Won’t you be my mission-oriented neighbor?

A qualitative case study of an innovation district’s ability to facilitate mission-oriented innovation

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Abstract

The thesis explores the possibility of facilitating mission-oriented innovation policy through the implementation of innovation districts. The idea for this research project originated from an interest in the applicability of missions in the Norwegian context and an interest in geographical and contextual factors for innovation activity.

The thesis is a case study of the Norwegian innovation district Punkt Oslo where the structure of the innovation district is explored and its ability to facilitate mission-oriented innovation policy is analysed. To investigate this a single case study was conducted based on semi-structured qualitative interviews and a document analysis of the strategic documents for the development of the innovation district and internal frameworks in Punkt Oslo.

The methods were combined with three analytical categories that are governance, experimentation and innovation intermediaries within innovation ecosystems. These analytical dimensions were chosen as there is a lot of emphasis on governance and experimentation in the missions-literature, while the focus on innovation intermediaries originated from the role of intermediaries in the innovation ecosystem in Punkt Oslo.

The interviews found that the lack of cohesive policies and management within the municipality acts as a barrier for projects that are mission-oriented. These barriers could either be lowered through the use of active innovation intermediaries or increased dynamic capabilities in the municipality. The findings of the document analysis indicated a lack of cohesiveness of policies and specified focus on cross-sectoral collaboration through the use of the MIT-stakeholder model. The study found that innovation districts can be conducive to mission-oriented innovation policy, but it would be dependent on more cohesive policies, a clear directionality for the innovation district and an active use of MIT-model. The thesis does not aim to generate new theory, but rather add insights to the research fields of mission-oriented innovation policy and innovation districts.

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Ole Elmer Lusminki Jensen, Oslo, October 2022

List of abbreviations

E-cap - Entrepreneurial capacity

I-cap - Innovative capacity

ID - Innovation districts

KS - The municipalities interest organization

MFT - Market failure theory

MOID - Mission-oriented innovation district

MOIP - Mission-oriented innovation policy

NIS - National innovation systems

OSC - Oslo Science City

PO - Punkt Oslo

RIS - Regional innovation systems

R&D - Research and development

STI - Science, technology and innovation

SME - Small and medium enterprise

SDG - Sustainable development goal

TTO - Technology transfer office

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1 Introduction and Background

Innovation policy has gone through evolutionary changes over the last century where the focus on innovation as a means for economic growth where the state's role was to fund research and development (R&D), shifted to a systemic approach to innovation where the focus shifted to different nations innovation capacity and consequently the state's ability for developing national systems of innovation (Schot & Steinmueller, 2018) But as these two framings were considered to be insufficient at solving the wicked problems that the world is facing, a third generation of innovation policy has emerged. The third generation of innovation policy focuses on the state's role in facilitating transformative change. One of the approaches in the category of transformative change is the mission-approach championed by Mazzucato (2017). The approach has gained a lot of traction over the last couple of years, but it is still a fresh concept which needs more research. Some of the aspects in the missions-thinking that Sharp et al. (2022) highlights a lack of is the consideration for geography, proximity factors and embeddedness. One new approach to urban planning that has a lot of aspects that might be accommodating to missions are innovation districts (ID), but how ID can be structured to facilitate missions is an understudied area, which leads to the following overarching research question:

How can missions-oriented innovation policy be facilitated through innovation districts?

This master's thesis aims to investigate how mission-oriented innovation policy (MOIP) can be facilitated through ID. One of the UN's sustainable development goals (SDGs) is sustainable cities and communities (United Nations, 2022). One approach that might be suited for achieving this is through ID. An innovation district is "a place-based urban development strategy that aims to regenerate an under-performing downtown neighbourhood into a desirable location for innovative and creative companies and workers" (Morisson, 2020). The research in this master's thesis will be conducted through an analysis of the development of an innovation district in the downtown of Oslo named Punkt Oslo (PO). The ID launched in 2022 and the thesis will focus on the pre-launch phase where they conducted pilot projects, set goals and ambitions, and established frameworks for how PO was going to achieve these goals. The thesis will study innovation intermediaries that has active roles in PO, how the ID is to be governed and whether or not the work of the innovation intermediaries and the governance allows for experimentation. The overarching research question can thus be broken down into the following secondary research questions:

RQ1: How can the governance in an innovation district be structured to be suitable for mission-oriented innovation policy?

RQ2: How can innovation intermediaries facilitate mission-oriented innovation within an innovation district?

RQ3: How can experimentation be facilitated within an innovation district?

1.1 Goal and Relevance

The main goal of this research project is to investigate how ID can be structured to facilitate mission-oriented innovation within the Norwegian context. The main objective of the thesis is thus to combine the emerging fields of MOIP and ID, and investigate how the governance of ID through the use of approaches like innovation intermediaries and experimentation can aid in integrating the two fields.

The empirical relevance of the thesis is for municipal and governmental actors, as the goal is to analyze how they might structure ID to be suited for a specific directionality in its innovation. Oslo Municipality has developed a campus strategy (Oslo Kommune, 2018a) that aims to establish Oslo as a knowledge capital through the development of ID and this thesis might provide some insight into how the governance, opportunity for experimentation and use of innovation intermediaries within the ID might be structured to best serve their strategy or how it might be reconfigured to fit a mission-orientation.

The theoretical relevance for the thesis is through the combination of MOIP and ID. Both concepts are lacking in empirical case studies and this thesis might provide more research for the two fields both in combination, but also as stand-alone concepts. The concept of MOIP is growing in popularity among innovation scholars where it is framed with different contexts, concepts and theories (Larrue, 2021). And this thesis might provide some insight into the emergent concept of mission-oriented innovation districts (MOID) (Coenen, et al., 2022).

There is also an explorative nature to this thesis as the concept of ID and MOIP are relatively new, but the concepts are being incorporated into policy across the world (Yigitcanlar, et al., 2020; Larrue, 2021), and as the thesis will show, Norway is no exception. There is thus a need for more research on their practical implications within the Norwegian context. The chosen research questions all build on approaches which are deemed important in the missions-literature according to the conceptualization of Mazzucato (2017), the only exception being inter-

mediaries that is not explicitly stated in the conceptualization, but they function as an extension of governance. By analyzing these research questions, the thesis can hopefully provide insights into how the concepts might function in a Norwegian context.

1.2 Thesis Outline

The chapter continues with an introduction to the Norwegian context with a focus on the applicability and implementation of MOIP and ID in Norway.

Chapter two introduces the literature review and the theoretical framework, where theoretical approaches concerning MOIP, ID, innovation ecosystems and innovation intermediaries are introduced.

In chapter three the chosen methodology is introduced and reflected upon, as well as an overview of the case study. Ethical and practical concerns are considered in this chapter.

The following chapter presents the empirical findings and frames them in the analytical dimensions of ID structure, governance, innovation intermediaries and experimentation.

Chapter 5 is a discussion of the empirical findings in the context of the research questions. The final chapter is a conclusion based on the discussion, including remarks on weaknesses of this study and future research.

1.3 The Norwegian Context

The Norwegian government is working towards the SDGs and has an ambition that private firms will take part in the new markets that emerge because of the SDGs, and they hope to achieve this through laying foundations for profitability within these markets and attract green, sustainable and innovative solutions (Kommunal- og moderniseringsdepartementet, 2020). The Norwegian government is thus adapting and introducing policies that might aid in achieving the SDGs, like increased sustainability reporting for public organizations, coordination of work towards sustainability with private firms and increased policy experimentation towards sustainability (OECD, 2021). The Norwegian government is using the SDGs as a basis for policy development, but there is not a definite contextualization of the concept developed by Mazzucato (2018) within Norwegian policy, even though some initiatives can be considered as such (OECD, 2021). Considering there is a lot of debate about the subject, a study of a policy initiative with specific spatial characteristics framed in a mission-oriented context might provide useful insight for the potential implementation of the missions-thinking in Norway, but how does it fit in the antecedent Norwegian context?

1.3.1 Missions in the Norwegian Context

The emergence of MOIP as a political concept has prompted many analyses of countries' ability to adapt to this framing of policy. In the Norwegian context the reports by OECD (2021) and Normann et al. (2022) provide a substantial review of the country's political context and what needs to be adapted to incorporate the missions-thinking in policy.

Research policy in Norway has for a long time been centred around societal issues, while the innovation policy has been more generic and business centred (Normann, et al., 2022). The primary goals of the research policy are generic without a clear direction, but the focus areas include areas that fit with missions like the oceans, climate, societal security, accessible technologies and improvement of public services. There have been some signals that innovation policy will have a clearer directionality with the Hurdal-platform, but as Normann et al. (2022) states; the practicalities of this is at the time of publication unclear.

Research policy is split between ministries as they are all responsible for funding research within their sector, but the Norwegian government has a history of using subcommittees and commissions to coordinate policies between the ministries. Different means of actions are also being established with a certain directionality, like Pilot E and CLIMIT which OECD (2021) deemed to be mission-oriented initiatives in Norway due to their strategic orientation, policy coordination and policy implementation. The existing and more wide spanning means of action like SkatteFUNN and the business garden programme are lacking in directionality for them to fit with the missions framing but are rather tools within the first generation of innovation policy.

The Norwegian government works on a one-year principle in its national budgets, which goes against the long-term planning that is required for the completion of societal missions. There is a need for a more open and long-term funding structure. An established governance tool is goal- and result measurement that can prove useful in working towards goals, but with the risk-filled nature of the specific missions, this might involve an undesired complexity in combination with the one-year principle (Normann, et al., 2022). However, the report by OECD (2021) finds Norway on a national level to be conducive to mission-oriented policies as the country is actively working towards societal goals and also has a strong interest in the adoption of more coordinated and targeted policies. An important caveat in the report is that the sector-principal which involves stronger involvement from different ministries does facilitate incremental change within different sectors but is not conducive to holistic transformative change.

1.3.2 Innovation Districts in Norway

The national innovation system (NIS) in Norway is highly dependent on the exploitation of natural resources, have high degree of collaboration among firms and an active public sector in industrial issues (Fagerberg, et al., 2009). The NIS is characterized by a high degree of "tertiary-degree holders" compared to other comparable European countries, which entails high absorptive capabilities, but there exists a lot of potential for further development within the emergent knowledge economy (MIT REAP, 2021). As a result of the identification of this potential for attracting and keeping skilled knowledge workers, the government has developed strategies for doing so where one involves the establishment of ID in Norway.

Norway has some history adopting strategies for sustainable development within regional innovation systems (RIS) (Normann, et al., 2020), but further narrowing towards the emergent concept of ID is new and in Norway there are five areas that can be categorized as ID (Qvigstad, 2021). These are Hovinbyen in Oslo, Oslo Science City (OSC), PO in Oslo, Trondheim Tech Port and Marineholmen Innovation District in Bergen. These districts vary in characteristics as they aim for different niches. Some focus on marine technology, some on urban innovation and others on circular economics. Some are state driven, like OSC, while some are a collaboration between public and private firms, like Hovinbyen. Development of ID is a growing trend, and many large organizations both public and private are investing in them in Norway. Comparably there has been a worldwide adoption and development of the concept where 22@ Barcelona in Spain and Cambridge Science Park in the UK are famous examples, but there are also closer examples like Hagastaden in Stockholm and Copenhagen Science City (Yigitcanlar, et al., 2020).

2 Literature and Theoretical Framework

In this section of the thesis, prominent literature concerning mission-oriented innovation and innovation system theory will be presented. The section on mission-oriented innovation will delve into the development of the mission-concept and introduce its modern contextualization. The literature on innovation systems will delve into innovation ecosystems and ID. Both the missions- and innovation systems sections will focus on the emergence of innovation district and innovation ecosystems, where governance and experimentation in the different literatures are in focus. The literature concerning innovation intermediaries will also be reviewed as it relates to the roles of Svale, which is an intermediary within PO, and the management of PO in the innovation ecosystem. PO was selected as a case study as it has the SDGs as a steering principle in its strategical documents, so without being it adamantly mission-oriented has conducive qualities to the missions-framing.

2.1 Mission-Oriented Innovation Policy

Missions as a policy concept has existed for a long time, most famously in relation to the moon landing in the 1960s when public policy was coordinated towards achieving a specific goal or mission, namely landing a man on the moon (Mazzucato, 2017). With rising global awareness of the challenges we as a society are going to have to face in the future, the mission-concept is returning among scholars, policy-makers, economists and other parts of society. There is a growing support for policy where political instruments are directed towards achieving specifically set goals with high complexity, like combating climate change, providing sufficient health care for all and solving the issue of an ageing population. The re-emergence of the concept stems from the claim that traditional science, technology and innovation (STI) policy and traditional market forces have been insufficient in combating wicked problems and that there is a need for a new mode for policy to be directed and coordinated where more stakeholders are taken into consideration (Schot & Steinmueller, 2018).

The original concept centred around a missions-thinking was focused on technology policy, where innovation in specific sectors were targeted to achieve set goals (Wanzenböck, et al., 2020). In the example of the moon landing, technology in astrophysics were targeted and funded as it was identified as the key technology to achieve the set mission. Missions could be politically motivated for national prestige or economically motivated to increase profits and create jobs, but as many missions-centred projects failed to deliver economic development, the missions-thinking was abandoned by many. The current view of missions is that the policy needs to involve more stakeholders and sectors and be more challenge-oriented rather than

technology-oriented (Mazzucato, 2017). The shift from technology-oriented to challenge-oriented missions entails that those missions have longer time frames and wider scopes, innovations will be dependent on diffusion throughout society, innovation is to be funded through a larger variety of stakeholders and innovation is highly dependent on niches and radical novelty as there will be strong incumbents standing in the way (Wanzenböck, et al., 2020).

Mazzucato (2021) assesses that the current thinking around the state's role in markets, the role of financial institutions, the funding and development of internal capabilities in public organizations and the neo-liberal thinking concerning economic development is flawed and creates more problems than it solves. There needs to be a complete rethinking of the state's role, where we need to turn away from the market failure theory (MFT) in which the maximum return that can arise from state intervention is when the market is failing through positive or negative externalities, a last resort when markets are not able to fix themselves. Mazzucato (2021) argues that governments should be encouraged to have a more active role in stimulating economic activity instead of just fixing failing markets. As well as a departure from MFT, many scholars also argue for a departure from the systemic failure approach, and it is with regard to this thinking that Weber and Rohracher (2012) suggested four types of failures as rationale for policy intervention for transformative change, these failures being directionality, policy coordination, reflexivity and demand articulation. These failures all provide different issues that need sorting for grand challenges to be overcome, like directionality in that wicked problems have to be translated into specific targets for innovation policy to be directed towards a common goal (Haddad, et al., 2022).

The wicked problems the world is faced with today are high in complexity and there is not necessarily an expectation that they are going to be solved, but a good starting point can be to establish what the problem is and how important it is, who should try to solve it and establish causality (Wanzenböck, et al., 2020). There are initiatives that are being put forward with this in mind, like the Net Zero Coalition, a result of the Paris Agreement, which aims to reach net zero in emissions by 2050, where some of the biggest polluters in the world like the US, China and the EU all have agreed to take part (United Nations, 2022). Another initiative is the SDGs put forth by the United Nations where goals and sub targets are defined and agreed upon, where many goals are interdependent in outcomes (Sachs, et al., 2019). These initiatives have clearly defined goals with set time frames that can provide directionality for NIS.

The framing of policy as missions can be questioned and criticized as a type of greenwashing of existing practices to attract entrepreneurs and gain social capital as can be argued was the

case in the Agder region with the S3 Platform (Normann, et al., 2020) where the region claimed to use the platform, but research showed that it did not follow through on many aspects. The MOIP-concept developed by Mazzucato (2017) has been criticized for lacking a concrete structure and for being too vague, a type of one-size-fits-all policy that is merely a buzzword for politicians (Wennberg & Sandström, 2022). An important aspect of the MOIP literature is that there is not one specific type of framework or typology of missions, so when conducting a qualitative analysis is it important to distinguish what defines the missions-thinking and what factors are to be taken into consideration when conducting an analysis.

2.1.1 Approaches to MOIP

There is no established framework for what actions can be defined as mission-oriented and which actions that cannot. It is important to distinguish between the different conceptualizations of missions when conducting the particular analysis of this thesis, as the analysis is dependent on a distinction of what an ID can facilitate. Wittmann et al. (2021) suggested a typology that focused on mission definition, design and implementation as defining factors, while Polt et al. (2019) focused on motivation, intention, definition of target and scope, and means, while Wanzenböck et al. (2020) focused on the level of societal contestation of the underlying problem and the solution that is anticipated. Missions can also be framed as accelerator missions for certain technologies or transformative missions that aims for sociotechnical transitions as suggested by Chicot et al. (2018).

This thesis uses the conceptualization theorized by Mazzucato (2017) as a basis for the characteristics of missions and how they can be successfully applied. The conceptualization separates contemporary missions with the missions of the past like the Apollo-program through diffusion, economic feasibility, directionality of the missions, governance, focus on radical and incremental innovation and cohesive policies. With these characteristics in mind, Mazzucato (2017) emphasize that missions should be well-defined to be successful, which is heavily linked with directionality. Due to the uncertainty of missions, the project portfolios should be diversified across sectors with a focus on both radical and incremental innovation to ensure both acceleration of existing technologies and the development of sorely needed novelties. The focus on radical and incremental innovation will be grouped into the term experimentation as both types of innovation requires experimentation to some degree.

Economic feasibility is a pragmatic factor as mission-oriented innovation need to avoid becoming pipedreams that can't go beyond the planning stages. Missions need to be doable and build on existing resources and capabilities. Diffusion of results is also an important aspect as

the goal of the mission is not economic growth alone but rather combating wicked problems on all levels, so successful technologies and innovations need to be diffused. Diffusion and economic feasibility are factors that are considered to be important for the facilitation of missions but would be difficult to study in PO due to the ID not being fully operational yet. Whether the innovations can be successfully diffused or if they are economically feasible in the long run is not something this thesis has the scope to study. Four factors in the conceptualization of contemporary missions that are of special interest in this thesis due to the nature of ID and which is deemed to be accessible to study are the governance approaches of experimentation, cohesiveness, and directionality.

2.1.1.1 Governance

Governance is defined as "a process of organising multiple actors to shape a shared vision and specific activities" (Rabadijeva & Terstriep, 2021). According to Wittman et al. (2021), developing a suitable governance practice is an essential aspect for achieving the changes that MOIP aspire to do. Socio-technical and economic systems have to be transformed for goals to be met, and heterogenous actors have to influence decisions and alter framework conditions. With the prevalent complexity of wicked problems, many scholars view the optimal governance structure to be a multi-level governance structure where a wide array of stakeholders are more involved in the governance structure on multiple levels (Wanzenböck, et al., 2020). Multi-level governance entails a mix of international, national, regional and local targets that public actors have to work towards. Mukhtar-Landgren et al. (2019) highlights the important role that a municipality can play as an enabler for urban experimentation, but also that governmental organizations cannot act wholly on their own accord due to not being unitary as they have to take into account for multi-level policies. It thus becomes relevant to examine the IDs ability to act on own accord and be explorative, or to what degree it must adhere to overarching strategies.

According to the UN, two thirds of SDG's can only be accomplished through local efforts (Kommunal- og distriktsdepartementet, 2020), so it is important to involve local and regional governments. The multi-level governance and the inclusive structure of this type of governance aims to allow for experimentation, which is an important aspect for facilitating missions (Mazzucato, 2017). The multi-level governance system's main purpose is to set guidelines and norms for nations to follow (Utenriksdepartementet, 2018). Through multi-lateral organizations like the UN, WTO and the EU among others, rules are set, and member nations must

follow these guidelines to avoid sanctions. Haddad et al. (2022) also emphasize that the governance needed to accomplish complex missions is multi-levelled and open-ended. Local, regional, national and international governments will all have to be involved to overcome wicked problems, and this entails open-ended missions with a lot of negotiations and collaboration between different transnational actors. A lack of sufficient open-endedness and successful multi-level governance could lead to both coordination and reflexivity failures, which we previously established as failures that could stand in the way of transformative change.

Governance of missions need to be decentralized and inclusive to create a demand for- and acceptance of missions within society (Wanzenböck, et al., 2020). The governance structure needs to go beyond incumbents and state organizations and involve all parts of the production chain as well as NGOs, lower governmental organizations and other stakeholders in society. The innovation policy literature is lacking in frameworks for handling such complex issues where lots of viewpoints have to be considered and conflict might arise between heterogenous actors (Wanzenböck, et al., 2020). From a grand challenge perspective, both the problem and the solution might present issues for policy makers as the problems require solutions that are cross-sectoral, involves phasing out of incumbent technologies and systems, and are not only technology-driven. Rabadijeva and Terstriep (2021) emphasize the need for participatory governance where new non-hierarchical forms of organizing have to be established with a focus on collaboration and co-production, but as they highlight, participation is not an end in itself and there should not be a one-size-fits-all approach. In other words, reflexivity and proximity factors are important for governance.

Wanzenböck et al. (2020) view MOIP as policy that provides direction for solutions to meet problems. This entails that MOIP is not going to "pick winners", be it technologies, firms or actors that are projected to have financial success, but rather connect these with a problem that they might be able to solve. Within this framing, policy makers can be viewed as innovation intermediaries that acts as "innovation brokers" (Zylberberg, 2017). But linking possible solutions with stated problems is not an easy task, as the issues are complex and the views on what the problem is or how it might be solved are not necessarily converging among stakeholders. Larrue (2021) identify in a study of lessons from the implementation of MOIP that it is important to build on existing structures of governance and redirect them rather than tear down completely to build anew. Another aspect is that many missions like the SDG's overlap and converge, so solutions might require efforts from a lot of different sectors. This inclusion

of different sectors, or stakeholders, and creating spaces for interactions between these are aspects that is also highlighted by Kuhlmann and Rip (2018) as one of three complementary ways of achieving a more inclusive, socio-technically focused approach to governance, a type of meta-governance focused on experimentation. The other two aspects being the inclusion of key actors which involves a re-evaluation of who the key actors are and create a joint focus on economic and societal development.

The SDGs are regarded as central missions on an international scale, but there still remains to be seen if they can provide actual change or if they are just used as a governance tool and a tool for greenwashing politics and behaviour. Biermann et al. (2022) report that there is no strong evidence that the SDGs have had a strong impact on mandates, practices or resource allocations. There has been no transformative change in multilateral governance due to the introduction of the SDGs, as Biermann et al. (2022) states: "the fragmented nature of global environmental governance continues to limit institutional change and produces inconsistencies and inefficiencies". While the fragmented nature hinders transformative change, many of the mechanisms that are working towards the SDGs were already in place before the goals were set, so there already existed long term strategies in many regards. There is also a lack of coherence in the implementation of the SDGs as the goals are chosen selectively by different governments for different purposes and the UN does not seem to provide cohesive leadership in the multi-lateral structure.

Coordination of policies is one of the policy rationales in the failure framework of Schot and Steinmueller (2018) while a similar term in cohesion is framed as an important aspect for completing contemporary missions according to the conceptualization of Mazzucato (2018). For clarity the term cohesion will be chosen as it concerns the creation of a united whole, rather than effective organization. It is important to create cohesive policies that affects the political apparatus both horizontally and vertically to ensure a holistic approach to missions. If policies exist in contradiction with each other, governments will not be able to effectively work with solving missions, so holistic strategies need to be conducive with local policies (Mazzucato, 2017).

MOIP requires state intervention as an entrepreneur, where the state is willing to take risks and create and shape markets instead of just fixing market failures (Mazzucato, 2017). By being an active entrepreneurial state, markets can be guided towards fixing issues the state has identified through active engagement with promising technologies, firms and business models, but this approach has been criticized for not taking into account the market failures that

might arise if the state is successful in doing the wrong thing or unsuccessful in doing the right thing (Wennberg & Sandström, 2022). The argument revolves around private entrepreneurs, whom might be better suited to solve or experiment with certain issues, being crowded out by an active state who is lacking in "punishment" if it fails compared to niche actors who will face negative economic consequences if they fail.

Based on the work of Weber and Rohracher (2012) concerning failures as rationale for policy intervention, directionality is an important aspect for transformative innovation as policy needs to be geared towards specific types of innovation. This entails that economic targets can't be the only driver for innovation activity, and rather specific societal targets should be pursued. Entrepreneurial niche actors play an important role in any innovation system as they are able to test new solutions and markets, so there is a need for niches to be fostered within an innovation system aimed at conquering grand challenges, and one geographical configuration that aims to do facilitate development of entrepreneurial niches while still involving a wide array of stakeholders is ID.

An important caveat to MOIP and the governance and implementation of missions is that the missions-thinking has received critique for not taking place-specificity into account. Brown (2021) highlights this through a study of missions-thinking in Scotland where regional factors were not considered, decreasing the effect of the mission-thinking. By implementing MOIP, governing bodies should thus apply a place-specific approach to its framing, as it has to build on existing competencies within a geographical area, but this might go against the broad approach of missions. This entails a degree of experimentation where place-specific governance has to be developed and to study this it is important to investigate how experimentation can be facilitated in a place specific approach.

2.1.1.2 Experimentation

A shift from an evolutionary mode of innovation requires strategic planning and directionality, but to avoid becoming locked into existing paths and rather orchestrating new path creation, experimentation is an important factor for innovation policy (Tödtling & Trippl, 2021). Mazzucato (2018) emphasizes that experimentation is key for the entrepreneurial state and that it should build on internal absorptive capabilities and institutional learning, while Foray et al. (2019) highlights the importance of smart specialization where bottlenecks, missing links and failures are necessary to identify. As the third generation of innovation policy has emerged through transformational policy or challenge-/missions-led policy, with focus on

overcoming wicked problems (Schot & Steinmueller, 2018), more attention has been dedicated to transformational innovation and how society is to achieve sociotechnical transitions. These types of innovation policies differ from the earlier generations through the need for social and behavioural change as well as technological development. This complexity combined with the lack of opportunities to study MOIP in practice as it is still an emergent concept, creates a need for experimentation with possible solutions both through governance, institutions, organizing and types of innovations (Hekkert, et al., 2020).

Experimentation goes beyond simply just technological experimentation. Larrue (2021) emphasizes that there needs to be an approach to policies that is inclusive and that there also exists a need for monitoring and reporting practices that can allow for learning and experimentation with policy. The main challenge with experimentation, especially with an ecosystem-based mission programme[1], is that they are dependent on incumbents. Ecosystems rely on the influence of incumbents and radical innovation has proven to be difficult when incumbents are faced with complexity when challenged by technologies that are geared towards sustainability but goes against the blueprint of the incumbent's ecosystem (Kim, et al., 2022). To allow for experimentation, the report by Larrue (2021) suggests that untraditional stakeholders should be included in the innovation processes, mainly through cross-sectoral and interdisciplinary collaborations, as well as open inclusion of local populations and users. Through open inclusion there are higher chances of co-definition of missions, which have shown to lead to a feeling of ownership and thus higher engagement.

Mazzucato (2018) conceptualizes a need for dynamic capabilities within the governmental apparatus where internal capabilities and institutional learning is fostered. This can be facilitated through active involvement of governmental actors in innovation ecosystems with cross-sectoral and interdisciplinary actors. This framing emphasizes a need for flexibility within organizations and a need to take risk no matter the size of the organization or whether it is publicly or privately owned. Cross-sectoral collaboration and interdisciplinarity are thus important dimensions to assess for the facilitation of missions along with the degree of openness.

2.2 Innovation Systems

Innovation is viewed in the systemic approach as a phenomenon that is non-linear, evolutionary and interactive where knowledge creation, transfer and diffusion is an essential part (Etzkowitz & Leydesdorff, 2000). In the system approach to innovation, stakeholders both inside

[1] See chapter 2.2.1 for innovation ecosystems.

and outside of the innovative firm are considered and interactions between the stakeholders are highlighted as important and nurtured. Knowledge diffusion and creation occur through spillovers, as different parts of the system interact and combine different type of knowledge. Innovation systems are evolutionary in their development and innovations are mainly viewed as ends in their own right, but some argue that for sustainability transitions to successfully happen, innovation systems need a clear direction (Fagerberg, 2018; Coenen & Morgan, 2020). The innovation systems literature emerged in the 1980s, and has developed from the original focus of NIS to include more delineated geographical areas, technologies and sectors (Fagerberg, et al., 2009). Even though many ID focus on specific technologies or sectors, the main interest of this thesis is the geographical systems, as the ID in question is geographically delineated. It can be useful to consider the systemic perspective in innovation studies as it takes into account both direct and indirect factors, and especially when looking at a transformative approach like the missions-thinking where whole systems have to be re-evaluated or transformed.

One theoretical concept that has been developed as a branch of innovation systems literature is the triple helix model of innovation (Etzkowitz & Leydesdorff, 2000). The triple helix is a model that involves interactions between academia, industry and government which fosters economic and social development. Considering intermediation, this model is important as it has spawned organizations like technology transfer offices (TTOs) and other intermediary organizations that operate between the three stakeholders. It is also important to note that the triple helix plays a significant role in the development of the knowledge economy, as both industry and government becomes more linked with science and research through academia and the creation and transfer of knowledge increases its importance (Leydesdorff, 2012).

Many scholars call for transitions of socio-technical- or innovation systems for grand challenges to be overcome (Kuhlmann & Rip, 2018), as the systems have to be transformed themselves as different actors take on new roles and there needs to be more open-endedness to the development within the system. Hekkert et al. (2020) introduced the concept of the mission-oriented system, which consisted of all actors that agreed on a specific mission, or rather directionality of innovation, and all involved stakeholders needed for achieving this, but this concept is currently underdeveloped, but might provide fruitful analysis in the future. Even though the concept of the mission-oriented system can be fruitful, an innovation district

within the context studied in this thesis is mainly an innovation ecosystem and part of a larger NIS in Norway, which according to Normann et al. (2022) is not primarily mission-oriented.

2.2.1 Innovation Ecosystems

The denomination "innovation ecosystem" stems from ecology and is meant to illustrate that the innovation ecosystem consists of formal and informal relationships between actors within a geographical area (Budden & Murray, 2019). The ecosystem analogy is relevant as the actors and systems within the ID are dependent on each other. The actors in this context are the human capital and material resources that make up institutional entities, like the firms, academia and other organizations (Jackson, 2011). Firms have historically mainly operated in dyadic collaborations where only two firms collaborate, but to increase their I-cap many leading firms have initiated collaborations with multiple partners (Davis, 2016). The literature concerning innovation ecosystems is an extension of the innovation systems-literature and can be strongly linked to the triple-helix model of innovation. The research economy is, according to Jackson (2011), sustained by the commercial economy and the same goes the other way round, and a successful ecosystem is characterized by R&D turning into commercial profit, which in turn is invested into new R&D. An important note relating to the relative infancy of the innovation ecosystem concept is that there is not a consistent definition (Gomes, et al., 2018), so an important distinction for this thesis is that innovation ecosystems focus on value creation while business ecosystems focus on value capture.

The emergence of the concept of the innovation ecosystem has entailed a new dynamic between public and private organizations, as the government can no longer just provide basic public services and rely on the private market for economic development, but rather in the knowledge-based economy must be an active participant in laying the foundations for a culture of innovation to flourish (Griffith, 2016). Thus, by taking an active part in an innovation ecosystem, they are better able to influence economic and societal development, instead of just existing as an "employer of last resort" in classical economic theory (Jackson, 2017).

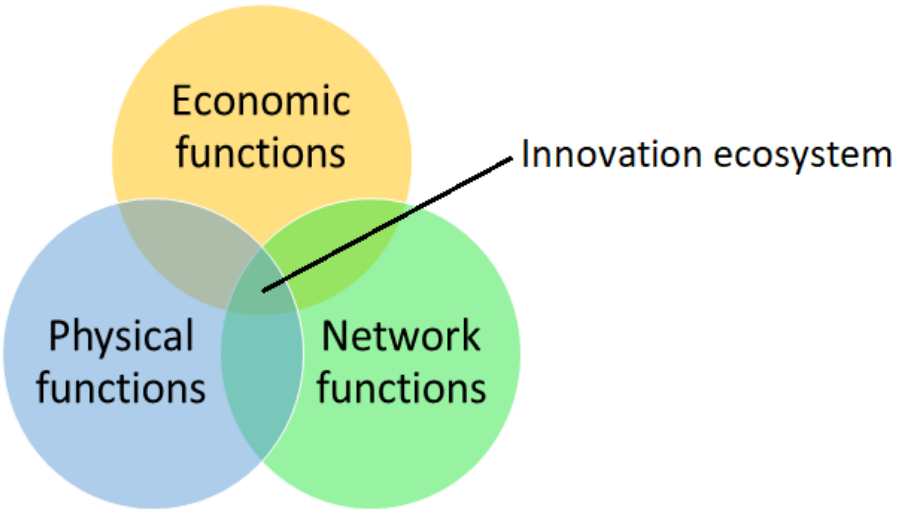

Figure 1. Innovation ecosystem (Oslo Kommune, 2018a).

Figure one, based on the work of Katz and Wagner (2014), which aligns with the findings of Yigitcanlar et al. (2020) and Heaphy and Wiig (2020), shows the different functions that make an innovation ecosystem. The economic functions are innovation drivers like R&D, cultivators for innovation like incubators, TTO's, etc, and other services like cafes and hotels. The physical functions are everything from public spaces to privately owned buildings to communication infrastructure. The network functions are the already established meeting places like workshops and educational centres, as well as open events and networking arrangements, and lastly it can also be chance encounters and connections that arise through proximity factors.

Innovation ecosystems are essential for understanding ID as these concepts go hand-in-hand in that the ecosystem is a "natural" system for interaction between actors within a geographical area, and it reflects the culture and norms of the area which the ID needs to establish (Lawrence, et al., 2019). A specific model for innovation ecosystems that it is important to establish in a theoretical framing for this thesis is the MIT-model, as it was shown in the MIT-REAP report (2022) that it is foundational for the development of PO.

2.2.1.1 The MIT-model

PO builds their methodology on the MIT-model of innovation ecosystems. The model emphasizes two capacities as important for the system dynamics, namely innovative capacity (I-cap) and entrepreneurial capacity (E-cap) (Budden & Murray, 2018). I-cap represents a specific region, city or nations innovative capacity, meaning the degree of existing scientific and innovative milieus, while E-cap represents the entrepreneurial capacity which concerns possibilities

for forming businesses and developing them. I-cap and E-cap are dependent on five dimensions according to Budden and Murray (2018), which are human capital, funding, infrastructure, demand, and culture and incentives, all of which can be supported through policy.

The MIT-model emphasizes that there is need for participation and collaboration between five different stakeholders for the ecosystem to be successful and efficient (MIT REAP, 2021). These five actors are entrepreneurs, academia, risk capital, the government, and incumbent firms. In this ecosystem, the entrepreneurs provide ideas and innovations which they aim to bring to market. Academia provides access to knowledge and talent as they develop future entrepreneurs and technologies through R&D. Academia has three missions, which are to create research-based knowledge, provide relevant teaching and contribute to societal and economic development. The governmental actors have many roles, as both regulators, customers through public procurement and a test arena for innovations within the ecosystem. Risk capital provide funding for projects and corporate enterprises are attracted to disruptive technologies and can thus provide experience to the innovation process and serve as customers (MIT REAP, 2021).

From the side of both corporate enterprises, governmental actors and entrepreneurs, open innovation is an important aspect for taking part in an innovation ecosystem (McGahan, et al., 2021). Corporate enterprises are attracted to disruptive technologies and niches and can thus enhance their innovative capabilities through external sources, and the same goes for governmental actors. Governmental actors can increase their capabilities through collaboration with both niches and existing regimes. Entrepreneurs can develop their solutions through collaboration, but also through interactions with end-users in the community of the ecosystem and through interactions with researchers. An important note is one which McGahan et al. (2021) highlight, which is that open is not synonymous with level, as power dynamics, barriers and asymmetric sharing occurs. It is thus important to study dynamics within the implementation of the MIT-model to investigate its foundations for challenge-orientation, which requires a greater deal of openness. Another important caveat is that the degree of wickedness of problems also play a part in managing innovation processes, open innovation in the face of wicked problems is currently an understudied subject but is theorized to be a suitable process to tackle these problems as it allows for input from a wide variety of stakeholders (Ooms & Piepenbrink, 2021).

The ecosystem aspect can be combined with the missions-thinking through ecosystem-based mission approaches (Larrue, 2021). Public authorities can operate as ecosystem architects and

facilitate which stakeholders should be part of the ecosystem and thus set a certain direction for the ecosystem. One approach that can serve as an ecosystem-based mission approach is through publicly initiated ID.

2.2.2 Innovation Districts

ID are geographically specific metropolitan innovation spaces. The concept is relatively new and there are few empirical case studies that has been conducted. Morisson's (2020) definition of ID focuses on place based urban strategies that aims to make use of spatial factors to regenerate urban areas to better suit and attract knowledge workers. As the systemic view of innovation became prevalent, industries and firms started to cluster together to achieve knowledge transfer and diffusion, but due to their closed-off and homogenous nature, these clusters became isolated and path-dependent, and silo thinking emerged (Yigitcanlar, et al., 2020). In the start of the 21st century, innovation policy turned towards a more open approach and there was a shift from the production-based economies to knowledge-based economies (Morisson, 2020). Within knowledge economies, cities are key to technological development, and it is within this framework that ID have emerged. ID are either high-technology-intensive or creativity-intense, but they arise through the need for interactions between niches, public institutions, users, infrastructure, etc. The need for these interactions is what sets the ID apart from science parks in separate areas.

The work of Katz and Wagner (2014) has been influential for the advancement of the field of ID, and they define ID as mashups of entrepreneurs, educational institutions, governmental organizations, start-ups, investors and social institutions, with an infrastructure focused on sustainability and inclusivity. It is important to note that their work for the Brookings Institute is not peer reviewed, but their thinking is in line with that of Morisson (2020) and some of the work of PO is based on the work of the Brookings Institute, so to better understand their framing the inclusion of this work is important. ID are alternatives to clusters with silo-thinking and individual start-ups working alone, as they facilitate collaborative spaces in metropolitan areas where different stakeholders can mingle and share ideas. ID intentionally focus on open innovation as they aim to create new products, technologies, or market solutions through input from external capabilities and knowledge bases. ID form naturally in some cases as start-ups cluster together due to affordability, similarity between start-ups, labour markets and infrastructure (Cosgrave, et al., 2013). While some form naturally, others are governmentally stimulated through municipal policies where the government has a direct role in its development.

Based on other cases with publicly initiated ID, for it to become self-sufficient over time it needs municipal leadership to transform (Morisson, 2020).

ID provide benefits through what Lawrence et al. (2019) categorizes as economic, physical and social dynamism. The economic dynamism occurs through diversification of the economy as niches are given access to facilities and connections to develop and establish themselves. This was exemplified by Barcelona's ability to thrive during the financial crisis of 2008-09 through the workings of 22@Barcelona. Physical dynamism occurs through bringing new life to industrial areas and improve infrastructure, which reduces the physical barriers to other nodes of the ecosystem. The social dynamism occurs through the ID potential ability to improve social lives of its inhabitants through events, parks and other recreational opportunities, thus creating strong networks. These types of increased dynamism lays foundations for more radical and revolutionary innovation, as shown through Berkes and Gaetani's (2021) study of patents in the US where they found that the more unconventional patents were found in more densely populated areas and where they argue that the informal interactions that occur in high-density areas are key to this development.

ID normally adhere to one of three different models according to the work of Katz and Wagner (2014). The first model is the "anchor-plus" model, where firms and organizations are structured around one or more important anchor institutions or organizations. Anchor organizations in an innovation ecosystem can be useful through their resources and capabilities, but there is also a risk of becoming path dependent as all activities are structured around the anchors. The "re-imagined urban areas" model is a model that focuses on transforming old industrial areas both physically and economically. This model takes advantage of existing infrastructure as the areas have antecedent factories, easy access to transportation lines and proximity to urban areas. The third and final model is the "urbanized science park", where the innovation activities are mixed with other activities in suburban areas. A commonality of all three models is that they build on existing strengths in the areas the develop in, either be it the existing infrastructure, strong anchor firms or the access to human capital in suburban areas.

Proximity factors are cornerstones for the development of ID as the clustering of different stakeholders is meant to increase unrelated diversification (Janssen & Frenken, 2019). Digital innovations have made a lot of impact in access to information and communication, the internet of things allow for a lot of collaborations and solutions that were previously thought to be impossible. But an important aspect to note in the change of innovation through digitalization

is that the marginal cost of transmitting information is lowered through greater digital infrastructure and easier access, but transmission of knowledge is more dependent on geographical factors (Katz & Wagner, 2014). This difference between knowledge and information is important as information is best utilized through relevant knowledge, or in some cases tacit knowledge, which is not easily codified and transferred (Nelson & Winter, 1982). The clustering of workers and firms within ID allows for individuals to change jobs and expand their knowledge bases and networks, but this requires a culture of openness and collaboration.

ID are driven by market creation rather than product creation due to their natural draw for start-ups and niche actors (Cosgrave, et al., 2013). The land use associated with ID was restricted to science parks and clusters in the 80s and 90s, but due to the shift from a production-based to a knowledge-based economy the geographical clusters of firms now include factors that provide quality of life as well as professional factors (Esmaeilpoorarabi, et al., 2020). Modern day knowledge workers are attracted to a well-balanced work-life relationship (Coenen, et al., 2021). This interest for a *buen vivir*[2] represents a shift in focus of policy towards a more holistic approach were more stakeholders and factors are considered in the innovation process. By planning ID with more than economic development in mind and a greater focus on societal factors, knowledge workers will become more attracted to the ID, which is in line with the findings of Heaphy and Wiig (2020). These characteristics are what defines ID as innovation systems in metropolitan areas, but a shift towards a knowledge-intensified workforce in metropolitan areas does not come without issues that needs asserting, like the issue of gentrification of neighbourhoods when a highly educated workforce replaces lower-skilled workers in an area and drives up the cost of living (Esmaeilpoorarabi, et al., 2020).

2.2.2.1 Criteria for Development of ID

The concept of ID is relatively new, so categorizing success criteria is still a relatively theoretical exercise, but it is important to take into account the theorized criteria for development of an ID. By creating a comprehensive understanding of the concept of ID, the later analysis of mission-orientation will be made easier as potentially contradictory factors are accounted for. In the criteria for the development of ID conceptualized by Baily and Montalbano (2018), we find that the most relevant criteria for development are:

[2] Buen vivir is a concept which entails a good work-life balance for everyone and where the two merge (Salazar, 2015). This approach has one the other hand been criticized as "economization of life" by blurring the lines between work and private life (Kayanan, 2021).

1. Core competency. The ID needs to build on its existing strengths or competencies to gain competitive strength.
2. The people. For an ID to successfully develop novelties there needs to be strong leadership, a skilled workforce and highly qualified researchers. By combining educational centres, research centres, private firms and governmental institutions in a geographical proximity, an ID can increase their chances of achieving this.
3. Culture. There needs to be an underlying openness to collaboration and new ideas in the ID for knowledge creation and diffusion to occur. At the same time there needs to be something that attracts the right individuals to live as well as work in the districts, so there needs to be an attractive social culture.
4. Business capabilities. The entrepreneurs in the ID need to be able to attract capable workers and be able to develop their own business. There needs to be a combination of business- and technical capabilities.
5. Access to markets. There needs to be a sophisticated demand, preferably within the cluster, and if not, the firms need to be able to access markets nationally or globally.
6. Access to funding. Proximity to financial institutions, venture capital or other sources for funding are important factors for the development of novel ideas as niche actors normally lack sufficient financial backing.
7. An accommodating infrastructure. Access to airports, roads, trains as well as accommodating office spaces are important factors. In this regard, state-driven ID have the advantage of using their zoning- and area-planning departments to design ID more easily.
8. Regulatory environment. A halting bureaucratic structure will slow down development and implementation of innovations, so a forthcoming governance structure is a clear advantage for ID.

These criteria are useful touchstones for the analysis as they highlight how ID can be designed to function positively, these criteria can further be assessed considering how they might be in contrast with a mission-orientation or how it might complement it. It is important to note that despite the usefulness of their framing, the work of Baily and Montalbano (2018) is not an established framework, but their findings from the use of ID in the US can provide relevant insight into how ID are developed.

There are other conceptualizations of success criteria, like the work of Esmaeilpoorarabi et al. (2020) which claim that community engagement in ID is essential for successful development, Heapy and Wiig (2020) which focuses on the role of anchor-institutions either through the public sector or private firms and Katz and Wagner (2014) which emphasises the need for critical mass can all be viewed as relevant approaches. Seeing as there are many different criteria for success in theory in an emerging field, the analysis in this thesis will have to be narrowed to certain factors and adjusted to the Norwegian context. The criteria conceptualized by Baily and Montalbano (2018) provide a clear framing of how the development of ID can be structured and what factors are important to consider.

The innovation ecosystem aspect of ID does to a degree entail that there is some silo thinking, as each individual ecosystem builds on globalized principals and the knowledge economy but adapts it to local conditions and structures which creates a peculiarity which does not necessarily match with other ecosystems in the region (Griffith, 2016). For this reason, it is important to investigate how ID can be governed to maximize its own development while still adapting to regional, national and international conditions, and how they adapt to being a part of inter-city networks. In the perspective of MOIP which requires directionality and cohesion, governance of ID thus becomes an important factor to research for how it is suited to accommodate these factors.

2.2.2.2 Governance

ID can either be publicly initiated or occur naturally through agglomeration of different stakeholders in a geographical area (Morisson, 2020). The publicly initiated ID are part of the political means of action for the municipal government as a part of strategic urban planning, while the natural agglomerations are more horizontally governed. Due to the open characteristic of ID, there are many aspects that distinguishes different ID (Yigitcanlar, et al., 2020). The host cities or districts may differ in governance and juridical characteristics. Some local governments might be autonomous or highly dependent on multi-level policies, or they might be influenced by the local population who demand participation or insight into the work done in the ID. Others might grant full autonomy to the ID and facilitate open innovation. Proximity to relevant stakeholders, as well as demographic and social features of the area will also be factors that can determine the ID innovative qualities. The more relevant stakeholders with heterogeneous qualities, the better the foundations for unrelated variety and new path development. ID can be market driven or state driven with focus on global or local markets.

An especially important proximity and governance factor relates to the helix configuration the ID is part of, if it is a double, triple, quadruple or quintuple helix. The dynamic of the helix configuration creates synergetic effects as different knowledge bases interact (Etzkowitz & Leydesdorff, 2000). The traditional model of the triple helix involves public organizations, private firms and educational institutions, but it might be lacking in a conceptualization of the different levels these three actors can interact and collaborate on to contribute on a societal level (Gohari, et al., 2019). Lawrence et al. (2019) argues that governance of ID needs to be flattened and authority distributed to the community, thus employing a quadruple helix as it also involves the local population. The characteristic of ID creates the assumption that a quintuple- or n amount helix would be preferable as there thus would be more stakeholders involved in the innovation process, but the higher complexity would make the governance structure more difficult to design efficiently.

Some scholars argue that there is a shift from "municipal voluntarism" to "strategic urbanism" within urban governance as there is more engagement by private and multilateral actors (Davidson, et al., 2019). The rise of ID follows this trend as urban development becomes more strategic with a certain directionality to its governance. The multi-lateral structure and increased globalization of city networks also creates more complexity and makes governance less transparent as more stakeholders are involved and want to implement their own agenda and needs. Within the context of the knowledge economy, stakeholders within academia will have to participate more actively in urban development to make universities a more prominent part of the city's fabric and increase informal encounters and communication (Gohari, et al., 2019). The directionality of governance does also create difficulty in maintaining and developing an innovation ecosystem as it might limit the small actors in experimenting and following their own ideas (Lawrence, et al., 2019).

The ID that are being established in Oslo are part of publicly initiated strategies and seeing as they are public initiatives with the aim of involving several stakeholders, their foundations are suitable for participatory governance, which is claimed to be an essential approach for MOIP (Rabadijeva & Terstriep, 2021). Participatory governance entails a lot of co-determination from affected stakeholders, which Sharp et al. (2022) state can occur through a quadruple helix or other n-tuple helix configurations. It is on the other hand important to emphasize that there is a lack of conceptualization of governance structures for ID and the thesis aims to shed some light on how the governance is structured in PO, and what stakeholders within PO view as the optimal approach for the ID and how this can be aligned with a mission-approach.

2.2.2.3 *Experimentation*

Experimentation is very much predicated on cross-sectoral and interdisciplinary collaboration (Larrue, 2021). For experimentation to be facilitated, there needs to exist access to different resources and technologies that can be used to create new combinations. The focus within an ID should, according to Lawrence et al. (2019), be on end users and power should thus be distributed horizontally. This mode of involving end users such as workers, students and residents of the ID involves feedback-loops in innovation and a doing-using-interacting mode of innovation (Enkel, et al., 2009). By conducting experimental innovation, it allows the stakeholders in the ID to learn and develop in real time to respond to wicked problems (Bulkeley, et al., 2016). These experiments require input and collaboration between the stakeholders, including end-users, as there exists complexity both from a technical side in the innovation itself, an environmental side through the use and development of the innovation in the community and from an organizational side as the projects require funding and approval.

Experimentation entails trying and consequently failing from time to time, and the risk of failure is something that might create friction in projects in governmentally initiated ID due to the municipal governments' key role (Eneqvist & Karvonen, 2021). The standard structure for municipal governments is, according to Eneqvist and Karvonen (2021), a vertical set-up with silo-orientation to minimize risk and stabilise collective interest. This set-up in combination with a neo-liberal, economic focus where public services are meant to be as cost-efficient as possible in theory does not allow for a lot of experimentation (Jackson, 2017). Mazzucato (2017) emphasizes the need to build on existing governance structures and not complete transformation to remain economically and politically feasible. The concept of building on existing governance structures thus aligns between MOIP and ID as it makes use of the antecedent economic and political situations to steer them towards mission-orientation. Whether or not this alignment allows for radical as well as incremental innovation is another question.

Berkes and Gaetani (2021) highlight the importance of proximity for experimentation, as areas with high agglomeration of knowledge creation facilitates unconventional combinations of prior knowledge. This is in line with the conceptualization of ID, as they aim to gather heterogenous actors and create spillover-effects. Although unconventional combinations or new path creations are better facilitated through conglomeration of knowledge-intensive actors, this does not necessarily entail transformational- or mission-oriented innovation. Sharp et al. (2022) emphasizes that there is a need to implement directionality in a place-based approach

either through SDGs or other goal-orientations, evaluation of output should be further developed to incorporate societal usefulness as well as economic and innovation spectrums, and evidence cases need to be built.

Open innovation is another emerging concept within innovation studies, which concerns knowledge creation through external sources (Enkel, et al., 2009). The knowledge can come from many sources, and Enkel et al. (2009) divides it into three categories, namely outside-in, inside-out and a coupled process. The outside-in process involves enriching ones own knowledge base through suppliers, producers and other external knowledge sources. The inside-out process involves bringing new ideas to market so they can be further developed, selling IP and thus increasing revenue or transferring technology to the outside environment. The inside-out process can be useful in creating intersectional innovation as ideas and knowledge is transferred across industries. The coupled process involves co-creation with complementary partners, which can be found in the MIT-model. This process relies on synergetic effects as it combines the inside-out and outside-in processes, which according to Enkel et al. (2009) will open the silos in innovation and R&D to external influences.

These resources might be technologies, knowledge and capabilities. In the framing of Mazzucato (2018), the focus is on welcoming experimentation through the development of dynamic capabilities. There is no "one-size-fits-all" when it comes to missions and missions should be framed in such a way that it facilitates cross-disciplinary, cross-sectoral and cross-actor innovation. By laying the foundations for this type of experimentation an ID can in theory be better suited for facilitation of missions. The degree of which experimentation is facilitated will be analysed using the following factors:

- Cross-sectoral collaboration: To what degree collaboration across sectors is facilitated in the ID and to what degree the actors are allowed to go beyond their own fields or roles.
- Interdisciplinarity: The inclusion of academia and different fields within the ID, and how interdisciplinary collaboration is facilitated.
- Open innovation: How the innovation process is structured in relation to the inclusion of outside parties and how open the stakeholders are. If the innovation follows specific parameters or if there is room for new path creation.

2.3 Innovation Intermediaries

Howells (2006) highlights that intermediation can be termed as a function, process or relationship. The intermediary can provide scanning, diagnostics, processing, testing and validation of knowledge among other functions, while intermediation can be a process where the intermediary has an active role in all steps of the innovation process, or the intermediary can exist within a network and have relationships with firms and other stakeholders. Even though the term innovation intermediary can be traced back to the middlemen of the 16th century (Howells, 2006), the modern intermediaries are firms that have emerged as components in the knowledge economy and a growing number of policies have started to rely on innovation intermediaries for support in R&D processes (Russo, et al., 2019). The innovation intermediaries can provide support in all of the R&D stages, from mapping collaboration to the commercialization process. Innovation intermediaries are often tasked with stimulating small and medium enterprises (SMEs) that normally don't conduct R&D on a systematic level. When intermediaries play a part in innovation systems, their roles become more complex as they must provide different functions for heterogenous stakeholders. Incubators, research councils, TTOs, public organizations and even individuals can be termed as innovation intermediaries (Howells, 2006).

Despite the work of Howells (2006), there have only been fragmented approaches to systemize the role of innovation intermediaries in innovation processes, where there are narrow approaches to different sectors but a lack of quantitative data. The literature review conducted by Feser (2022) does on the other hand highlight the role innovation intermediaries play in knowledge sharing in innovation systems, where it can be measured by innovative outcome, internal factors and contextual factors. Innovative outcomes can either come through direct outcomes with new products and services, indirect trough the influence on innovations or on a systemic level within an innovation system. The internal factors are divided into categories which are general characteristics, strategy, structure, management and assets. As there are no one-size-fits-all for the role of intermediaries, the contextual factors are categorized after industry/sector related factors, location, networks, knowledge sharing/transferring activities and public policies.

The framework developed by Feser (2022) provides a useful analytical tool for analysing the role the intermediaries Svale and PO can play in facilitating innovation, but it is also important to assess which type of intermediary they can be categorized as. Svale is a private

company while PO is a publicly instigated organization, and it is thus a public-private collaboration. Municipalities have recognized that they need to play an active part in networks, and this fact combined with the difficulties that often occur in public-private relations in ecosystems, the innovation intermediary has often been employed (Bakici, et al., 2013). Innovation ecosystems are in themselves complex, but as they grow over time they increase in complexity, and it is important for innovation intermediaries to play a proactive role as the ecosystem evolves (Ngongoni, et al., 2017).

In the context of MOIP, there have been conducted a small amount of research into the role intermediaries can play in facilitating missions. The research that has been conducted highlights that intermediaries can play a role as a broker for policies in that they can facilitate collaborations that serve a certain directionality (Robinson & Mazzucato, 2019). If policy is to accommodate missions, it is important to allow for directionality and innovation intermediaries can play a role in facilitating this through playing a role as broker or gatekeeper, thus facilitating for co-creation with "the willing". In the transitions literature the role of intermediaries has on the other hand been researched to a greater degree, which is highlighted trough the work of Gliedt et al. (2018) where they emphasize the possibility for intermediaries to contribute directly to green entrepreneurship trough brokering and gatekeeping and contribute to facilitation of niche experimentation.

Open innovation can lead to more involvement of end-users and more experimentation (Enkel, et al., 2010). This aspect is in line with the missions-thinking as it allows for greater inclusivity and co-determination in the innovation process. Lack of resources is something that has provided a barrier for SMEs in conducting open innovation as they are not able to maintain sufficient networks to retain enough knowledge (Bigliardi, et al., 2020), so by using an innovation intermediary this issue can be reduced, allowing for greater openness in the innovation process. McGahan et al. (2021) state that "if properly managed, the inherent tensions related to open innovation can be mitigated, and open innovation can be a powerful, and necessary, tool to address the grand challenges, and the related trade-offs".

2.4 Summary of Chapter

The literature review has provided an overview of the literature concerning mission-oriented innovation, innovation systems with focus on ecosystems, helix configurations and ID, and lastly innovation intermediaries. The MOIP-literature section establishes the concept developed by Mazzucato (2017) and takes into account what the key elements for succeeding with missions are according to this approach, with a focus on governance, cohesion, directionality

and experimentation. Governance and experimentation are important factors for the directionality of innovation, and especially when linked with the innovation systems literature where ecosystems and ID need a special type of governance to achieve the desired directionality. The innovation systems section delves into the theory of innovation ecosystems as it is relevant to understand the novelty of ID, as ID functions as an innovation ecosystem where innovation is facilitated through interactions between all parts of the ecosystem. The literature review further expands on the ID and how approaches to governance, cohesion and experimentation is theorized in the ID literature, by doing this the ID literature is linked with MOIP to establish the analytical dimensions that the thesis will investigate. The section on innovation intermediaries establishes the role of intermediaries within MOIP and ID, and introduce the framework developed by Feser (2018) to assess the role of intermediaries.

3 Methodology

The following chapter will present the methods used for data collection and how the data collection process was planned and executed. The chapter will then present the case chosen for study in the thesis and explain why it was selected. Lastly the chapter will present the practical and ethical concerns that were considered before, during and after the data collection and analysis.

3.1 Qualitative Methods

Due to the relative newness of ID in Norway, the research will have to be qualitative as there is not enough data to assess how ID have functioned over time within the specific national context. The best suited way for conducting the research was thus deemed to be case studies with document analysis of the implementation process of projects within the innovation district and qualitative interviews with stakeholders to gain insight into how the implementation process works in practice and how it might be adjusted to suit the missions thinking.

The research method used to investigate the research question was a case study where a combination of qualitative interviews with relevant stakeholders and a document analysis was used to analyse the data. The relevant stakeholders were in the case of PO project managers that had insights into the facilitation and leadership on projects within PO, the entrepreneurs who provided the innovations for the pilot projects and public organizations that helped facilitate PO. The interviews would have to be qualitative, and semi structured as there was a need for in-depth perspectives on the collaboration process within PO in the pre-launch phase and what the informant's perspective on facilitation of missions were. By accessing in-depth knowledge from relevant stakeholders, the research project would aim to get perspectives on how the events leading up to the project occurred, how the innovation process was conducted and how the informants experienced the whole process. Another point for the interviews to be semi-structured is that there was a need for coherence in the data collection process, but during the interviews there needed to exist possibilities to go off script and investigate insights that the informants found important. A flexible approach to the data collection process was thus chosen.

The scope of the research project did not allow for a wide array of informants, so the informants had to be chosen from a relatively small pool of relevant stakeholders and triangulated with a document analysis to ensure representative data and rigour (Stratford & Bradshaw, 2016). The thesis had an explorative nature as there is no established framework for MOIP in

the innovation literature, but there are many theorized approaches within the missions-literature that could provide a fruitful analysis when assessed in the Norwegian context. An important consideration in the early phases of the research project was if the project would be theory-testing or theory-generating, which entails that the thesis would either aim to support or falsify existing concepts, or rather look at a case with some distance from existing theory and try to generate theory (Baxter, 2016). Seeing as there was a small pool of existing theories and frameworks for the combination of the missions-thinking and ID, the thesis rather had to try to be theory-generating, or rather provide more insights that can help generate theory in the future.

When conducting qualitative analysis, it is important to decide on how to structure the data for analysis to be able to translate and synthesise the data in a meaningful way (Cope, 2016). Approaches like concept mapping and coding were considered, but the organizing method that was considered to provide the most fruitful analysis was memos. Cope (2016) states that "a memo is usually a short note to oneself, or research collaborators jotted to capture a quick insight". This technique is used to reflect on patterns and connections, and proved to be useful when going from interview to interview as patterns emerged and one could either investigate the matter further with the next informant or go back to previous transcribed interviews. These insights and patterns were later explored in the context of the theoretical analytical dimensions.

3.1.1 Qualitative Interviews

The qualitative interviews followed a semi-structured form, where there were some short answer questions to start the interview to get the informant going and concluded with some more deep-lying questions that related more to the research question of the thesis than the short answers. The interview guide was structured with the three analytical dimensions of the role of innovation intermediaries, the level of experimentation and the approach to governance. The aim of the interviews was to gain information about- and insight into how well the ID accommodate these factors and how it might be altered to better accommodate these factors based on the viewpoint of the informant. As the interviews were centred on the viewpoint of the informant, it was important to collect data from several different stakeholders.

The selection process for the qualitative interviews was based on the snowball- or chain sampling (Stratford & Bradshaw, 2016), where the first informant was queried if there were other stakeholders that might be relevant to interview. Another factor that influenced the selection

process for informants was the information that the interviews and document analysis revealed, one example being that some of the informants emphasized the importance of the active role of PO and that work with the municipality was challenging, so it became essential to get their perspective on the matter for a better analysis of the research questions. The sample size was determined both by the type of knowledge gathered, as well as time- and resource constraints. Once the collecting process had given sufficient insight into the specific type of concept or knowledge that was needed for the analysis, further interviews could not be prioritized. With a larger scope, and with more time and resources, more stakeholders would have been interviewed, primarily with a focus on incumbent enterprises within the data sector and capital funding institutions.

3.1.2 Document Analysis

To ensure rigour in one's research, it is important to triangulate data either through multiple sources, methods, investigators, or theories (Stratford & Bradshaw, 2016). To triangulate the data needed for the research questions, a document analysis was chosen as an additional method. Document analysis can be done as an interview, where the researcher asks a question and looks through the text to find answers. Or the researchers can quantify the use of words, phrases, concepts or categorize into themes. It is easier to remain objective when using quantitative interpretation, as when one is asking questions it is easy to skip the material that does not answer one's question (Research Methodology in Education, 2016).

The strength of document analysis is that the sources are unreactive, they can be re-read an uncountable number of times and remain unchanged (Asdal & Reinertsen, 2020). It is also cost- and time efficient. But documents are limited, the researcher will not be able to gain information beyond what is stated in the document without adding additional sources and there is risk of bias, as there is with all qualitative sources.

Before conducting an analysis on the contents of a document, it is important to note who the sender is, who the receiver is, what the purpose of the document is and who or what the document has gone through from its first draft to its published form (Asdal & Reinertsen, 2020). There might exist biases and when we know the entire lifespan of the document, it is easier to analyse the contents of the document, but also analyse what is not in the document. Everything exists within its relevant context, so it is important to understand that a document does not just exist on its own, it is a political technology that has a specific purpose.

The document analysis conducted in this thesis focused on the internally developed legal framework of Svale, the campus strategy of Oslo Municipality, the report from the needs study for PO, the overarching business strategy of Oslo County and the MIT REAP-report. The documents either concern the background for PO or how PO is to be structured. An important caveat is that the steering documents for PO are not published yet and would provide an even more fruitful analysis. The aim was to assess how PO is structured and what considerations were made for the development of ID in Oslo. These insights would then be linked with theory concerning MOIP. By combining these two aspects the aim was to achieve greater understanding of how the innovation district functions, what considerations are made and whether or not MOIP are conducive with this structure. And by combining these insights with in-depth interviews of relevant stakeholders in the selected pilot projects the thesis will be able to assess how the process works in practice for the stakeholders.

3.2 Case Study

Case study research has resurged in popularity as a research method over the last couple of decades and it aims to provide intensive- instead extensive research (Baxter, 2016). Case studies aim to investigate phenomena within a specific context and can be used towards corroboration or falsification of existing theory within a certain context or developing new explanatory concepts. The most common type of social research when conducting a case study is cross-sectional case studies, as they are conducted in a specific point in time, normally when the researcher collects their data (Baxter, 2016). This thesis was cross-sectional as PO has existed for such a relatively short amount of time, which does not allow for a longitudinal case study.

When the research question of a thesis is a “How?” or “Why?”-question, a common way of gaining deep understanding is through case studies (Yin, 2003). Case studies are also preferred when investigating contemporary events where the researcher has access to first hand sources. Case studies thus became a natural research method when investigating how ID can facilitate missions. A single case study was selected over multiple cases, as it would provide greater insight into how specific missions could be facilitated within the context of PO. There is a risk of some bias as the research takes into account the perceptions of stakeholders in regard to how an innovation district can be structured in the future, and some might knowingly or unknowingly favour structures that benefit their aims. This complexity coupled with the

risk of informant bias for contemporary events will have to be considered when conducting the case studies and analysing the results (Yin, 2003).

The aim of the case studies will be to assess to what degree PO is structured to facilitate specific missions and achieve theoretically generalizable results for how ID can facilitate missions. Case studies aim for transferability by conducting careful selection of cases and create useful theory that is transferable to other cases by both avoiding being too abstract and too specific (Yin, 2003). The thesis does not aim to corroborate or falsify any theory, but rather combine two emerging concepts and investigate their degree of compatibility within a certain context.

3.2.1 Case Selection

Given the objective of investigating how missions can be facilitated through ID combined with the scope and size of the thesis, a single case study was selected as there are few ID in Norway. To gain insight into the different viewpoints of stakeholders, there needed to be conducted several qualitative interviews, so to maintain validity of the research, it was important to prioritize quality over quantity.

The reason PO was chosen over other relatable cases like Hovinbyen or OSC was mainly due to PO exhibiting aspects that might be align with MOIP and accessibility to data. A common aspect in the case selection process in qualitative research is the combination of serendipity and purpose, according to Stratford and Bradshaw (2016) it is advisable to work with what is practical and appropriate. PO was very forthcoming and wished to provide data and input on the research project early in the case selection process. A more extensive research project could have chosen a multiple case study with the inclusion of the other ID in Norway to create a better understanding of ID in the Norwegian context.

3.2.1.1 Punkt Oslo

Punkt Oslo is a spatially defined area in the centre of Oslo, that is established as a part of the municipality of Oslo's strategy for developing the city as a knowledge capital (Oslo Kommune, 2018a). An important note for this thesis is that PO changed its name after most of the foundational documents and reports were produced, and it was previously called Innovasjonsdistrikt Sentrum, but the steering group found the name Punkt Oslo to be a more fitting identity marker. The focus of PO is urban innovation with data-driven innovation as its base, and the aim is to address challenges like cleaning up the ocean, public health and reducing pollution with data-driven innovation within an urban environment (Norheim-Martinsen, 2022). PO is a publicly initiated ID aimed at revitalizing a specific district in Oslo. It is not a

spontaneous innovation district that has emerged through low rents and natural clustering, but rather as a political instrument where the municipality has an active role in the management of PO.

In the pre-launch phase of PO, the project management conducted three pilot projects to assess the strengths and weaknesses of conducting urban innovation within the ID. As revealed through the informants, there was no codified selection process for the projects but rather a use of existing networks for well-fitting projects and serendipity.

3.2.1.1.1 Pilot project 1: Nordic Neurotech

The first pilot project within PO is a project with Nordic Neurotech and Air, where they use data-driven innovation to develop VR-technology that can be used for exposure therapy (Neurotech, 2022). The project aims to develop technology for the health sector. The project is cross-sectoral as it is a collaboration that required competence in both data hardware and software, but also in psychology and other health disciplines.

The technology developed in the project is called VRET Nordic and was developed in close collaboration with Oslo University Hospital, Helse Sør-Øst and the regional service of competence for autism, ADHD, Tourette's syndrome and narcolepsy (Neurotech, 2022). The technology is focused on exposure therapy through VR technology, which makes exposure therapy more accessible and less resource demanding. Whether it fits with the profile of PO and urban innovation is unclear, but it can be considered as a project that works towards societal goals as well as financial ones.

3.2.1.1.2 Pilot project 2: City-Integrated, Floating Solar Cell Panels

Pilot project number 2 is a project which concerns city-integrated, floating solar cell panels. The panels were placed in the Oslo fjord and the purpose of the project was to test and show that Oslo harbour could be a test arena for innovation (Innovasjonsdistrikt Sentrum, n.d.a). The technology was provided by the start-up Sunlit Sea, which was founded in 2019. The other stakeholders involved in the project were academia through OsloMet, established firms through Statkraft and the government through Oslo municipality.

Through the collaboration researchers gain empirical insight on the effect of waves, currents, predictive analysis, and power production in proximity to urban areas, while the municipality gained insight into how their harbour can work as a test facility and how they can adjust to innovative urban development (Innovasjonsdistrikt Sentrum, n.d.a). The project thus fits the

profile of PO through urban innovation with data-driven technology as a source, and it is also a technology that can be suited for achieving SDGs.

3.2.1.1.3 Pilot project 3: Natural Resources on City Rooftops

The third pilot project conducted within PO is a project focused on creating green spaces on rooftops in Oslo. The project is a collaboration between SquareRoot, Rooftop, Tiny Workers and Oslo Bygg, as well as PO and Svale as intermediaries, and funded through Smart Oslo (Innovasjonsdistrikt Sentrum, n.d.b). The project focuses on sustainable urban development and preservation of biodiversity, and the aim of SquareRoot is to create an efficiency tool that can help landscape architects in dealing with plant producers. The project thus deals in data-driven innovation and is aimed at helping solve goals like the SDGs, and according to the informants, this profile was one of the reasons that they were contacted for a pilot project within PO.

3.2.1.2 Svale

Svale is a consultancy firm that works with ID in Norway and provide project support for the establishment of PO (Svale, 2022). The firm provides a legal framework for the innovation process in PO and acts as an innovation intermediary alongside the project managers in PO. They have also provided theoretical grounding for the development of PO in the workshops leading up to the launch.

3.3 Practical and Ethical Concerns

Yin (2009) states that there are four tests that have been established to assess the quality of any empirical social research. These four tests are construct validity, internal validity, external validity and reliability. These tests should be applied continuously through the research process.

3.3.1.1 Construct Validity

Construct validity is one of the most challenging tests to conduct in case study research as it is about "identifying correct operational measures for the concepts being studied" (Yin, 2009). This test is tricky due to the risk of being subjective when collecting data and creating operational measures that does not accurately measure the concepts that are being studied. In the case of the research project in this thesis, identifying correct operational measures can be challenging as the concepts are relatively new. The identified measures to assess the ID's ability to facilitate MOIP are thus based on a mix of criteria for successful ID established by

Baily and Montalbano (2018) and the theorized requirements for MOIP introduced by Mazzucato (2017). Achieving construct validity proved difficult as the case study had to combine theoretical concept with a small degree of antecedent empirical research.

3.3.1.2 Internal Validity

Internal validity is primarily relevant for explanatory case studies, where the causal relationship between *x* and *y* is being investigated (Yin, 2009). Issues may arise when additional factors are not addressed in the analysis, and this might lead to spurious conclusions. To test the internal validity, the researcher can use tactics like pattern matching, explanation building, addressing rival explanations and using logic models. The research of this thesis is not explanatory as is does not address the causal relationships between events in a well-defined problem, but rather exploratory as it investigates the main aspects of an under-researched topic. Thus, there was not a lot of attention dedicated to the potential pitfalls of internal validity in this research project.

3.3.1.3 External Validity

External validity deals with applicability to an external context. This is one of the main concerns of this research project as ID is a field that requires more study, so achieving generalizable data from case studies in a Norwegian context might provide an issue. When facing the problem of external validity in multiple-case studies, Yin (2009) suggests using replication logic, through literal replication by selecting cases that predicts similar results or through theoretical replication by selecting cases that predicts contrasting results for anticipatable reasons. Seeing as the available case studies of ID in the Norwegian context are fewer than the suggested number of 6 to 10 (Yin, 2009), using replication logic might become an issue in the research design. External validity was not achievable due to both the lack of empirical cases of the use of MOIP in an ID and the number of informants due to time constraints.

3.3.1.4 Reliability

Reliability is the final test a researcher can use to assess the quality one's research design. This is the most commonly known test and pertains to allowing later investigators to conduct the same research and arrive at the same conclusions (Yin, 2009). Reliability can be established by documenting the procedures followed throughout the research, this can be achieved through the use of a case study protocol and the development of a case study database. The case study protocol is an overview of the case study projects, including objectives and hypotheses, theoretical framework, information sources, data collection plan, expected preparation and evaluation. The case study protocol for this particular research project was developed continuously as the project was developing.

3.3.1.5 Ethical Concerns

Ethical concerns for this thesis are based on the guidelines by National Committee for Research Ethics (NESH) in the Social Sciences and Humanities (NESH, 2021). In advance of the data collection process, consent forms were created and approved by NSD. All informants had to sign a consent form proving informed consent, as this is important for maintaining ethical guidelines (Dowling, 2016). The informants had to approve the data management of their personal data as all interviews were recorded and transcribed. The recordings were done by using the recorder app provided by UiO and the data was stored in "Nettskjema" which is a service approved by NSD. All personal data is to be deleted once the thesis is submitted and the informants could at any point until submission withdraw consent.

3.3.1.6 Practical Concerns

Research which involves qualitative interviews with informants that might have different viewpoints and interests concerning a research project requires critical reflexivity (Dowling, 2016). This thesis included interviews with informants were differing opinions became apparent, different informants had different recollection of the importance of certain aspects, so this data had to be triangulated with other data sources like a more extensive document analysis. The number of informants that could participate in interviews were a bit few as only 5 informants were able to participate. Two more informants were willing to participate, but one had to cancel late in the process and another interview was conducted but the recording device proved to be faulty during the interview and rescheduling for a new interview did not fit for the informant.

A final practical consideration is the lack of peer reviewed literature on ID. The workings of the Brookings Institute with the reports of Katz and Wagner (2014), and Baily and Montalbano (2018) are all influential in the field of ID, but the reports are not peer reviewed. Even if they can prove to be useful concept, other peer reviewed articles will have to be relied upon for theoretical and empirical grounding. A compensation measure that was employed for the lack of literature was the inclusion of other similar fields, like the broadening of innovation ecosystems.

4 Empirical Findings

The empirical findings chapter is divided into four sections. First the development of PO will be assessed through the criteria of Baily and Montalbano (2018). Secondly the overarching governance will be presented through the effect of multi-level governance, the degree of directionality and cohesion. The insights concerning innovation intermediaries will be then presented using the framework developed by Feser (2022) and these will be linked to MOIP and ID. The aspect of experimentation will be analysed with an emphasis on how it might be enabled within an ID through the use of open innovation, cross-sectional collaboration and interdisciplinarity. The empirical findings consist of the qualitative interviews with two entrepreneurs, two intermediaries and one municipal informant. The findings also draw from a document analysis of the MIT REAP-report, Oslo Municipality's campus strategy, the overarching business strategy of Oslo County, the report of the needs study of PO, the project descriptions of the pilot projects in PO and the legal framework of Svale. The interviews were transcribed, and some direct quotes are presented, and when the interviews were unclear the informants were given the opportunity to rephrase their answers.

4.1 ID Structure

The following section will categorize the empirical findings on PO in the categories proposed by Baily and Montalbano (2018) and provide a brief explanation of what model the management of PO adhere to.

4.1.1.1 Chosen Model

The ID is focused on downtown Oslo, where there is a lot of existing infrastructure and human capabilities. Based on the workshop proceedings in the needs study for PO published in May 2022, the ID has based itself on the anchor-plus model. The ID does not aim to transform the geographical area, but rather make new use of existing infrastructure. The ID adheres to an anchor-plus model, which entails that it is structured around one or more anchor institutions, in this case primarily Oslo Met.

4.1.1.2 Core Competencies

The first factor established by Baily and Montalbano (2018) is the need to build on core competency. The MIT-REAP report (2021) was a survey of the regional strengths in Oslo, where governmental, private and academic actors worked together with MIT to assess the strengths which Oslo could develop further. The report concluded that Oslo had a lot of unfulfilled potential within data-driven innovation as there was a lot of available data and a lot of trust

among the population for the governments data management. The core competency of the ID is data-driven innovation. The term data-driven innovation went against the distinct profile which PO wanted to establish and thus the focus area pivoted to urban innovation with data-technology as a base. PO thus aim to have a clearer identity that can still span wide enough for cross-sectorial collaboration, while still drawing on the core competencies of the area.

4.1.1.3 The People

The second important factor for the development of ID is the people. As both the Campus Strategy (Oslo Kommune, 2018a) and the MIT REAP-report (2021) states, Oslo is struggling with attracting and consequently keeping talented knowledge workers due to weak linkages between the business sector and academia. This is something which the municipality aims to alter through the development of ID and the general development of the campus areas in Oslo. The people working with the development of ID anchor their process in the work of the Brookings Institute, as stated in the needs study (Innovasjonsdistrikt Sentrum, 2022). The intermediaries use theoretical grounding and have active involvement in both the selection process and the project management. While they have not been fully able to engage all parts of the MIT-model with mainly venture capital and established private firms being absent, this is one of their aims in the future.

4.1.1.4 Culture

Culture is also an important factor for the development of ID. According to the informants and the document analysis, there exists an underdeveloped link between business and academia, as well as between sectors in Oslo. PO aims to increase collaboration through the use of the MIT-model. The campus strategy (Oslo Kommune, 2018a) aims to develop Oslo as an attractive city for knowledge workers and establish ID, which are intertwined efforts to create an attractive business and social culture. The two factors that are the culture and the people together can enhance the city's I-cap and E-cap according to the factors established by Budden and Murray (2018).

4.1.1.5 Business Capabilities

PO is centred in the downtown area of Oslo, with a relatively high mass of businesses which is growing (Oslo Kommune, 2018a). There are also several incubators and initiatives like Oslo Business Region that facilitates entrepreneurship, where some of the informants highlighted the need for PO to incorporate these in a larger ecosystem rather than representing an alternative approach or exist as a competitor. The business capabilities can at the same time access the capabilities of the knowledge institutions, as the campus strategy highlights the

need for better linkages between academia and the existing business world. PO aim to shorten this gap in linkage through active use of the MIT-model.

4.1.1.6 Access to Markets

I-cap and E-cap are important aspects for an ecosystem, but it is difficult to take advantage of these without access to markets. Proximity plays an important part in the access to markets within PO. Urban innovation is the focus point, which entails a higher focus of business-to-business innovation, i.e. technologies that can be useful to established firms and the municipality rather than products for consumers, even if they exist in an urban environment where consumers will experience and make use of the innovations. The MIT-model comes into play for this aspect as well through the link between entrepreneurs, established firms and governmental organizations, as the example of pilot project 2 showed where an established firm was brought into the innovation process and ended up as a customer for the entrepreneur.

4.1.1.7 Access to Funding

"*If there is not sufficient funding for a project, it will not be carried out*" (Intermediary informant 1)

Access to funding is important for continued innovative activity, as the intermediary informant states. According to informants both financial institutions and established firms are hesitant in engaging in the ID as they first have to see the value in it for themselves. PO is working towards including these two stakeholder sections as member organizations, as proximity to the organizations is not an issue as many are already located within PO and more large firms are moving their office to the centre of Oslo according to the Campus Strategy (2018a). The active involvement of the municipality as a founding member can help in accessing public funding for projects., but the main takeaway is that PO is working towards better access to private funding. The findings of the MIT REAP-report (2021) highlights that approximately 26 percent of all private funding goes to the Oslo-region and a majority to the construction sector, and one reason for that according to the report is the lack of knowledge for the potential of data-driven innovation among asset managers.

4.1.1.8 Infrastructure

There is already well-established infrastructure in the metropolitan area of Oslo, with PO drawing on established anchor institutions, like OsloMet, as revealed through the needs study and the interviews. Having the municipality as a member organization can also provide benefits as they can act as an enabler for urban experimentation through the coordination of municipal policies. Policies like the continuous work of reducing car traffic in downtown Oslo

(Oslo Kommune, 2022a) benefits the development of PO, especially on a social level as living in the area becomes more attractive. The informants also revealed that there is an interest in making better use of the existing infrastructure through the use of available office spaces and the city as a test arena for innovation.

4.1.1.9 Regulatory Environment

In light of the Norwegian political context investigated in chapter 2.1.1, the regulatory environment might be one of the key factors for successfully establishing and developing an ID in Norway. According to the informants, there exists barriers when working with the municipality as the different departments work with their own strategies. This is in line with the findings of Eneqvist and Karvonen (2021) as this is common within municipal organizing and with Normann et al. (2022) on the workings of the Norwegian political apparatus. Through the interviews with the informants, the indications were that the municipality could preferably be more accommodating to PO for it to work more efficiently, but a potential strength for PO is that the municipality is an active member organization, and this could prove beneficial over time.

4.2 Governance

The governance aspect of both ID and MOIP is something that is in the need of enhanced study. Governance is an overarching concept that functions on multiple levels both horizontally and vertically, where different policy instruments like the use of intermediaries and experimentation are two of many available approaches. For increased understanding of the other dimensions, an extensive analysis of some aspects of governance within the ID is deemed as important. For this thesis the governance aspect will be analysed using three dimensions. The first of the dimensions is multi-level governance as the missions thinking is dependent on top-down targeting, as well as bottom-up innovation and fulfilment of these goals among a broad set of stakeholders, so a useful tool for analysing the degree to which ID can facilitate missions in Norway is how affected local authorities are by international, national, regional and local policies. The second analytical dimension is directionality, which entails an analysis of how PO is structured and governed towards a specific type of innovation, and how it can be governed to achieve specific mission-oriented targets. The third analytical dimensions that the empirical findings will be analysed through is cohesion of policies. According to Mazzucato (2018), there needs to be a mobilization of policies that spans across many parts of the governmental apparatus for it to be able to achieve complex missions, so cohesion of policies is thus an important factor to analyse for the facilitation of missions within ID.

4.2.1 Multi-Level Governance

According to the steering documents of Oslo Municipality the SDGs are some of the central background documents for the long-term plan towards 2040, where the municipality incorporates it with other strategies like the mobility plan, zoning laws, national strategies for county development and others (Oslo Kommune, 2018b). The SDGs are also named in the campus strategy as premise for the follow-up of development of ID in Oslo. The informants on the other hand stated that Oslo municipality does not work specifically towards the SDG's but rather have their own sustainability goals and departments which follow up on the work towards those targets. They thus make their own adjustments to the SDGs and adapt it to a place-specific approach. Oslo Municipality is in this sense thus not to a high degree inhibited by the likes of the EU and the Norwegian government in their targeting but can govern somewhat independently when working towards sustainable development and which goals to target. Issues does on the other hand arise when there is need for collaboration with other departments within Oslo municipality.

"*This can provide complexity as different departments have their own administrative processes, but de-bureaucratization is something PO is working towards to speed up the innovation process within the ID*" (Municipal informant 1)

The missions-thinking is not a guiding principle for PO, but the future innovation strategy in Oslo municipality will most likely incorporate elements of this framing. The strategy will most likely not follow the missions-framing beat by beat, as the conceptualization is viewed as too broad and difficult to incorporate in strategies.

"*The upcoming innovation strategy will incorporate elements of the missions-thinking by Mazzucato, so it will most likely have more influence in the future*" (Municipal informant 1)

Regulations within the municipality take time to change, and some informants call for special mandates that can speed up application processes or help projects within PO go around certain bureaucratic barriers. Multi-level governance thus affects PO' ability to facilitate missions through lack of coordination of policies on a national scale. According to the informants, Oslo Municipality is characterized with a lot of silo-thinking among departments as they either lack overview of overarching strategies or have their own strategies that they follow.

The strategical documents for the development of PO all aim for value creation within the knowledge economy through job creation and increased E-cap in knowledge intensive sectors in Oslo. This goal thus goes before other targets and needs to be taken into consideration for

the development of PO, an important note being that it also has to integrate the SDGs (Oslo Kommune, 2018). This municipal strategy entails adherence to multi-level governance as PO has to weigh these targets in the local urban development.

4.2.2 Directionality

As was gathered through the interviews with the informants, PO has SDG number 11 as a cornerstone. SDG number 11 concerns liveable cities and communities, which is defined as "creating career and business opportunities, safe and affordable housing, and building resilient societies and economies. It involves investment in public transport, creating green public spaces, and improving urban planning and management in participatory and inclusive ways" (United Nations, 2022). Based on the subgoals stated in Prop 40. (Kommunal- og distriktsdepartementet, 2020) and the assessment of the Norwegian context in chapter 2.1.1, PO can be considered as a tool for the government in their work towards achieving subgoals 11.3, 11.6 and 11.7. The subgoals are as stated in Prop 40.:

- 11.3. "*Within 2030 strengthen inclusive and sustainable urbanization and the possibility for a participatory, integrated and sustainable social planning and administration in all countries*"
- 11.6. "*Within 2030 reduce cities' and communities' negative impact on the environment (measured per capita), with a special focus on air quality and waste management in public and private management*"
- 11.7. "*Within 2030 secure access to safe, inclusive, and available green areas and public spaces to all, especially women and children, elderly and people with disabilities*"

The use of SDG 11 is mainly a concept that is made use of within the ID, but not something that is codified in strategic documents even if the overarching SDGs are. SDGs are overarching in follow-up of the development of the campus strategy. But even if it is not codified it provides a certain directionality as it is conducive to the profile of urban innovation.

The aim of PO is to develop a specific niche in urban innovation through data-driven technology, which would create "buzz" for the ID on an international scale. Once the ID has become world leading within its niche, the thinking is that similar projects and relevant actors will naturally become attracted to the prospect of developing their innovation within PO. They thus aim to create directionality through a clear identity that is not too narrow but can still fawn wide enough to ensure cross-sectional collaboration as the specific niche becomes clearer.

"*You can brand an area as a centre for a certain type of innovation activity, for example "health innovation occurs in this area" or brand it as "fishery innovation". This can lead to more actors being attracted to the area, so that you can steer innovation. And then you can create a stronger and stronger environment, so that you reach critical mass, which entails that as the niche becomes more and more narrow the higher the probability is to become world leading in the specific field*" (Intermediary informant 1)

Directionality also requires specific selection processes and means to attract the right kinds of projects. The selection process for PO has not been facilitated yet, and the pilot projects occurred through an ad-hoc nature, but based on the interviews with the informants, the selection process will be based on specific criteria and instruments like the use of funding as a draw for entrepreneurs. The selection process will be combined with the development of a clear identity. The needs study identified this as an important aspect that needed to be pursued, which built on the analysis of the MIT REAP-report (2021) in that the ID needed to build on the existing capabilities with high potential, but it was also in line with the campus strategy as it would help in attracting and keeping talented individuals within that niche. The aim through shaping their identity, is that PO can create a clear directionality for what they want to achieve and thus attract "the willing" rather than "picking winners" who is projected to have financial success. Attracting the willing in the sense that they work within the specific niche of urban innovation with data-technology and who also can, and most importantly are, willing to work towards specific missions. An important caveat being that profitability needs to be considered for projects, especially if private capital is to have a more prominent role within the ecosystem.

For directionality to be facilitated, policies need to be horizontally integrated, the actors within the ID need to work towards the same goal and agree on what direction to take to reach this goal. Both entrepreneurs, intermediaries and municipal actors agree that for PO to establish itself as an enticing prospect for entrepreneurs and other relevant stakeholders, bureaucratic barriers need to be lowered. The structure of the municipality and national institutions are at the moment considered to be too rigid for innovation to be enabled at the desired efficiency. As municipal informant 1 suggested, they are working towards mandates or funding for sandboxes, but as seen in chapter 2.1.1, the Norwegian governance configuration is based on one-year funding and horizontally distributed ministries and departments that slows down or inhibits this process.

According to the informants, even though it has been up for debate during the pre-launch phase, the mission-thinking is not a mandate that PO works with, so in its conception it can't be categorized as a MOID. As Sharp et al. (2022) states, if an ID is to be mission-oriented, the framework for evaluation needs to go beyond accountability to founders and have a more learning-based approach. Based on the information from the informants, the campus strategy and the overarching business development strategy of the county, economic factors are prevalent for the creation of the ID in Oslo and it is thus natural to assume that these factors will play a large part in the evaluation framework for projects within PO. The steering group with its member organization will most likely have a prevalent role in the direction and development of the ID. An important caveat is that the evaluation framework is a work in progress at the time of writing and might be mission oriented with time.

"*It is exciting that PO can provide added value through linking cross-sectoral projects to concrete, local challenges. In the strategy we are to facilitate socially beneficial innovation collaborations, which in practice is similar to a missions-approach*" (Intermediary informant 2)

If the concept of missions is to be framed in the IDs mandate and the evaluation framework shaped thereafter, it might create a clearer directionality for the work within the PO. At the moment of writing the framing is geared to work towards societally beneficial innovation without a framework theoretically grounded in specific transitions-, transformational innovation- or missions-literature. An important point to highlight for the lack of clear theoretical conceptualization is that there is not a clear dichotomy between using MOIP and not, many aspects of working towards socially beneficial innovation collaborations overlap with a clear missions-framing.

4.2.3 Cohesion

Cohesive policies and corresponding policy instruments are important to effectively work towards missions due to their complexity and need for cross-sectional collaboration. In the context of ID and specifically PO, cohesive policies entail that business development strategies, city- and area planning, public innovation funding and infrastructure planning all are geared towards developing the geographical area of the ID. PO is dependent on the use of public buildings, using Oslo as a test arena for innovations, providing entrepreneurs with access to public funding of their innovations or being given mandates or sandboxes to speed up the innovation process. As gathered through the informants, the entrepreneurs are dependent on funding from public funding initiatives and other collaborations with the municipality.

The campus strategy is a form of business development strategy aimed at developing Oslo as knowledge capitol and create better business opportunities within the emergent knowledge economy. The overarching strategy of the region (ie, the strategy of Oslo and Akershus from 2015) is also aimed at developing the region with the knowledge economy in mind, as the strategy identifies unfulfilled potential in the region with linking strong research communities with relevant business sectors (Akershus fylkeskommune, 2015). The overarching strategies of the municipality are thus geared towards the development of sustainable innovation with a focus on linking research communities with the businesses in the knowledge sector, and the development of ID can be viewed as a policy instrument in achieving this. The municipality's high-rise strategy is also a strategy that can be linked with the development of the ID in the city if they can add requirements of multifunctional areas in the development of new high-rises in the city.

The campus strategy laid the groundwork not only for the establishment of PO, but two other ID as well, so PO is part of a larger strategy with diverse initiatives. The diversification is in line with the findings of Bakici et al. (2013) as public sector intermediaries should exist and enact their own strategies that might be in competition with each other. The informants on the other hand revealed that it was important to emphasize that the different ID should not operate as competitors but rather as parts of an even larger ecosystem.

The two comparative cases for PO in Oslo are OSC and Hovinbyen, whom both have been operationalized through the municipality's campus strategy. As previously mentioned, Hovinbyen is focused on business development towards the circular economy and OSC is more research centred and focused on the life sciences as the University of Oslo and the adjacent research park is the nexus of the ID. It became apparent that there are some differences between these two ID and PO through the interviews, mainly that PO has had a more hands on approach to projects, which is deemed to be a positive approach, but resource demanding.

"*One of the decisive advantages that PO has is the strong anchoring in the municipality's strategy and that they are a member organization to the same degree as the other sectors. This is in line with the MIT-model and it is decisive that they contribute with their resources and regulatory capital in innovation processes, like for example the pilot projects*" (Intermediary informant 2)

The fact that the municipality is an active participant in the steering group is viewed by many informants to be an important factor to facilitate collaboration, as it allows for more efficient

communication and allows the innovation intermediary easier access to public resources. The participant organizations in Hovinbyen are on the other hand more centred on the construction sector as they include Construction City Cluster, OBOS and Oxer Eiendom among others (Hovinbyen, n.d.). According to the Campus strategy (Oslo Kommune, 2018a), the infrastructure in Hovinbyen is monofunctional where different areas are used for specific functions, so the ID is thus a transformative project that has to deal make the infrastructure and areas multifunctional to be able to operationalize an ID. Oslo municipality is among the partners in Hovinbyen, but according to intermediary informant 2, has a less active role in the ID than in the comparative case of PO. OSC is more research centred, with organizations like UiO, SINTEF, OUS and NGI among others, with the municipality also involved as a participant and Ferd as the real estate partner[3]. This allows for more projects within the ID and there will have to be conducted research in the future concerning the quality of the projects this allows for in regard to the directionality of innovation, but for now it allows for a higher quantity of projects than with an active intermediary according to the informants. These types of projects take up a lot of time and resources, so to allow for active facilitation on all projects within PO will require a lot more funding from the municipality. The research in this thesis was not able to verify the exact quantity of projects that the other ID have produced.

"*Maybe we can influence the municipality to such a degree that they can prioritize resources internally, that can be coordinated, and they can try to provide resources to participate in projects or as a test arena*" (Intermediary informant 2)

One approach that was suggested that might help in alleviating and de-bureaucratizing the work within ID is the implementation of nodes within the different departments of the municipality. These nodes would act as contact points for the intermediaries and other actors, and they can be specialised in the work of PO. The thought is that with these nodes the municipality would be better able to enact its own overarching strategies with investment in the internal dynamic capabilities.

Funding for entrepreneurs either has to come through private venture capital that is meant to be facilitated through the MIT-model in PO, or it has to come through public funding initiatives. Pilot project 3 required funding and were set up with an application for funding from SmartOslo, which is a program aimed at funding innovation projects that create value in Oslo

[3] This specific linkage has been criticised for serving the interest of real estate developers and allowing the development of education to be ruled by these interests (Tangen, 2021).

and contribute to more start-ups (Oslo Kommune, 2022b). The only issue being that there has to be a municipal agency involved in the project and also the one who sends the application to SmartOslo, so if the project requires efficiency to work and the entrepreneurs are dependent on the funding for their project, the municipal agency has to be willing to work at the same pace.

One initiative that the municipality is hoping will lower the bureaucratic barriers is the partnership for radical innovation that the municipalities interest organization (KS) is organizing. The initiative recognises that wicked problems is not something each municipality can handle on their own, and the aim is to create collaboration across disciplines, sectors and governmental levels (KS, 2022). The initiative aims to identify where the public organizations are insufficient in handling wicked problems and transform them to be better suited to adapt to large and complex issues. This initiative does not affect PO and the other ID directly, but it is an indication of increased focus in transforming systems to be better suited for addressing wicked problems and can thus contribute to better conditions for entrepreneurs in the future if the governmental apparatus is altered towards more efficient public-private collaborations. And if the ID can make active use of these changes in cohesion, can increase cross-sectoral, interdisciplinary and cross-actor collaborations.

4.3 Innovation Intermediaries

Innovation intermediaries can play a pivotal role in the enactment of innovation policies according to Russo et al. (2022). The innovation intermediaries within this context are anchored in publicly initiated strategies and is thus an approach to governance within PO. Svale provides a legal framework for collaboration among stakeholders with a focus on the MIT-model, the aim of the legal framework is to provide clarification of what all parties bring into the projects and how the results are to be distributed. The project managers in PO act as innovation intermediaries as they have an active role in the facilitation of projects and their consequent execution.

4.3.1 Internal and Contextual Factors

The characteristics of the intermediaries can be systemized in the categories proposed by Feser (2022), where the category of innovation outcome is excluded from analysis as the relative infancy of PO does not allow a fruitful analysis of outcomes. The general characteristics of PO and Svale shows that they have relatively few employees at the time of launch. PO is publicly initiated, so the intermediaries are dependent on governmental organizations and policies. The timespan of the intermediaries' operations are not set at the time of launch and the

interviews gave an indication that an active role for intermediaries in projects in the future required more extensive budgets. The intermediaries have created a clear strategy with the MIT-model as a base which allows cross-sectional collaboration, a relatively open approach where they are aiming to entice actors who deal with urban innovation and while the interviews did not reveal a clear commercialization strategy, the legal framework reduces complexity for the commercialization phase through clearness ex-ante and ex-post. In relation to how the intermediaries place themselves within the structure of the ID, they are quite embedded in the pre-launch phase due to being purposefully established for the development of PO, but whether they remain this way is unclear.

The interviews with the informants did not reveal any information worth considering in an analysis of management practices. Functional assets and strategies relate to the intermediary's ability to find, allocate and maintain the flow of financial resources, and as the interviews revealed the intermediaries have provided entrepreneurs with opportunities for funding but the amount of capital institutions within the ecosystem could preferably be increased. Other functional assets are human resources and the ability to transfer tacit knowledge between organizations. The last functional asset is marketing, but due to the infancy of PO and direction of the thesis, human resources, the ability to transfer tacit knowledge and the marketing strategy can't be sufficiently analysed.

4.3.2 Role in Innovation Ecosystem

"*To have a third party that deals with that part [dealing with the municipality] is of great, great value, because it is really difficult if a company or especially a start-up has to deal with that process where you just encounter a wall with the municipality, which often happens when dealing with the government when you are trying to create a new path. Innovation is really a foreign word in schools and the government*" (Entrepreneurial informant 1)

The informants highlighted the importance of the innovation intermediary as they lowered barriers, allowing the entrepreneurs to focus on their innovative activities. Especially the legal framework developed and employed by Svale was highlighted as an important aspect. The degree of specialization that the legal framework exhibited created better conditions for collaboration between the actors in the MIT-model through clear guidelines for input and output. This can help speed up the innovation process as entrepreneurs are normally specialized within one field and either have to outsource these tasks or spend valuable time in their early phases dealing with these.

"The thing that was very nice with IDS [PO] was that you get access to stakeholders a lot faster. They put in a lot of hours to set up the meetings and connect stakeholders, which would have taken up a lot of our time and effort if we were to do it alone" (Entrepreneurial informant 2)

The phenomena of "the Death Valley Curve"[4] is something most entrepreneurs have to deal with, so having potential barriers reduced will be helpful for ensuring that PO can attract more entrepreneurs and thus have a greater pool of potential projects, thus laying better foundations for experimentation with capabilities.

"*If you go to a regular legal firm, you will not get the same type of specialized framework*" (Entrepreneurial informant 1)

According to the informants, all collaborations within PO have been facilitated in an ad-hoc manner in the pre-launch phase, and the manner in which the innovation district will facilitate projects in the future is not codified at the time of writing. PO aim to make an active use of their network and with a focus on staying true to the MIT-model ensure five factor participation in projects. How they will facilitate collaboration and to what degree the project management of PO and Svale will remain active parties in the innovation process remains to be seen, but the empirical findings suggests that they can inhabit an important role. The geographical area of PO holds many established ICT firms and has a lot of entrepreneurs within data-driven innovation that are outside of existing networks. The brokering of connections by the intermediary is meant to help them work towards urban innovation with their data-driven technology as a tool.

As the MIT-REAP report (2021) highlights, within the ICT-sector in Oslo there exist a market failure as there are no leading anchor firms that can drive innovation and there is a lack of access to sufficient funding for entrepreneurs, relative to what the situation is in comparative neighbouring countries. By using the MIT-model as a framework and facilitating collaboration, the innovation intermediaries can help reduce this market failure through linking entrepreneurs with capital institutions. Governmental actors also play a part in the reduction of this market failure as they aim to invest in the innovations and show the potential profitability for private funding.

[4] The period in the life of a start-up when it is not generating revenue but has started operations (Fernando, 2022)

4.3.3 Relationship to MOIP

Missions are not codified in the steering documents of PO, in the campus strategy or the overarching business development strategy of Oslo County (Oslo kommune, 2018a; Akershus fylkeskommune, 2015), the initiatives are mainly aimed at business development within the knowledge economy and developing the I-cap of Oslo. Terms like sustainable and smart development are used in the overarching strategy, but the main goals are cluster development, increase the number of knowledge-based start-ups, facilitate innovative public procurements, strengthen financing for knowledge-based businesses in an early phase and increase commercialization of research (Akershus fylkeskommune, 2015). The same goes for the campus strategy which mainly focuses on enhancing innovation capacity within the knowledge economy, but an important caveat is that innovation needs to be sustainable and that there is a big focus on attracting and keeping talented individuals in Oslo. The strategies in which PO can use as reference are not mission-centred, so the innovation intermediaries must mainly work towards the goal of increasing Oslo's innovation capacity within the knowledge economy.

4.4 Experimentation

The following section will examine the empirical findings in the framing of experimentation. The findings will be examined through the three analytical dimensions which are cross-sectorial collaboration, interdisciplinarity and openness. The empirical findings are analysed within these framings to assess how experimentation is facilitated in PO and how the ID might be structured to better suit MOIP.

4.4.1 Cross-Sectorial Collaboration

The ID is still in its early phases, so the recruitment process for projects is still being discussed, but the entrepreneurs, intermediaries and municipal actors all recognize the need for different industries and competencies to collaborate to create new combinations and preferably radical innovations. PO is focused on an area that had a lot of unfulfilled potential in data-driven innovation, but which the municipality wished to develop to become world leading. The innovations in the pilot projects are cross-sectional as they deal with digitalization of health tools, solar cell technologies and creating green rooftops trough data-driven technologies and AI solutions.

Pilot project 1 is cross-sectoral through the combination of the data technology sector and the health sector. These actors are linked through the MIT-model in that the entrepreneurs provide the innovative solution, while the publicly driven health sector procure the service and provide a test arena for the technology. Pilot project 2 was a project that dealt with floating

solar cell panels in the Oslo fjord which included actors involved with power production, predictive analysis, hardware and software for the panels. The project made use of Oslo harbour as a test arena. Pilot project 3 combined data technology with landscape architecture and rooftop gardening, where there are several entrepreneurs involved with the project, which sets them apart from the other projects. The fact that there were several entrepreneurs involved created complexity according to the informants and this complexity made the guiding principles of the legal framework essential to maintain efficiency in the innovation process as they were able to agree on ex-ante and ex-post conditions in advance.

"More entrepreneurs lead to more opinions around the table in the start-up phase" (Entrepreneurial informant 2)

According to the MIT REAP report (2021) which the need-study builds upon, data-driven innovation was going to be the focus point for innovations as it builds on existing core competencies of the specific region. According to the informants on the other hand, the term data-driven innovation proved too vague to create a sufficiently clear identity, as shown in the need study conducted in pre-launch phase (Innovasjonsdistrikt Sentrum, 2022). The steering group thus focused on urban-innovation with data-technology as its source, this is meant to create a clearer identity and also facilitate cross-sectoral collaboration. Urban innovation when addressed through the frame of the smart city in a modern context, can be categorized using many dimensions, and it also employs a lot of different technologies and capabilities, while combining economic targets with social and sustainable dimensions (Nilssen, 2019). Urban innovation thus requires cross-sectoral collaboration as well as interactive governance where stakeholders in the urban environment have increased participation. The decision to pivot to a focus on urban innovation thus creates a clearer identity and direction while laying the foundations for interactive governance within the ID and allows for a wider array of technologies to be explored.

"*Many innovation projects can solve several missions. This is in line with Mazzucato's model. But it is essential that they are cross-sectional for this to work*" (Intermediary informant 1)

All the pilot projects were facilitated due to fitting the profile of PO as cross-sectional collaboration with data technology as a base, and they could all fit within the frame of urban innovation. Hovinbyen is an example of where a clear identity has helped in ensuring cross-sectoral collaboration, as it deals with circular economics and spans all sectors that can be adjusted towards circular economics, like waste management or construction. By ensuring a

clear identity and marketing itself with this in mind, the thought is that they can attract projects and stakeholders that wish to work within this field. According to the informants, cross-sectional collaboration is an important building block for the future development of PO.

"*It is an advantage for an innovation district to have a narrowed and thematic profile, operations and activities that draw on the strengths in the geographical area. There are, among other things, many start-up environments in data-driven innovation, SMEs and academic milieus, who work with solutions that contribute to streamlining and solving urban issues and challenges. PO want to enhance urban innovation through combining the best within "smart cities" and "sustainable cities" concepts*" (Intermediary informant 2)

By ensuring cross-sectional collaboration, PO aims to increase the chance of solving specific issues and through the denomination of urban innovation create a profile that is thematic enough that it can attract enough projects to create critical mass. Through the use of a clear profile that build on the strengths of the geographic area, the informants also claim that they can avoid path dependency through building on core competencies of the region through the use of cross-sectional collaboration.

"*I don't believe that it is a contradiction [that an ID should build on core competencies will still facilitating radical innovation]. I think you can build an ID with a focus on its core competencies, but the culture that exists between the stakeholders has to be of a degree that you have freedom to innovative towards areas that are not the core competencies*" –(Intermediary informant 1)

By nurturing a culture of exploration and openness within the ID, the informants believe that actors can innovate towards areas that go beyond their core competencies.

4.4.2 Interdisciplinarity

For interdisciplinarity to be facilitated, academia has to be incorporated. As the Campus Strategy states, the inclusion and involvement of academia is in large parts both an end goal and a strategy for the development of the campuses in Oslo and the I-cap of the city (Oslo Kommune, 2018a). The municipality thus aims to increase the attractiveness of Norwegian knowledge institutions for international knowledge workers and create stronger links between academia and the business sector. OsloMet is a leading actor in the development in PO, and the board aims to incorporate more academic institutions, like Høgskolen i Kristiania. The educational institutions both provide professional environments, knowledge bases and research that can be used for innovation (MIT REAP, 2021).

OsloMet has, according to the informants a very strong knowledge base for data-driven technology and AI, and PO is working towards applying these knowledge bases on different sectors like health, welfare, energy and waste, to name a few sectors they have already explored. Pilot project 2 made use of these connections through the involvement of a research team from OsloMet that capitalized on the data that the project could provide. OsloMet has certain fields that they specialize in, but according to the informants one aim of PO is to include more educational institutions to create greater diversity in research fields and more novel ideas that could be brought into the projects.

As revealed through the interviews and the document analysis, interdisciplinarity is meant to be ensured through the MIT-model, where academia play a central role. The particularities of how this is to be achieved was not made clear through the qualitative methods and that combined with the emphasis on the new plan of action that is currently being developed by PO does not allow for a very fruitful analysis of their interdisciplinary nature. It is however natural to assume that interdisciplinarity is linked with the cross-sectional collaborations through the MIT-model, where we for example can look at the pilot projects. Pilot project 1,2 and 3 required a large variety of research fields to be include if the projects were to adhere to the MIT-model. For one project you would need plant biologists, while the others would need energy researchers or psychologists, all combined with the field of data technology. This combined with the increased importance of academia within urban development in the emergent knowledge economy (Gohari, et al., 2019) allows for the assumption that academia is meant to have a prevalent role in the development of ID in Oslo.

4.4.3 Openness

PO aims for openness through the involvement of a broad variety of stakeholders through active use of the MIT-model. By employing a coupled process and also making use of a clear legal framework for the innovation process, they aim to ensure cross-sectional and open innovation processes where ex-ante and ex-post conditions are predetermined. The goals and targets of PO also allow for open innovation as it aims to involve stakeholders that are suited for or can provide solutions to particular problems, and through the expansion of their network bring in more ideas and viewpoints. The intermediaries play a role in facilitating the openness of the innovation process through the active use the MIT-model and a clear legal framework that is meant to facilitate trust between the collaborators.

"*You have something that is actually being facilitated by a neutral third party. And that meant extremely much, because both parties trusted the third party, so it is like having broker in between at all times that looks after everyone's interest*" (Entrepreneurial informant 1)

PO mainly deals with the local population through the local, democratically elected city council, but even though they work for the local population it does not guarantee inclusion in decision making processes. PO hopes to become more visible within the city, to make the local population more aware of their existence, and with more awareness increased participation.

"*Visibility and promotion of everything that is going on with innovation activity within PO will be an important role. PO is to contribute towards giving a shared feeling that the area provides "cutting edge" innovation, and those who live, reside and work there are test subjects or first-hand users of new solutions. This generates an identity for the area, creates buzz and can attract more innovation activity and talent to PO*" (Intermediary informant 2)

The end users, or rather the affected parties in urban innovation are not to a large degree considered and brought into the decision process in the development of PO, but rather as potential test subjects and first-hand users to create an identity for the area. The local population are considered more in an indirect degree through the urban development, with examples like reduction of car traffic and a higher degree of green spaces which will make the area more attractive to live in (Innovasjonsdistrikt Sentrum, 2022). By allowing the local population to be test subjects, they can play a larger part in the innovation process and there could be to a higher degree a shift towards a quadruple helix configuration where the local population have co-determination. And through co-determination draw on the proximity factors to increase I-cap.

"*PO will draw on the combined forces in the city centre through strategic collaboration and partnerships with other actors that work towards the same purpose; namely to increase the innovation capacity within urban innovation in the city centre*" (Intermediary informant 2)

Pilot project 1 involved a collaboration with a stakeholder from another county, that was not a natural part of the ID. Some of the informants highlighted that this type of open and far spanning collaboration is something that the ID should be open to. The involvement of other intermediaries in collaborations is also something that is up for consideration to increase the size of the ecosystem.

5 Discussion

The following chapter will discuss the empirical findings in the context of the research questions established in the introduction. The findings will be analyzed using the theoretical concepts and framings of both MOIP and ID to assess how conducive they are in the framings of governance, innovation intermediaries and experimentation.

5.1 RQ1: How Can the Governance of an Innovation District Be Structured to be Suitable for Mission-Oriented Innovation Policy?

The policy rationale for the establishment of PO is to increase the E-cap and I-cap in Oslo and ensure higher value creation within the knowledge economy. PO is a policy instrument the government can use to increase capabilities and facilitate more accommodating conditions for entrepreneurs. The ID has legitimacy through its anchoring in the Campus Strategy of Oslo Municipality and through having the municipality as an active member organization. By having the municipality as an active participant, the overarching strategies might be enforced to a higher degree through direct action and steering than if the ID was a natural agglomeration of firms where the governmental apparatus could influence in a more indirect way through regulations.

For the missions-thinking to be properly facilitated, according to the work of Mazzucato (2017), policy needs to include all affected parts of the governmental apparatus to have the desired effect. A policy instrument like PO could increase its impact if it had political backing on multiple levels, and not just operate within its own silo or niche. There needs to be horizontal coordination as well as vertical coordination of policy. Goals are set from the top, but experimentation and shaping of how these missions are to be achieved occurs at the bottom. MOIP require experimentation, but also a certain directionality and cohesion. This might provide an issue for the facilitation of missions-thinking through ID as it encourages experimentation within governance and not putting all public efforts towards a single initiative (Mazzucato, 2017), but if ID is recognized as a potential tool in the search for sustainable innovation and development, the municipal policies need to be more aligned with that of PO to allow for efficient development. The development of PO is just one of many tools among widespread initiatives enacted both to increase economic output and serve societal goals, where the different departments enact their own strategies as well as the other ID serving a similar purpose. Experimentation within governance might thus create contradictory conditions as PO needs cohesion across municipal departments to facilitate MOIP, but MOIP on the

other hand might require many different approaches to find the one best suited to contextual factors.

The use of the MIT-model both for the organization of the innovation district and as a structure for innovation projects can lead to increased experimentation as it increases the amount of knowledge bases involved, but in a missions-framing, questions can be asked over whether this is open-ended enough. The MIT-model can be deemed as a version of the triple helix model where entrepreneurs, venture capital and established firms represent the industry, but for facilitation of missions, a quadruple helix where the public is included might be more suitable. Mazzucato (2018) emphasizes that public engagement is crucial, which entails active involvement of the local economic and social actors and operationalizing co-determination of missions. MOIP might be better facilitated and more embedded if there is active public engagement in the conceptualization of missions and their importance, this might more likely be achieved through the active use of participatory governance of local economic and social actors in the ID. The public does not need to weigh economic feasibility to as high a degree as the industry, and the societal factors can thus become more prevalent in projects. This might be better facilitated with time as the innovation ecosystem within PO expands and involves a higher number of local stakeholders.

The main negative effect of the existing governance structure in Oslo municipality that was suggested through the empirical findings is the lack of cohesiveness in policies, as there is still a long way to go regarding the different departments working according to their own strategy. This type of silo thinking within the municipal departments inhibit innovative activities as it takes up much of the time and energy of the intermediaries as well as the other parties within the MIT-model to overcome bureaucratic barriers. As one of the informants indicated, it is like the municipality works against itself in some situations, as the strategy of some departments go against the overarching campus strategy. Within the missions framing it is important to build on conducive governance instead of completely reforming, and thus find and expand on structures and actors that accommodate missions. In the Norwegian context one can question the fruitfulness of this as the one-year principle reduces risk within municipalities and MOIP require long-term thinking and risk taking. The one-year principle can be conducive to incremental innovation, but a distributed mix of radical and incremental innovation is less likely. Increased cohesiveness of policies and strategies among municipal departments combined with participatory governance might create better conditions for MOIP than if the ID is to operate as a singular entity.

PO is a governmentally sponsored initiative and with the municipality as one of the main driving forces behind the project, the governance aspect of the ID can be viewed as in line with the thinking of Mazzucato (2017) as the governmental authorities has an entrepreneurial role and facilitates collaborations with the willing instead of picking winners. Involving an innovation intermediary and having the municipality as an active party in the facilitation process can thus allow for better foundations for the mission-approach as the government can create direction for innovation within the ID. Through operating as an ecosystem architect, the governmental entities can operate as an entrepreneurial state by designing the specificity of the ecosystem. Through active governance the ID can be designed to accommodate certain stakeholders that are both willing to work towards missions and fit the profile of the missions the government is to establish as targets. The probability of increasing the directionality of innovation within the geographical area of the ID could thus increase by ensuring the inclusion of specific innovation projects through both clear criteria and an active intermediary that can help maintain the directionality.

Openness and experimentation within governance can be viewed as important factors for governance that might facilitate MOIP. Kuhlmann and Rip (2018) emphasize a need for inclusion of a broad variety of stakeholders and Brown (2021) states that for missions to be facilitated it is important to consider regional factors. By linking the ecosystem of PO to larger ones and making use of the RIS, as was done in pilot project 1 where an actor outside of the ID was involved and provided essential competences and resources, the ID can take advantage of regional factors. Even if the conceptualization of ID by Morrison (2020) is focused on place-based urban regeneration, linkages with RIS allows for greater access to markets that can help both the development of the ID and the potential for economic feasibility and diffusion of innovation, which is in line with both the missions-thinking of Mazzucato (2017) and the development criteria for ID of Baily and Montalbano (2018).

5.2 RQ2: How Can Innovation Intermediaries Facilitate Mission-Oriented Innovation Within an Innovation District?

Based on the empirical findings through the qualitative interviews and document analysis, innovation intermediaries can facilitate MOIP through lowering barriers for niche innovations and actors. As an extension of the governance of both MOIP and ID, the intermediaries can ensure adherence to overarching policies and directionality for the innovation within PO.

Many SMEs lack the proper funding for their innovation, so by using intermediaries as brokers, these SMEs can be attached to larger networks and gain access to funding, expertise, research and potential customers. The empirical findings indicated that PO and Svale played an important role in bringing the stakeholders together using the MIT-model and facilitating efficient collaborations through a specialized framework.

The intermediaries provide established networks and through using the MIT-model, can create cross-sectoral partnerships and facilitate a more efficient innovation process. But to what degree does this facilitate MOIP instead of just innovation for growth? The most important factor in this regard is the criteria which PO should operate with. As the pilot projects show, there exists a link between the sustainable nature of the innovations and the urban innovation profile of PO, as they all function within an urban context, make use of data-driven technology and can be suited for aiding in working towards SDG 11. PO can use standards and structure their selection process to include projects that are aiming for certain targets and be an active facilitator for the projects rather than be a standard incubator for entrepreneurs that has a passive role towards the societal impact of innovations. The intermediaries cannot operate fully on societal goals, economic feasibility is also a factor that has to be taken into consideration as without the possibility to profit on innovations, many possible actors in the ID might lack incentives to start and take part in projects. Possibilities for public funding when aligned with the criteria of PO, as was the case of pilot project 3 and the use of SmartOslo, might increase the chances of attracting projects.

Innovation intermediaries can play an active part in projects through frameworks, criteria and project management. In the case of PO, the legal framework facilitated by Svale provide clear boundaries ex-ante and ex-post, which can increase the efficiency of the innovation process, as long as there is still room for experimentation beyond the core competencies of PO. The framework has to have a certain flexibility so that it can fit into different kinds of projects, rather than the projects being shaped after the framework. Some informants did not find the framework to be anything special compared to other frameworks while others believed it to be more specialized than others, but all agreed on the importance on having input and output settled through a legal framework. The innovation intermediary can also set criteria for which projects should be included in the ID by focusing on innovations aimed at specific societal targets while also being in line with their profile of urban innovation, which is in line with the framing of intermediaries within MOIP made by Robinson and Mazzucato (2019). An im-

portant point that needs to be considered with the active use of governmentally steered intermediaries is the arguments of Wennberg and Sandström (2022) in that there is a lack of "punishment" if the state misses. If the municipality chooses a certain directionality where criteria for selection and success are set, it is not guaranteed to succeed in achieving economic and/or societal goals, and without market forces that can steer towards a more feasible direction, how can the governance of ID avoid negative lock-ins? This is an aspect that requires more research as the concept of cohesion in policy and experimentation in governance might not align.

Svale and PO mainly act as brokers in the ID, where they connect stakeholders through the MIT-model. They act on the principles of the steering group with its member organizations. Whether the intermediaries have any influence policy-wise is not something this thesis was able to determine, but influence on policy could produce better conditions for MOIP as it would entail a bottom-up approach which increases the co-determination and acceptance of missions. Influence on policy would entail a bottom-up approach as the intermediaries have active relationships with different stakeholders and this would allow policy to be adjusted to the needs of these stakeholders in the co-determination of missions. By developing and fostering networks of heterogenous stakeholders through proximity factors, trust and legitimacy towards MOIP can be nurtured.

The empirical findings gave indications that the development of the innovation ecosystem in PO might go against the conceptualization of Gomes et al. (2018), in that it focuses both on capturing the value of the existing and underutilized ICT-sector in Oslo and at the same time create value in the knowledge economy through increased job creation, I-cap and E-cap. The dynamic markets of the ICT-sector create a need for firms to create and capture value at a more rapid pace through launching new innovations at a higher rate, which can be done through well-defined innovation ecosystem strategies (Pellikka & Ali-Vehmas, 2016). By both building on existing capabilities and increasing the dynamic capabilities of the government within a specific sector or within an economic shift towards a knowledge centred one, this might indicate more favourable conditions for the missions-framing if there is a well-developed ecosystem strategy. Whether or not this the ecosystem strategy can be developed more accommodatingly through the use of governmental intermediaries as ecosystem architects is not something that is a certainty, but strategically set direction might be more accommodating to the missions-thinking than an innovation for growth approach.

According to Feser (2022), the contextual situation of the innovation intermediaries will affect their ability to operate within an ecosystem. PO aims to place itself as an actor within the field of urban innovation, but then mainly in the ICT-sector as it is the base of PO's focus area. The MIT REAP-report (2021) states that this is a sector with high potential in Oslo with a lot of incumbents and potential for start-ups with good linkage to academia, so positioning itself as an intermediary that can help accelerate this potential can aid in creating an embedded position for the intermediaries. By inhabiting an embedded position within the ecosystem, the intermediaries will be better suited to exert influence (Pellikka & Ali-Vehmas, 2016). The geographical factor is one of the main purposes for the establishment of PO, so this factor can be deemed as a strength for PO. Stakeholders, other intermediaries and regional innovation capacities are all in close vicinity. The informants also stated that networking opportunities are important for the development of PO, and it is natural to assume that if PO and Svale are to continue their role it will be important to have prevalent roles in these networks. PO is also a direct result of public policy, so in theory the ID should be coordinated in line with the cohesive policies of the government, but as revealed through the analytical dimension of cohesion this might not be the case.

Even though PO is not mission-oriented in its steering documents and strategies, it is something that has been discussed in development phases according to informants, but for now PO is mainly anchored in the campus strategy and focus on societally beneficial innovation without a missions-framing. There is no clear dichotomy between this orientation and the conceptualization of Mazzucato (2017), as many aspects align even if they are planned or not. If there was to be a development towards mission-orientation, innovation intermediaries could play a role in the innovation district in that they can use their network and profile to attract entrepreneurs with specific innovations that can be used in the mission-orientation, as they did with the pilot projects. All pilot-projects were results of existing networks, but they were also facilitated due to fitting the profile of what many actors within PO aims to achieve, mainly sustainable urban innovation with the use of data technology. They can play a role in attracting, retaining, and expanding niche innovations and talent, which is in line with the role of intermediaries proposed by Gliedt et al. (2018).

An important caveat to the innovation intermediary's role is that it requires a lot of resources, which mainly has to come through the municipality if the ID is publicly initiated. If the government acts as an entrepreneurial state, it can provide funding for an active intermediary in an innovation district that can help ensure a directionality. As it is not a naturally occurring

agglomeration of firms, the ID has to actively market itself to attract the actors it wishes to collaborate with. Efficiency is key to reducing costs, and one suggestion that might help alleviate the costs of employing intermediaries for the specific ID is the use of individuals as communication nodes in the individual departments of the municipality that can help with strategies and regulations. By having specific nodes that work towards ID, the municipality can increase internal capabilities while at the same time either adjust the development of the ID to the overarching strategies or create more cohesion in the individual departments. Nodes which both can increase the E-cap and I-cap of PO and increase the dynamic capabilities of the municipality.

5.3 RQ3: How Can Experimentation Be Facilitated Within an Innovation District?

Experimentation is mainly facilitated in PO through its cross-sectoral and interdisciplinary nature. Different fields collaborating and combining existing technologies to create new solutions and new paths for innovation is meant to accelerate innovations that can solve wicked problems and achieve specific sustainability targets. Based on the data gathered through the interviews, a main factor for facilitating cross-sectoral and interdisciplinary collaboration is through avoiding too clear of a delineation, meaning that the ID should try to reach different sectors with its marketing as well as being open to collaborations that go beyond the geographical area of the ID. Experimentation is linked with the governance of the ID as the governance lays the foundations for who should operate within the ID, how they should operate and what they should work towards.

The pilot projects conducted within PO has a cross-sectoral nature, stakeholders are brought into collaboration with the MIT-model as a framework. The MIT-model thus ensures that different viewpoints are considered in the innovation process. Even if some of the stakeholders are brought in as observer to assess the value of the innovation, it can still provide future benefits as was shown with the example of an incumbent firm being brought into pilot project 2 and ending up as a customer for the entrepreneur. Just by staying true to the MIT-model, the pilot project thus created better chances for the development of the specific innovation. The MIT-model does facilitate experimentation through bringing in heterogenous stakeholders, but it also facilitates economic feasibility for the MOIP as it brings in financiers and established corporations that can help accelerate the innovation into new markets and diffuse the technology. The MIT-model can thus facilitate many aspects in line with the conceptualization of Mazzucato (2018).

The structure of PO and the use of the MIT-model implies the use of the coupled process as PO brings in external sources to help and collaborate with the entrepreneurs in their innovation process, while at the same time aiming to create intersectional innovation through marketing their innovations to a broader audience. Enkel et al. (2009) highlights the importance of innovation networks and intermediaries for the coupled process, as the use of these create better foundations for bringing in external and new knowledge through bringing in more stakeholders to the coupled processes. This insight, combined with the structural issues concerning lack of funds for open innovation for SMEs highlighted by Bigliardi et al. (2020), implies that the project managers at PO and Svale as intermediaries can provide essential facilitation for experimentation within PO as they can increase the number of coupled processes and lower barriers for open innovation through easier access to funding.

Cross-sectoral collaboration can also be facilitated through the active involvement of the RIS and collaboration with other innovation ecosystems. PO is not in competition with Hovinbyen and OSC but could rather serve as collaborators to achieve cross-sectoral influences. Other incubators and intermediaries in the proximity of the ID could also be brought in over time as PO wants to be more than just another incubator and competitor in the geographical area. Through the expansion of the networks within the innovation ecosystem they can aim to attract and take advantage of different competencies. This economic dynamism can lay foundations for diversification both in an economic light and also in regard to innovation, as was the case with 22@ Barcelona (Lawrence, et al., 2019). By facilitating diversification through niche development, the city might be better suited for adaption to economic downturns as niche development is more embedded in the economic development of the municipality. Through embeddedness the municipality might be better suited for long term planning as they might be less affected by economic fluctuations and thus better able to facilitate MOIP.

A notable point regarding the facilitation of experimentation is the role of the innovation intermediary. Many informants highlight the importance of administrative and legal framework when working towards and with the municipality. Efforts, time and funding can be more efficiently distributed if intermediaries and nodes can be employed to create more efficient working conditions for the other stakeholders in the MIT-model. PO as an intermediary can help accelerate processes within the municipality, and again, more active participation from the municipality and more cohesive governance can allow for more efficient experimentation within PO, but one counterargument that can be raised is that cohesive policies in favour of

the development of ID might go against holistic experimentation in the governmental apparatus, as experimentation within MOIP goes beyond simply technological experimentation.

The governance aspect of PO and the overarching governmental apparatus is important for the facilitation of experimentation (Morisson, 2020), as a focus on end users and inclusivity in governance might entail unconventional combinations of prior knowledge. Proximity is a natural strength of ID and in this case PO, as heterogenous stakeholders are in close vicinity, which is in line with the findings of Bulkeley et al. (2016), and collaborations between them are facilitated through the MIT-model. An open culture might aid in attracting knowledge workers and projects centred on the knowledge economy which can both aid the development of ID through the culture and people in the geographical vicinity of PO and allow for participatory governance and heterogenous knowledge bases.

An important caveat that the interviews exposed is that PO aims to become world leading in urban innovation through data-driven technology, and the development of the specific niche is high on the agenda. Mazzucato (2018) emphasize a need for both radical and incremental innovation, so narrowing down on a specific niche does not necessarily entail strong foundations for experimentation over time, as PO will work towards a specificity that will separate it from other ID over the world. Whether this development entails a future lock-ins where routines within PO are developed to maintain existing institutions and development paths remains to be seen. According to Martin and Sunley (2006) facilitating both cross-sectoral and interdisciplinary collaboration, as well as using media strategies to attract potential projects can help balance against negative lock-in effects and reinforce positive ones. Maintaining the use of the MIT-model and working towards a clear marketing strategy might aid in avoiding negative lock-ins.

6 Conclusion

The research question of this thesis was how innovation districts could be structured to facilitate mission-oriented innovation policy, and this question was divided into three secondary research questions that revolved around the role of governance, innovation intermediaries and experimentation. A newly developed ID was chosen as a case study to analyze how it might be structured to facilitate MOIP, both due to a potential for facilitation of mission-oriented innovation within the ID and to the accessibility to informants and documents for analysis. The empirical findings showed that the aspects of governance and in extension innovation intermediaries and experimentation were interlinked as the innovation intermediaries can prove useful for the active governance of an ID, while the governance is essential for facilitating experimentation.

How can ID be structured to facilitate MOIP? This thesis was not able to provide significant findings for how it might be facilitated. The pool of informants can be viewed as too shallow to provide any insight of value on its own, but the document analysis of strategic documents and incorporation of previous studies provides some insights that might be of use for future studies. The analysis indicated that the active use of innovation intermediaries can be useful for facilitating directionality of innovation and through the active use of the MIT-model ensure a wide variety of stakeholders and increase experimentation, which all are factors that is highlighted as important for the implementation of MOIP according to Mazzucato (2017). The government might facilitate MOIP through active shaping of innovation ecosystems and operate as ecosystem architects through insurance of open innovation that might aid both the private sector through innovation-led growth and increase the dynamic capabilities of the government.

The main insights of the thesis are that the use of innovation intermediaries and the MIT-model can be conducive to MOIP due to their effects on cross-sectoral and interdisciplinary collaboration and experimentation through lowering of barriers and setting directionality through active governance. Clear terms ex-ante and ex-post, as well as the possibility to experiment between fields can help in avoiding path-dependency. Increased cohesion of policies, at least in the context of Oslo Municipality, can provide better foundations for MOIP as actors will be better able to collaborate across departments and sectors. How the municipality is to develop more cohesive policies that can increase cross-departmental collaboration and improved public-private collaborations might be a useful study in the future. The analysis also indicated that publicly initiated ID might be better suited for MOIP as directionality can be

steered through active governance and the use of public intermediaries, as natural agglomerations might adhere to the economic development, but this is also a topic that requires more research as multi-level policies might affect both in different ways.

The fact that PO was launched in September 2022 creates some uncertainty in relation to the empirical findings as strategies might be altered and the insights of the informants might improve as they become more experienced with ID. This thesis might have provided more insight if the pool of informants were expanded to include stakeholders from all parts of the MIT-model, thus including more informants from venture capital, academia and incumbent firms. The thesis would have been improved with their insights as their needs and views could be incorporated in the analysis to assess if they are conducive or unfavorable of a mission-oriented framing. The thesis could also have been a multiple-case study of the different ID in Norway to better assess how the Norwegian context affects the development of ID and how MOIP might be facilitated within this context.

7 References

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8 Appendix

Appendix A. Interview Guide Semi-Structured Interviews
Translated from Norwegian to English.

Short answer questions 1: Establishment

- How was this project established?
- Are there any specific factors within the ID that facilitated pilot projects? What drew you to participate in IDS [Name changed to Punkt Oslo after the interviews]?
- Are there any of the stakeholders that was particularly important for the establishment or execution of projects?

Short answer questions 2: Evaluation of collaboration and governance

- What is your impression of the collaboration within the ID? Is there anything that could have been done differently from your point of view?
- How did the strategies and managment within the ID function? Was everything pre-determined or did anything change as the process developed?
- What is in your view the best way to govern a project to achieve both radical and incremental innovation?

Short answer questions 3: Other considerations

- To what degree was the local population involved inn the ID?
- Do you have the impression that innovation that deals with societal issues is facilitated in the ID? Why or why not? And how may it be altered to take it into consideration?
- How can IDS draw the «right» kind of projects, meaning innovation that work towards solving specific societal issues and thus create directionality?

Long answer question 1: Within the «missions»-thinking, there is a lot of focus on transformativ innovation to tackle wicked problems, to what degree do you feel economic factors should be wheighed against societal factors within an ID?

Long answer question 2: How will practices change as a result of the establishment of the ID? What is the difference between «natural» clustering of firms as a result of area planning and the establishment of ID?

Long answer question 3: In many cases, entrepreneurs and other private firms struggle when collaborating with the municipality as the burearcracy between departments is time

consuming and a barrier. Do you have this impression? If so: in your opinion, how can these barriers be lowered?

Long answer question 4: Theory concerning ID focuses on the need to build on core competencies, while in the missions-thinking there is a focus on breaking from existing systems, practices and institutions to create new paths. Do you think it is possible for an ID to avoid path dependency while building on core competencies to create a specific niche?