Building Innovation Capacity

VINNOVA Final Report

Building Innovation Capacity –Research Framework and Findings
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Summary	This final report accounts for the framework and key results from the VINNOVA-funded research and development project, Building Innovation Capacity. The purpose of the BIC project was to explore two features of innovation capacity: 1. How do we explain and measure innovation capacity? 2. How do we develop innovation capacity? Overall, the BIC project shows that an organization's innovation ability is constituted by how capacities, capabilities, and external orientation are associated and employed to mobilize, transform, and use knowledge and ideas to bolster enterprises' competitive advantage, and innovative performance. In the BIC project, we have shown that a Nordic learning model holds promise as a competency development method for the improvement of the capability dimension. Capability is a key feature of an organization's ability to create stronger and more sustainable innovation.

Keywords	Case study; innovation ability; innovation management; Nordic learning model; organizational learning
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Executive Summary

Innovation has been one of the highest prioritized topics for countries, policy bodies, and enterprises across industry types for decades while also representing a dynamic and vibrant research field and community. One important approach and theme in innovation studies that has gained traction in recent years is the notion of innovation capacity, or innovation ability which is the used general term here. The Building Innovation Capacity project (BIC) is a research and development project that explores how innovation abilities are explained and developed in organizations. The purpose of the BIC project was to explore two features of innovation ability: 1. How do we explain and measure innovation ability? 2. How do we develop innovation ability?

For the first exploration, we have shown that an organization's innovation ability is constituted by how capacities, capabilities, and external orientation are developed and employed to mobilize, transform, and use knowledge and ideas to create and sustain enterprises' competitive advantage, and innovative performance. The principal line of argument is that for a broad understanding of innovation management, organizations need a corresponding wide-ranging explanation of innovation ability that includes how the employees' available knowledge and competencies are used in the organization to fully understand abilities to innovate. The capability dimension is particularly a novel add-on to existing models and measures of innovation ability.

For the second exploration, we have accomplished two goals. 1. The BIC project has furthered the design of the form and content of a Nordic-inspired learning model. This model is labeled 'Learning Labs' and is characterized by open experimentation and recognition of participant experiences and practices as valuable to organizations working with innovation processes and creating novel solutions. One of the main aims of the BIC project was to experiment with a Nordic learning and competency model in practice for the improvement of innovation ability. 2. Based on the analysis of collected case data, we observed tangible changes from the Learning Labs in the participating enterprises on an individual and collective level. The changes primarily connect to development in the capability dimension from realizing a multifaceted learning approach, change in the quality and number of social relations, and time to reflect as slack. Changes that overall expanded the possible sum and quality of connections between employees and the use of available knowledge, experience, and competencies to develop, share, and apply new ideas and solutions.

The key finding in the BIC project shows the value for organizations of working with alternative understandings and models of learning that can include all dimensions of an organization's ability to innovate with a special outlook to the capability dimension to create stronger and more sustainable innovation. In the BIC project, we have shown that a Nordic learning model holds great promise as a learning and development method for the improvement of the capability dimension that is a key feature of an organization's ability to innovate.

Sammenfattning

Innovation har varit ett av de högst prioriterade ämnen för länder, politiska organ och för företag över olika branschtyper i dekader, liksom det representerar ett dynamiskt och levande forskningsfält. Ett viktigt förhållningssätt och tema inom innovationsstudier som har vunnit genomslag de senaste åren är föreställningen om innovationskapacitet – eller innovationsförmåga som det här används som generella begreppet. Projektet Building Innovation Capacity (BIC) är ett forsknings- och utvecklingsprojekt som utforskar hur innovationsförmåga förklaras och utvecklas i organisationer. Syftet med BIC-projektet har varit att utforska två drag av innovationsförmåga: 1. hur ska vi förklara och mäta innovationsförmåga; 2. Hur kan innovationsförmågan utvecklas.

För den första utforskningen har vi visat att organisationers innovationsförmåga konstitueras av hur kapacitet, förmåga och extern orientering utvecklas och används för att mobilisera, transformera och använda kunskap och idéer för att skapa och upprätthålla företags konkurrensfördelar och innovativa performance. Den huvudsakliga argumentationen är att för en bred förståelse av innovationsledning behöver organisationer en motsvarande bred förklaring av innovationsförmåga som inkluderar hur anställdas tillgängliga kunskaper och kompetenser används i organisationen för att fullt ut förstå förmågan att förnya. Capability dimensionen är särskilt ett nytt tillägg till befintliga modeller och mått på innovationsförmåga.

För den andra utforskningen har vi uppnått två mål. 1. BIC-projektet har främjat utformningen av formen och innehållet i en nordisk inspirerad lärande modell. Denna modell är bestämt som "Learning Labs" kännetecknad av öppna experiment och erkännande av deltagarnas erfarenheter och praktiker som värdefulla för organisationer som arbetar med innovationsprocesser och skapar nya lösningar. Ett av BIC-projektets huvudsyfte har varit att experimentera med en nordisk lärande- och kompetensutvecklingsmodell i praktiken för att förbättra innovationsförmågan. 2. Baserat på analys av insamlade case data, observerade vi påtagliga förändringar från Learning Labs i de deltagande företagen på individuell och kollektiv nivå. Förändringarna kopplar i första hand till en utveckling av capability dimensionen för att förverkliga ett mångfacetterat lärande, förändring av kvaliteten och antalet sociala relationer och tid att reflektera som slack. Förändringar som totalt sett utökade den möjliga summan och kvaliteten på kopplingar mellan medarbetare och användandet av tillgänglig kunskap, erfarenhet och kompetens för att utveckla, dela och tillämpa nya idéer och lösningar.

Nyckelfynden i BIC-projektet är att visa värdet för organisationer av att arbeta med alternativa förståelser och modeller för lärande som kan inkludera alla dimensioner av organisationers förmåga att förnya sig med en speciell syn på capability dimensionen för att skapa starkare och mer hållbar innovation. I BIC-projektet har vi visat att en nordisk lärandemodell är lovande som en lärande- och utvecklingsmetod för att förbättra kompetenser som är avgörande for organisationers innovationsförmåga.

1.0 Background

Innovation has been one of the highest prioritized topics for countries, policy bodies and for enterprises across industry types for decades while also representing a dynamic and vibrant research field and community. The reason for the high priority is that innovation characterizes an industry practice and orientation that is of crucial importance for the consolidation and further development of countries and enterprises' competitive advantage, performance, and survival in volatile, globalized, and fast changing environments (Cohen & Levinthal, 1990; Fagerberg et al., 2012; Teece et al., 1997).

One approach and theme in innovation studies that has gained traction in recent years is the notion of innovation capacity. Innovation capacity can largely be conceptualized as enterprise aptitudes for innovation that are determined by the quality and combination of a set of different organizational features and elements. In the field of innovation, the capacity to innovate is deemed to represent one of the most vital determinants of creating competitive advantage of countries and bolstering enterprise performance and success (Arundel et al., 2015; Crossan & Apaydin, 2010; Jalil et al., 2022; Jensen et al., 2007; Yeşil & Doğan, 2019). Thus, research and experiences from practice stress that innovation capacity is of substantial importance for enterprise value creation and competitive advantage, making it imperative also for Nordic enterprises to better understand and manage how to deal with enterprise capacities for innovation.

This final report accounts for the framework and key results from the VINNOVA-funded research and development project, Building Innovation Capacity (BIC). The purpose of the BIC project was to explore two features of innovation capacity: 1. How do we explain and measure innovation capacity? 2. How do we develop innovation capacity?. These two explorations have been organized in two parts, a development part and a research part, both outlined in this final report.

For the first exploration, the existing body of knowledge shows that innovation research lacks a unified and comprehensive conceptual model and tool that can measure the determinants of capacity for innovation in organizations. From a review of current and leading explanations, the BIC project aims to combine knowledge and insights to construct an integrative model of innovation capacity determinants. In the BIC project, we use the concept of 'innovation ability' as the leading notion for our developed integrated model, which represents the first finding from the BIC project. Innovation ability explains the enterprise aptitude to mobilize and transform its knowledge, experiences, and ideas to expand its potential to renew products, services, and processes.

The ability to innovate is founded on three dimensions: capacity, capabilities, and external relations, which constitute our first key result. Later in this final report, we elucidate the form and content of innovation ability and how 'ability' is connected to 'capacity' that is the usual employed notion in innovation studies. The BIC model is proposed to be valuable for refining the understanding of enterprise innovation management processes and outcomes with a special outlook to Nordic-founded organizations.

For the second exploration, the BIC project shows that enterprises and research need alternative knowledge and models for building and developing innovation abilities. Leading approaches, often based on knowledge and management models from the US, for developing innovation capacity are dominated by top-down managerial planned projects, expert-driven initiatives, or policy instruments and incentives. The BIC project's Nordic-inspired learning model is characterized by the design and implementation of high-involvement, experience- and practice-based elements as key drivers for the development of innovation capacity. A Nordic-inspired learning model was further developed and implemented as part of the BIC project. The BIC project tested how the further developed Nordic-

inspired learning model influences the development of innovation capacity in one large Swedish and one large Danish enterprise.

The second key result from testing the Nordic learning model in the two participating enterprises show that especially organizations' innovation capabilities and organizational learning processes are positively influenced by the designed and tested Nordic learning model. The BIC project describes a learning initiative aimed at developing the capacity for innovation in two different types of industrial enterprises, focusing on the efforts of both managers and employees to systematically build the capabilities for innovation. In analyzing and assessing the challenges facing such learning processes, this research adds new knowledge and tools for innovation capacity and how it is built over time in enterprises.

In the following sections of this VINNOVA final report, we first frame the research, research questions, and objectives for the BIC project. Second, we outline the methods, data documentation, and analytical strategy. Third, we then describe the form and content of the developed Nordic learning model that was used in these enterprises to develop the ability to innovate. Fourth, we describe key results and outcomes from our analytical work in two subsections. In the first subsection, we present a new conceptual model of innovation capacity that was developed in the BIC project and the first test results. In the second subsection, we summarize the findings from the case study with a special outlook on how a Nordic learning model may influence organizations' innovation capacity. In the concluding section, we summarize our findings and contribution of the research from the BIC project as well as point to future areas of research unlocked by the BIC project that need further exploration.

2.0 Research Framework, Questions, and Objectives

Dynamic capabilities and organizational learning constitute an extensive theoretical framework that underlines the importance of enterprises being able to continuously reconfigure and apply their explicit and intangible resources to cope with internal and external changes (Cohen & Levinthal, 1990; Teece et al., 1997; Vera et al., 2012). Wang & Ahmed (2007) have shown that innovation capacity is associated with dynamic capabilities as learning in organizations. For the BIC project, this general theoretical founding on learning and capabilities highlights how internal and external knowledge, experiences, and competencies are formed, applied, and developed in enterprises to create new value.

Inquiries into innovation capacity constitute the key focus for the BIC research project in the context of dynamic capabilities and organizational learning. Traditional definitions and academic literature on innovation capacity centers on explaining how organizations adapt to changes and apply resources and competencies to create new solutions and innovative outcomes of different types. To this extent, innovation capacity is indirectly responsible for adding value and shaping the way products, processes and services are changed and improved.

Another important opening characterization for how innovation studies view innovation capacity is dependent on the approach and general understanding of innovation. Researchers explain that two different general paradigms are observed in the field (Bäckström & Bengtsson, 2019; Forsman, 2011; Jensen et al., 2007; Prajogo & Ahmed, 2006). The first paradigm can be classified as the formal R&D approach. This paradigm refers to innovation and innovation capacity as a phenomenon that can be explicated and managed from a controlled linear process accomplished by employees with specific innovation functions such as R&D workers. Research is typically focused on differences in macro-level patterns of and investment in innovation across countries and business sectors, technology development, patents, and variances in the inclination of enterprises to innovate.

The second paradigm is characterized by a focus on innovation as micro- and meso-level phenomena that are studied and accomplished by all organizational members regardless of function. The aptitude for innovation is, so to speak, a wide-ranging organizational phenomenon that involves all types of employees, functions, and tasks. Focus is on organizational settings, management and strategy, internal and external collaboration, learning orientation, and informal and formal work routines and practices. For the second paradigm, innovation studies are interested in building knowledge on how innovation capacity can be developed employing a broad understanding of innovation that, for instance, refers to innovation as new products, new work processes and business models, organizational renewal, and services. In the BIC project, we studied innovation and innovation capacity on a micro- and meso-level analytical level connecting to the second paradigm.

Even though analysis of key research in the field of innovation capacity underlines that capacity generally is to be understood as the organizational aptitude to innovate, a lack of consensus is found in how we are to explain innovation capacity. In the BIC project, we observed two aspects of innovation capacity that need deeper inquiry representing this study's key contributions.

First, looking through previous studies on innovation capacity, theoretical and empirical descriptions sometimes use the notion of innovation capacity, and at other times innovation capability as the key notion, using them interchangeably without any difference in meaning. This difference in use alludes to more profound variations in how innovation capacity is conceptualized and demonstrated.

Variations range from simple conceptual constructs focusing on one dimension of innovation capacity, e.g. capacity as financial allocated R&D resources and structures, to research that use more aggregated conceptual models including dimensions e.g. capacity as organizational internal resources and managerial and structural settings and capabilities comprising available human competencies and knowledge (Boly et al., 2014; De Jong et al., 2001; Ferreira et al., 2015; Forsman, 2011; Nielsen et al., 2012; O'Connor et al., 2007; Prajogo & Ahmed, 2006).

However, even though it seems like the consensus in innovation research surges towards overall conceptual models that consist of more aggregated constructs the understanding and use of the terms sometimes overlap and are not used consistently. Further research to confirm the usefulness and benefit of how to conceptualize innovation capacity is required. The first research question of the BIC project addressed this need asking:

RQ1: *What characterizes the main determinants of innovation capacity?*

The specific objectives of the first part of the BIC research were to:

1. Review existing explanations and models for how to measure and conceptualize innovation capacity.
2. Construct a combined and aggregated conceptual model of innovation capacity.
3. Develop and test a survey instrument based on the built conceptual model that can measure innovation capacity in enterprises.
4. Provide feedback to the development part of the BIC project from knowledge generated in the research part.

Second, the primary modus operandi for how enterprises deploy and develop capacities for innovation is generally performed as top-down and expert driven initiatives by, for example, managerial or policy incentives. For instance, it is often stressed by researchers that the innovation process should be included in the examination of innovation capacity patterns. Consequently, more qualitative studies are needed to gain a deeper understanding of how enterprises can mobilize and transform knowledge, ideas, and experiences to sustain renewal (Forsman, 2011) (Yeşil & Doğan, 2019).

Adding, the "how" issues for enterprise support and development of innovation capacity is asked for by both researchers and enterprises as an essential research topic in current and future studies. Hints are given beyond traditional managerial and policy incentives, yet knowledge about how different types of learning models and designs influence development of innovation capacity are still lacking (Börjesson et al., 2014; Ferreira et al., 2015; O'Connor et al., 2007). In the BIC project, we expect that a Nordic learning model will be positively associated with developing organization innovation capacity from a more democratic, experience-based, and wide-ranging involvement of employees

on all levels and functions. This leads us to the second main research question of the BIC project that focuses on the results from using a Nordic-inspired learning approach which is a novel learning and development method:

RQ2: *How does a Nordic-inspired learning model influence the development of organization capacities for innovation?*

The specific objectives of the first part of the BIC research were to:

1. Design and devise a case study for exploring the results from the implementation of a Nordic-inspired learning model.
2. Develop an organizational design for a Nordic learning model capable of developing innovation capacity through organizational learning processes based on the involvement of experiences and knowledge from the participating employees and managers.
3. Support and strengthen continuous and sustainable development of the participating employees' innovative competencies in their daily work practice.
4. Construct a model for the development of innovation capacity.

The primary objectives of the BIC project are thus to strengthen the understanding of the ability to innovate. Additionally, the aims of the BIC project are to contribute to the deepening of our knowledge about how industrial enterprises can improve their search for how enterprises' innovation abilities can be developed, creating a sustained competitive advantage.

3.0 Research Settings and Methods

To examine the research questions and objectives of the BIC project, two different research methods were employed as described in the below subsections. BIC participating parties in the development and research parts of the project collaborated – also with the participating enterprises - by providing feedback and sharing knowledge on a continuous basis throughout the project's different phases. The BIC project is thus to be categorized as a collaborative research and development project as all partners, researchers, developers, industries, and shareholders, Sweden's Innovation agency (VINNOVA), and Nordic Network for Adult Learning (NVL) have cooperated and contributed throughout the project with important feedback and knowledge sharing.

Overall, the BIC project was organized in two parts, a development part and a research part. The principal activities of the development part were realized in 2021 with preparation in 2020. The final Learning Lab (LL) was completed in the first months of 2022. The research part was realized as continuous feedback from the developers and industry partners throughout the BIC project using two types of measurements: 1. Survey development and testing (2020 baseline), 2. Case study (2022). Due to Covid-19 restrictions in Sweden and Denmark and revisions to the originally planned activities, the development phase was delayed as the BIC project needed to coordinate with changes faced by the industry partners. These needed modifications impacted both types of research in the BIC project.

The launch of the survey administered by the gate keepers (in the two enterprises) for especially the endline measure saw major hindrances due to a focus on production tasks and keeping the BIC development activities running as a prioritized element. In addition, the BIC research part used the case study as documentation of the outcomes from the LLs on the innovation capacity even though this part had limited time compared to the original project plans.

The development part focused on two main tasks: 1. Designing the structure and content of a Nordic learning model and method; 2. Applying the Nordic learning model aimed at improving innovation capacity in one Swedish and one Danish enterprise. The BIC development part prepared the design in 2020, and launched the Nordic learning model in the enterprises, termed Learning Labs (LL), in 2021 and the first part of 2022. About 8-10 LLs in two pre-selected sample groups in each enterprise were realized. More detailed info on the structure and content of the LLs can be found in section 4.0 of this report and in the BIC Handbook on Learning Labs report.

The research part focused on exploring the innovation capacity changes in the Swedish and Danish sample groups emerging from the realized LLs. The research part focused on two main tasks: 1. Construct a conceptual model and testing a measurement tool for studying innovation capacity; 2. Designing and implementing a multiple case study research detailing the outcomes from the LLs as innovation capacity in the Swedish and Danish enterprise sample groups (Eisenhardt & Graebner, 2007; Yin, 1981).

3.1/ Research Settings

The context of our study was provided by two participating enterprises, one from Sweden and one from Denmark. The Swedish enterprise is represented by a large multinational company headquartered in Sweden. This enterprise has a long history and still runs most of its core development activities in Sweden. This Swedish enterprise has about 12,000 employees worldwide and an annual revenue of about 4,5 bn. Euros. The Swedish enterprise is a world market leader for its robot technologies, which is one of the best on the market and see themselves as having 'innovation in their DNA'. However, the competition is fierce with several international competitors offering similar products. While price and costs are important, the main competitive advantage in this market is innovation and explorative learning processes, i.e., the capability to continuously upgrade and include new functions and features in the robot product. As technologies related to the robot product, both in hardware such as sensors and cameras, and software, such as algorithms and artificial intelligence, there are plenty of innovation opportunities. The Swedish enterprise is organized in three divisions representing its primary activities and support activities in five functions covering HR, communication, legal affairs, global information, and strategy.

The Danish industry partner is represented by a large enterprise with a production facility and headquarters in Denmark. The Danish enterprise manufactures and sells bakery items for the convenience sector in approx. 16 countries with more than 200 employees in the Danish branch of the enterprise. In 2019, the Danish participant was acquired by one of the world's largest consumer goods companies, yet the Danish partner still has its main production facility based in Denmark benefiting on know-how and technology from the acquiring partner. The Danish enterprise is one of the largest bakeries for the convenience sector in the Nordic countries and its production lines are designed to develop and make bakery items with 200 different products. Production facilities are extremely flexible and can handle all types of bakery items, bakery, and convenience products. The ability to quickly translate and adapt to market trends and customer demands is one of the highest prioritized strategical objectives for the Danish enterprise to be competitive. Being able to continuously adapt and create new products, improve its business model and work processes is thus of great importance. The Danish enterprise does not employ a traditional organizational structure. Thus, the enterprise is organized in two main processes: 1. Innovation that includes product and concept development, 2. Supply chain that includes production and support functions such as marketing, sales, and quality procurement.

3.2/ Methods

BIC used a combination of quantitative and qualitative data to address the research questions using a mixed methods methodology. We used a sequential mixed methods process as suggested by Creswell (2009) that fits the exploratory design of the BIC project. A sequential mixed methods process requires quantitative data collection followed sequentially by qualitative data collection (or vice versa) to strengthen the soundness of research.

Originally, we aimed for testing the conceptual model of innovation capacity through a baseline and endline measure, yet due to the limited size and changes in our samples we could not fully realize this

aim for the quantitative part's endline measurement. The advantages of using a mixed methods design nevertheless provided the BIC research study with a solution to this issue. The qualitative case study opens for deeper explorations of the results emerging from the implemented LLs that give the needed details and depth to the understanding of innovation capacity changes. In the subsections below, we outline the employed methods, case settings and data collection, and the analytical strategy.

The sampling strategy is overlapping for the selected respondents in the survey and case study units as all had to participate in the LL and constituted our primary unit of analysis. The BIC research and development study aimed for a purposeful sampling of respondents that was, however, difficult to achieve completely for the overall study (Onwuegbuzie & Leech, 2007). This was due to the enterprise's emphasis on keeping some strategically prioritized production and business areas running. From close collaboration with the Swedish and Danish enterprises, researchers nevertheless followed some overall criteria for the selection of respondents that the enterprises used to identify and select participants and respondents for the LL and research study: the value chain was compounded (not same function), working with or in production or working on management tasks (different level); the enterprise experienced a need or were curious about the innovation capacity for selected groups of participants (relevance).

For the first research question, the BIC research team organized a data collection and analytical process in three steps:

1. A review of existing studies on innovation capacity were conducted resulting in an aggregated conceptual model (see review protocol in Appendix 1).
2. Based on the developed conceptual model, a survey instrument was constructed. The survey instrument measures an organization's ability to innovate by dividing the concept into two parts: innovation capacity and innovation capability (see launched survey instrument in Appendix 2).
3. The constructed survey instrument was tested in the selected samples in the Swedish and Danish enterprises. Results are summarized in Section 5.1 of this report.

We first pilot tested the constructed BIC survey in the Swedish and Danish enterprise on selected respondents that had similarity to the participants in the two LLs. Based on feedback from the pilot test, we adjusted, deleted, and changed questions that lacked meaning or clarity. Especially, the first part of the survey that measured innovation capabilities saw changes to improve meaning.

The final survey consisted of background questions and three dimensions for the measurement of organizations' aptitudes for innovation. In Table 1, we describe the form and content of the BIC survey. The BIC survey is explained in more detail in Section 5.1 as the survey represents the first results coming out of the BIC research.

Table 1. BIC survey tool descriptions.

Element	Items
Background	Age, gender, experience at the current employer, total work experience, current occupation, educational level, innovation strategy.
Capabilities	Idea generation (10 items), development and conversion (10 items), implementation and diffusion (9 items).
Capacity	Strategy (8 items), process (11 items), organization (10 items), learning (8 items).
External orientation	Inter-organizational (5 items), competence and knowledge acquisition (4 items).

The Swedish survey was launched in English, while the Danish survey was translated into Danish. In total, the number of items ended at 75 excluding the background questions. This correlated to a response time of approx. 15-20 minutes, which we deemed acceptable for the purpose of this part of the BIC research. The number of items could benefit from a reduction and a correlating reduced response time based on a factor analysis in a next iteration and test.

Except for the background questions, the BIC survey applied two types of Likert scale response categories for each item. For the capability dimensions, we used two Likert scales, 'Level of importance' and 'Frequency of use'. Both Likert scales used 1-5 range values. For level of agreement, the value 1 correlates to 'not important' and value 5 correlates to 'very important'. Regarding frequency of use, frequency ranged from 1-5 where response value 1 correlates to 'never use' and value 5 to 'use very often'. We decided to use a two-dimensional Likert scale comparing importance and frequency of use for each item instead of using the regularly used single-dimensional response category, as we intended to capture the complexity of innovation capacity in organizations in a more realistic way. For instance, for the same item respondents could find cross-functional collaboration very important yet it happened rarely, thus pointing to important differences in the measurement of innovation capacity. For the capacity and external orientation dimension, the Likert response category 'Level of agreement' was used ranging from 1-5 where 1 indicates low and 5 high agreement with the statement following the usage from Ferreira et al. (2015).

The baseline survey was completed by LLs participants and a small similar control sample. General characteristics are briefly summarized in Table 2.

Table 2. Sample characteristics summary.

Sample: Swedish enterprise (n=20)			
LL group	Employees (n=5)	Managers (n=11*)	Control (n=4)
Summary	1 woman and 4 men with an average work experience of approx. 5,8 years.	2 women and 9 men with an average work experience of approx. 6,2 years.	2 women and 2 men with an average work experience of approx. 4,5 years.

	5 out of 6 completed the survey. Functions were engineers, laboratory workers, and project workers. All had a bachelor's, master's, or PhD degree.	11 out of 13 completed the survey. Manager roles ranged from project lead, team, and director level for product and innovation. 10 had a bachelor's, master's, or PhD degree. 1 had a professional education shorter than 3 years of study.	4 out of 6 completed the survey. Functions were engineers, laboratory workers, and HR. All had a bachelor's, master's, or PhD degree.
Sample: Danish enterprise (n=18)			
LL group	Employees (n=6)	Managers (n=3)	Control (n=9)
Summary	5 women and 1 man with an average work experience of approx. 4,2 years. One respondent had 16 years of work experience while the rest had 1-3 years of experience. All completed the survey. Functions were production bakers responsible for product or concept development. All had a bachelor's or master's degree, and one had completed primary school as the highest educational achievement.	2 women and 1 man. Two had 2 years of work experience at the Danish enterprise while 1 had 20 years of work experience. All completed the survey. 2 had a background as production baker and 1 as an innovation designer but worked as manager for product, concept, and development. One had a professional occupational background and two had master's degrees.	4 women and 5 men. with an average work experience of 9 years with the most experienced having 20 years of experienced and the least experienced had 1 year of work experience. All completed the survey. Various occupational backgrounds including production, marketing and analytics, sales, and HR. Various educational levels, including 2 with secondary education, 1 with vocational education, 2 with professional education, and 4 with master's degrees as their highest educational achievement.

The BIC research team used a deductive analytical strategy employing a two-pronged approach to address RQ1. First, we did a content analysis of theoretical understandings of innovation capacity in the selected studies resulting in the construction of a conceptual model, dimensions, and survey measures. Second, we did univariate and bivariate analysis of the collected quantitative data to test and report on the baseline level of innovation capacity for the selected samples.

To address the second research question, the BIC research team organized a data collection and analytical process in three steps:

1. Based on the research questions and conceptual model from the first part of the BIC research project, the BIC research team designed a qualitative case study resulting in a semi-structured interview guide, observations, and process data (see interview guide and consent form in Appendix 3).
2. Completing the case study by collecting and collating interview and observational process data from the selected samples and BIC activities in the Swedish and Danish enterprises.
3. Generation of a data structure (see Appendix 4 and Section 4.0) and a model for how to understand how enterprises' ability to innovate are developed.

In Table 3, an overview of collected and collated data in the case study is described as well as brief respondent characteristics. All names were anonymized, and both names and any references to interviews in the research were given a tag.

Table 3. Case data overview and documentation.

Interviews							
Organization code	**Name (anonymized)**	**Function**	**Gender**	**Age**	**Date**	**Learning Lab group**	**Duration (excl. intro in min)**
DK	Christina	Product development	Female	45-49	20-04-2022	Part process group	45
DK	Sara	Concept development	Female	45-49	20-04-2022	Part process group	53
DK	Peter	Product development	Male	40-44	20-04-2022	Part process group	45,
DK	Solveig	Innovation manager	Female	50-54	20-04-2022	Process group	56
DK	Bente	Product development	Female	35-39	26-04-2022	Part process group	50,
DK	Jan	Product development	Male	55-59	26-04-2022	Process group	46
DK	Pia	Sponsor coordinator	Female	40-44	26-04-2022	Part process group	30
DK	Jette	Production	Female	45-49	26-04-2022	Part process group	41
DK	Jens	CEO	Male	55-59	26-04-2022	No process, CEO	33
DK	Moe	Design leader	Female	30-34	26-04-2022	Process team	38
DK	Lone	Lecturer	Female	45-49	06-05-2022	Developer team	01:28
DK	Kristin	Lecturer	Female	30-34	06-05-2022	Developer group	01:28
DK	Hans	Lecturer	Male	30-34	06-05-2022	Developer team	01:28
SWE	Anders	Innovation manager	Male	50-54	20-04-2022	Part of manager group	45
SWE	Hans	From developer to manager	Male	45-49	20-04-2022	Part of manager group	34
SWE	Mikael	Innovation manager	Male	45-50	20-04-2022	Part of manager group	45
SWE	Fredrik	Project office manager	Male	45-49	20-04-2022	Part of manager group	52
SWE	Sten	Test engineer	Male	35-40	20-04-2022	Part of the development team	48
SWE	John	Product development	Male	45-50	21-04-2022	Part of the development team	86

SWE	Susanne	Product development	Female	45-50	21-04-2022	Part of the development team	47
SWE	Stefan	Product development	Male	45-50	21-04-2022	Part of the development team	41
SWE	Bosse	Production engineer	Male	45-49	21-04-2022	Part of manager group	45
SWE	Karl	Manager of one of the employees of the development team	Male	35-40	24-05-2022	Not part of LL	30
Observations							
Organization code	**Context**				**Date**	**Groups**	**Time**
DK	Launch of Learning Labs and first visit to the company.				03-11-2020	All LL-participants	7,5 hours
DK	BIC Learning Lab ending with all groups. Online observations.				14-01-2022	All LL-participants	3 hours
DK	Participant observation at DK. Placed in their main office.				19-04-2022 and 20-04-2022	Participant observation at the headquarter	Day 1: 4 hours, Day 2: 7,5 hours
SWE	Launch of Learning Labs and first visit to the company.				13-11-2020	All LL-participants.	3 hours
SWE	Feedback seminar (mid-term) in the Swedish enterprise				27-08-2021	All LL-participants	4 hours
SWE	BIC Learning Lab ending with all groups. Online observations.				19-01-2022	All LL-participants	3 hours
Process data							
DK	Meeting notes and observation logs from all seminars and LLs completed by the developers and meeting notes from researcher and developer meetings.						
SWE	Meeting notes and observation logs from all seminars and LLs completed by the developers and meeting notes from researcher and developer meetings.						

For RQ2, the BIC research team used an inductive analytical strategy employing a grounded theory approach developed by Glaser & Strauss (1967) and Corbin and Strauss (1990). This inductive analytical strategy was refined by Gioia et al. (Gioia et al., 2013; 2000) and Eisenhardt (2007) in later methodological contributions. The BIC research team used Gioia's (2013) analytical framework and procedure to explore the LLs and changes to the ability to innovate as systematized into first, second, and aggregate analytical steps. The analysis generated a data structure to document and validate the findings followed by a model for learning and change from the use of a Nordic learning model on the ability to innovate.

It needs to be underlined that the Covid-19 pandemic greatly affected the whole situation including the LLs, i.e., in several cases they had to be performed remotely as digital video meetings. Thus, effects on innovation ability caused by LL and/or by the pandemic are hard to disentangle in our case study analysis. Consequently, the findings and conclusions from the project need to be interpreted with caution, keeping the pandemic situation in mind.

4.0 Learning Labs – a Nordic Learning Model

The BIC project was a research and development project that explores how innovation abilities are built and strengthened in organizations. One of the main objectives of the BIC project was to experiment with a Nordic learning and competency model for the improvement of innovation ability. In this section, the setting, form, and content of the further developed Nordic learning model in a Swedish and Danish organization are described.

Organizational learning and change theory and tools were established and further advanced in an Anglo-Saxon context under different names and labels used by organizations for decades to create and support organizational development (Bartunek, 2021, Beer, 2021). The Anglo-Saxon learning and change approach still represents the most influential theory and explanation in organization and management studies for strategic renewal, development, and change in organizations (Burnes, 2012). The focus for this approach is on planned changes structured as phase models intended to produce behavioral change and improved group dynamics, new productive learning systems, and/or development of democratically founded organization or management systems.

In innovation management studies, for instance, leading approaches for how to develop organizations' innovation capacity are dominated by top-down managerial controlled strategic changes, expert-driven initiatives or policy instruments and incentives. These change models and tools reflect key concepts and development models from the Anglo-Saxon approach.

The BIC project attempted to sustain, integrate, and operationalize Nordic values, principles, and traits in the LL. Highlighted in a review of Nordic approaches to organizational learning and development by Brandi & Sprogoe (2022), the Nordic approach can be described as a generally discernible analytical and normative organizational phenomenon – as something that can be defined, discussed, and used in practice. Although differences between the Nordic countries exist, low power distance, a high degree of responsibility, trust, and autonomy, a collective mindset, and a broad sense and application of learning and innovation are among some of the key general characteristics and elements for explaining Nordic values and traits (Hofstede, Neuijen, Ohayv & Sanders,1990)

Other contributions stress that Nordic organizational contexts seem to support learning and knowledge production processes that are founded on collaboration (Asheim, 2011; Czarniawska & Sevón, 2003; Kreiner, 2007). Nordic collaboration types involve open and engaged dialogue with the participation of employees reinforced by a lack of major structural and managerial barriers, which indicates high adaptability to both internal and external changes. These and other studies also underline that the aspect of enterprise leadership being open to employees on all levels experiment with new ways of solving work tasks as well as inclusion of employees in decision-making processes as a trend in a Nordic context.

In the BIC project, we experimented with a Nordic-inspired learning model as an alternative to the dominating Anglo-Saxon approaches described above being inspired by Nordic values, principles, and traits. Generally, the BIC project aimed at further developing the form and content of a Nordic-

inspired learning termed 'Learning circles' as this has been designed and developed in the context of the Nordic network for Adult Learning (NVL). Emphasized and explained by Lahdenperä & Marquard (2019), learning circles represent a learning and development approach based on Nordic values, principles, and traits. The learning circle is characterized by being a collaborative arena for collective learning covering the following three features: 1. Participatory and experience-based, 2. Critical thinking and reflection, 3. Change practice from competence and knowledge development (ibid., p. 10).

In the BIC project, we aimed at further developing the learning circle concept testing this Nordic-founded learning model in an industry context. More specifically, from further developing and adapting the learning circles we experimented with this Nordic learning model as a lever for improving innovation ability in the production industry.

The label 'Learning Labs' was used instead of learning circles to accentuate particularly the experimental, bottom-up, and experience-based features of the concept and model. LL thus refers to an arena where selected people, employees from the Swedish and Danish enterprises, openly were able to share and discuss work-related topics and issues. The open collaboration between different types of employees in the single LLs employed participant experiences and knowledge as the bedrock for the discovery and development of new perspectives and solutions to real and concrete practice-based situations. Participants were trusted and empowered by the enterprises to share and use knowledge, experiences, and competencies as the basis for improving the individual and group's ability to innovate even though this was open-ended, highly experimental, and democratic. Characteristic for the LL in comparison to the learning circle was that the participants came from the same organization and that the facilitator role was focused on continuously supporting the participants' collective interactions with no end-goals, expert input or feedback, or underlying agendas in sight.

Another important feature for the LL was the highly engaged and open collaborative efforts by all project partners in the design and further development of the Nordic learning model. From planning meetings preparing the LLs, meetings during the testing of the LLs in the Swedish and Danish enterprise, and seminars developers, researchers, and key partners from the enterprises collaborated closely throughout the BIC project providing important feedback and adjustment on a continuous basis.

The development part of the BIC project used the above theoretical Nordic framework as the conceptual foundation for the further design and operationalization of LLs in an industry context. Regarding the structure and content of the LLs, the organization of LLs in the enterprises first denoted a collection of selected employees in groups – what is termed Learning Labs. In the Swedish and Danish enterprises, we organized two comparable types of LL groups. The first group included employees working with responsibilities for primary or supportive organizational activities. The second group included managers at different levels and functions.

Selection of LLs participants were completed from close collaboration between researchers, developers, and the two enterprises using function, level, and relevance as selection criteria. The

Swedish employee group consisted of 5 people and the management group consisted of 11 to begin with but was reduced to 8. The Danish employee group consisted of 6 people and the management group included 3 participants.

Participants met in their various LL group on a continuous basis during 2021 completing between 8-10 LLs meetings of approx. 3 hours of meeting time for each LL. The developer partners from Sweden and Denmark supported and organized the LLs taking a facilitator role. The launch of the LL started with a half-day seminar in November 2020 in both enterprises covering introduction to the project and completion of the baseline survey. LL participants, developers, industry partners, and researchers met at the first seminar. Two additional seminars were completed. In mid-2021, a feedback and adjustment seminar was organized, and a closing seminar was convened in the beginning of 2022. In the closing seminar, experiences and insights from the LLs were shared across the LL groups and plans for how to continue – or integrate – the LL into existing organizational routines were planned.

In parallel to the concrete LLs in the Swedish and Danish enterprises, developers (working as facilitators in the LLs), researchers, and enterprise partners met on a continuous basis. In these BIC meetings, it was shared and discussed how the LL progressed and if any adjustment were needed regarding the development part of the BIC project in 2020 and during 2021.

The focus for the LLs were to develop, locate, and experiment with new solutions to existing wide-ranging challenges faced by the LL members in the enterprises. The content for the specific LL was thus based on current and actual challenges faced in practice by the LL participants. Experiences and insights were shared by dialogue with the other LL members representing different professional viewpoints. At the end of all LLs, the participants decided to experiment with new actions or task solutions until the next LL where experiences from the test were shared and discussed. The work format in each LL was thus a balanced interaction between the individual experiences of existing practice challenges and the collective development and test of new knowledge and ideas with the other LL members in a practice setting.

The intention behind the LL was thus to include all participants' knowledge, experiences, and competencies about work practices and routines to develop sustainable and collective solutions and actions to existing business challenges. This also means that it was the LL participants that had the responsibility to decide the content – to convey real cases and challenges from their daily work - of the single LL and to create a common space for the development and test of new ideas in practice. The key issue is that the real case is of relevance to all LL participants, thus that the practice challenge is of general importance and not extremely specific in its form and content. More detailed information on the background, structure, and content of the Nordic learning model, LL, can be found in the Handbook in Learning Labs.

It needs to be underlined that the Covid-19 pandemic affected how the LLs were organized and completed, thus in several instances the enterprises had to perform the LLs remotely as digital video meetings.

5.0 Research Results and Outcomes

In this section, we summarize the results and outcomes from the two parts of the BIC research study addressing the two research questions. First, we outline the aggregated conceptual model for describing determinants of the enterprise ability to innovate and the key results from testing the developed measurement tool. Second, we describe the outcomes from the implemented Learning Labs in the two participating enterprises on their ability to innovate.

5.1/ Determinants of Innovation Ability

5.1.1/ Conceptual Model

In Table 4, we summarize the measures and conceptual characterization of innovation capacity, ability, and capability. The selected studies from our review of existing literature show the main determinants and definitions of the enterprise aptitudes to innovate.

Table 4. Measures and definitions of innovation capacity.

Source	Measures	Definition
Boly et al. (2014) and Rejeb et al. (2008)	The framework of a firm's innovation capacities is based on 15 fundamental innovation management best practices and numerous dimensions.	Innovation capacities are defined as the continuous improvement of the overall capabilities and resources that the firm possesses for exploring and exploiting opportunities to develop new products to meet market needs.
De Jong & Brouwer (2001)	A firm's innovative ability depends on 9 dimensions: people characteristics, strategy, culture, structure, company and organization characteristics, availability of means, network activity. Enterprise and market function as mediating variables.	Innovative ability is the ability of an enterprise's employees to generate ideas and to work with these ideas to develop new or improved products, services, technologies, work processes, or markets. The employees of an enterprise are at the heart of the innovation process.
Ferreira et al. (2015)	Stipulates that a firm's innovative capacities depend on strategy, organization, learning, processes, and networks using Tidd & Bessant's innovation management model.	A firm's innovation ability allows them to compete and perform better than competitors based on the application of resources and capacities as affecting factors on innovation levels.
Forsman (2011) and Forsman & Rantanen (2011)	The degree of innovation capacity was studied by using three variables: - R&D investment. - The degree of innovation capabilities. - External input into innovation development through networking.	Defines innovation capacity as 'a continuous improvement of capabilities and resources that an enterprise possesses to explore and exploit opportunities for developing new innovations to meet the market needs'.
Nielsen et al. (2012)	Capabilities for innovation are constituted on three dimensions: - Employer and employee cooperation in change	Innovative capabilities are the ability to mobilize human and organizational resources and bring problem-solving ideas that are new to the firm into practical use by implementing them.

	- Dynamic capabilities - Global economic context	
Prajogo & Ahmed (2006)	Include leadership and management of culture/people, knowledge, and creativity as the stimulus for innovation and R&D and technology management as the innovation capacity measures.	Studies on the human factors of innovation emphasize such factors as organizational structure and culture. This research stream presupposes that people and organizational context are the main determinants of successful innovation

We know from the literature that numerous definitions of innovation capacity have been developed and used presenting varied conceptualizations and measurement solutions (Raghuvanshi & Garg, 2022; Robb et al., 2022; Yeşil & Doğan, 2019). The content analysis of identified studies from the BIC project review shows variations in definitions of innovation capacity underlining the need for more coherence. For instance, some of the studies use innovation capacity as the main concept while others use ability or capability. Further, in some of the studies, enterprise aptitude for innovation is a matter of mobilizing managerial controlled resources inspired by a resource-based view (Prahalad, 1990) while other studies include resources as R&D investment and managerial controlled resources and capabilities leaving out the external orientation dimension. And finally, we observe differences in the outcome of the innovation process ranging from narrow R&D results in the form of new products to wider understandings of innovation encompassing e.g. products, services, processes, and new problem-solving ideas.

As Lawson & Samson (2001) elucidate, a general and wider-ranging characterization displays that innovation capacity functions as a higher-order concept that refers to the ability of enterprises to shape and manage multiple resources (tangible and intangible), knowledge, and capabilities to stimulate innovation performance. Content analysis corroborates that this high-order concept and multidimensional idea represents a general feature across the identified studies. Since innovation capacities are dynamic, they are also flexible, which allows them to be used in a range of related business situations as a type of potential of organizational responses to internal and external stimuli. As capacities are a combination of groups of aptitudes to achieve a given purpose, they may be sufficient themselves for the purpose. Capacities may need to be used in combination with other capacities from how they are put into use in concrete practice. This last feature seems to be missing in existing characterizations of enterprises aptitudes for innovation.

In the BIC project, we find it important to include a broader understanding of innovation as explained earlier in this final report and specify that abilities for innovation are built on top-down, bottom-up, and external input determinants to coherently explicate determinants of enterprise abilities to innovate. Especially, our content analysis indicates that bottom-up features are needed for a more coherent explanation of enterprise ability to innovate. For the BIC project, we thus developed and employed the following multidimensional definition of innovation ability: "*the ability to continuously improve and apply capacity, capabilities, and external input to mobilize and transform knowledge and ideas into new products, processes, services, and systems*". Specifically, capacity, capability, and external input are defined as:

1. Innovation capacity is the resources of available structural and cultural elements that are owned or managed by an organisation.
2. Innovation capability is the available and used human competencies and knowledge in an organisation.
3. External orientation is the external input of an organization towards inter-organizational collaboration and external competence and knowledge acquisition.

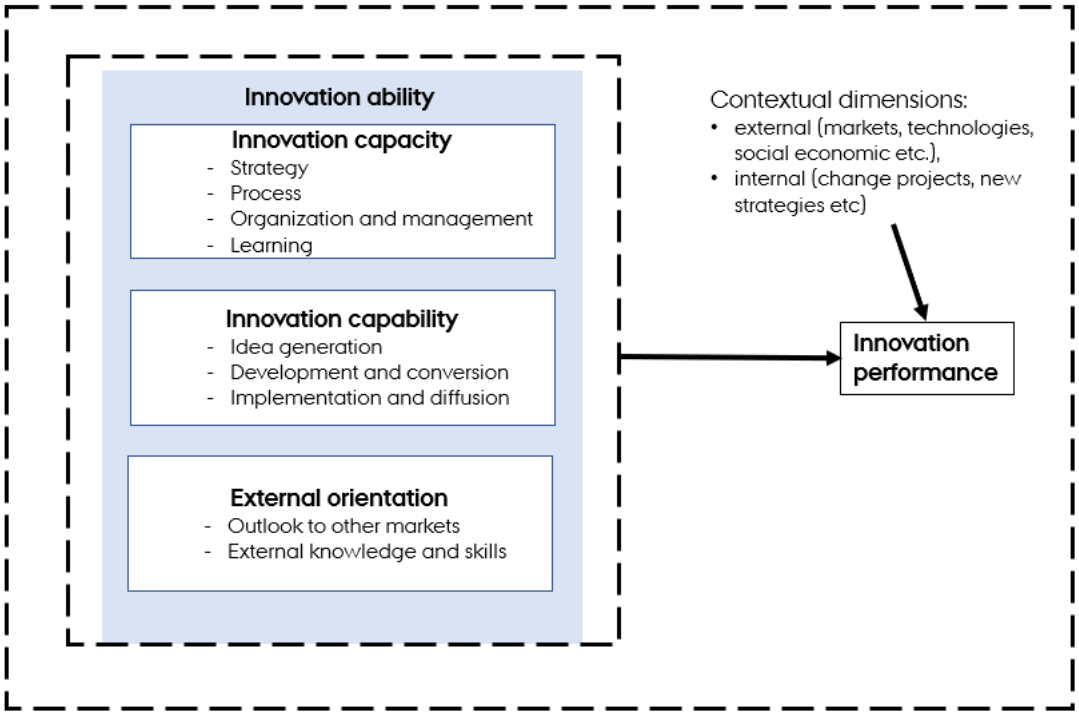
From our conceptual analysis of determinants of innovation ability, the BIC conceptual model results in applying three dimensions that characterize the ability to innovate founded on capacity (manageable organizational resources), capabilities (available capabilities used and embedded in work), and external orientation. Thus, innovation ability is the sum of organizations' capacity, capabilities, and external orientation built as an aggregate measure of determinants for the enterprise's degree of innovativeness. Innovation ability cannot be studied directly, rather we study organizational capacities, innovation capabilities and external orientation indirectly using already existing measures.

Measures for the constructs of innovation ability were adapted from existing literature. To measure the capacity dimension determinants, four items were considered from Tidd & Bessant's grounding model of determinants linked to innovation capacity (Tidd & Bessant, 2009): strategy, process, organization, and learning. This measurement scale has recently been tested by Ferreira et al. (2015) and used to study determinants of the innovation management process and the implications for enterprise performance.

To measure the innovation capabilities dimension, we employed and combined knowledge from the open innovation climate measures literature (Remneland-Wikhamn & Wikhamn, 2011) and the innovation value chain model developed by Hansen & Birkinshaw (2007). We evaluated that these measures capture the dynamic and bottom-up determinants of innovation ability covering three general sub-dimensions. From Hansen & Birkinshaw (2007) we integrated the three sub-dimensions: idea generation, development, and conversion of ideas, and implementation and diffusion to shape the innovation capability measure. This measure was used as a generic expression for all types of innovation processes in combination with the term 'new idea' as a marker for working with innovation. From the open innovation climate measures (Enkel et al., 2011; Remneland-Wikhamn & Wikhamn, 2011) in combination with Hansen & Birkinshaw (2007), we included several items for each sub-dimension as, for instance, collaborative elements, social relations, and knowledge and competence aspects.

To measure the network orientation dimension, we employed network orientation determinants from Tidd & Bessant (2015) that comprise two general categories: 1. outlook for improved market share and sustained competitive advantage; 2. Sharing and importing new skills, knowledge, and competencies. Figure 1 illustrates the conceptual model for determinants of enterprise ability to innovate. In Appendix 2, the survey is presented based on the conceptual models of three determinants.

Figure 1. BIC conceptual model – determinants of innovation ability.



5.1.2/ Results from the BIC Survey

We distributed the survey to the participants that took part of the Learning Labs in the two firms as well as some employees, as controls, that did not take part in the Learning Labs. In all we received 38 responses. We had no reports of problems or questions from respondents regarding the survey items. The first round of surveys was intended to result in a baseline of the two firms' innovation abilities. The means and variances of the items related to innovation capacity are shown in Table 5 below.

The results indicate that both firms had quite good overall innovation capacity. However, there were some problems, indicated by low means and marked in red in the table above, with the implementation part of the innovation process, reward systems for innovation, resources for innovation activities, learning from others, reviewing employee projects, and sharing competence needs and skills with universities. Overall, the learning component of innovation capacity received the lowest means, indicating challenges in this component of innovation capacity.

Table 5. Means and variance for innovation capacity.

SUMMARY							
Groups	*Count*	*Sum*	*Average*	*Variance*		*Avg.*	
B_1	38	181	4,763158	0,185633	Strategy	3,9	Strategy - My firm recognize innovation's importance in competitiveness.
B_2	38	149	3,921053	0,777383			Strategy - My firm shares innovation strategies with employees, and employees are aware of
B_3	38	167	4,394737	0,894026			Strategy - In my firm, we understand and recognize that for the organization to remain compe
B_4	38	139	3,657895	1,906828			Strategy - My firm anticipates threats and opportunities (through forecasting techniques).
B_5	38	167	4,394737	1,326458			Strategy - My management perceive innovation to be a determinant factor in future firm deve
B_6	38	170	4,473684	0,364154			Strategy - My firm's management demonstrates commitment to supporting innovati
B_7	38	125	3,289474	3,076102			Strategy - My firm deploys mechanisms to analyze new technological and market developmen
B_8	35	81	2,314286	1,163025			Strategy - To what extent does, a link exists between innovation projects and all business strat
B_9	38	157	4,131579	1,036273	Process	3,21	Process - My firm employs mechanisms that help design, develop, and launch new products.
B_10	38	158	4,157895	0,56899			Process - My manager motivates me to come to him/her with new ideas.
B_11	38	162	4,263158	0,523471			Process - My management is tolerant of mistakes and errors during the implementation of so
B_12	38	100	2,631579	1,428165			Process - My firm normally implement innovation projects within deadlines and budgets.
B_13	38	114	3	1,675676			Process - My firm uses mechanisms to verify that employees fully
B_14	38	107	2,815789	2,100284			Process - My firm implements management mechanisms to tailor procedures and succeed
B_15	38	114	3	2,594595			Process - My firm systematically researches ideas for new products and processes.
B_16	38	144	3,789474	1,630156			Process - My management supports me in implementing good ideas as soon as possible.
B_17	38	114	3	1,297297			Process - My firm uses mechanisms guaranteeing the involvement of all departments in
B_18	38	94	2,473684	2,147937			Process - My firm deploys a clear system for selecting innovative project
B_19	38	112	2,947368	1,618777			Process - The firm system is flexible and encourages rapid implementation of small-scale proj
B_20	38	135	3,552632	1,280939	Organization	3,28	Organization - My firm structure does not compromise but rather fosters innovation.
B_21	38	128	3,368421	0,995733			Organization - In my firm, employees work well together and across departmental borders.
B_22	38	130	3,421053	1,439545			Organization - In my firm, employees suggest ideas for better products and processes to the r
B_23	38	127	3,342105	1,420341			Organization - My firm structure enables swift decision-making.
B_24	37	114	3,081081	0,798799			Organization - In my firm, communication between hierarchical levels is functional and effecti
B_25	38	89	2,342105	2,609531			Organization - My firm adopts a pro-innovation support and reward system.
B_26	38	110	2,894737	2,150782			Organization - My form has set aside sufficient resources to support
B_27	38	139	3,657895	0,933855			Organization - My firm fosters creativity and new ideas and encourages employees to submit
B_28	38	133	3,5	1,283784			Organization - My firm provides employees time for putting ideas and innovations into practic
B_29	38	147	3,868421	0,603841			Organization - My firm works well as a team (or in teams).
B_30	38	122	3,210526	1,197724	Learning	2,77	Learning - My firm displays a high level of commitment to employee training.
B_31	38	107	2,815789	1,721906			Learning - My firm reviews employee projects to improve them and achieve better performan
B_32	38	132	3,473684	2,634424			Learning - My firm works with universities and other research centers to build knowledge resc
B_33	38	93	2,447368	3,280939			Learning - My firm systematically compares products and processes with those of its competit
B_34	38	116	3,052632	3,13229			Learning - My firm shares experiences with other firms, thereby achieving a better understanc
B_35	38	70	1,842105	2,83926			Learning - My firm registers and records its developments to benefit its employees.
B_36	38	112	2,947368	2,645804			Learning - My firm learns from other firms.
B_37	38	106	2,789474	3,359886			Learning - My firm seeks to identify where and when the firm may improve innovative perfor
B_38	37	127	3,432432	2,03003	Network	3,38	Network - My department incorporate ideas (examples: new work methods, product develop
B_39	38	144	3,789474	1,251778			Network - My firm maintains good relationships (win–win) with suppliers.
B_40	38	136	3,578947	1,007112			Network - My firm reports a thorough understanding of consumers' needs.
B_41	38	131	3,447368	1,443101			Network - My firm analyzes and learn from its errors to improve its activities and processes.
B_42	38	134	3,526316	1,391181			Network - My firm works closely with consumers to develop new concepts.
B_43	38	122	3,210526	2,440967			Network - My firm collaborates closely with other firms to develop new products and process
B_44	38	141	3,710526	1,346373			Network - My firm attempts to develop external networks with individuals who can assist the
B_45	38	92	2,421053	3,655761			Network - My firm shares its competence needs and skills with education sector entities.
B_46	38	129	3,394737	1,975107			Network - The firm works closely with end users to develop new products and services.
B_47	36	90	2,5	0,657143	Overall	2,5	Overall assessment of your company's innovation performance

The results for the innovation capability part show that the idea generation dimension was seen as both more important and more in use than the development and implementation dimension. External contacts were deemed to be important but not very well used in practice. When analyzing the items with the largest differences between importance (receiving a means of at least a 4 in importance, Likert scale), and frequency of use (Likert scale 1-5), the top 10 items looked like this (see Table 6):

Table 6. Differences between importance and frequency of use for innovation capability.

	Top 10 differences in importance and frequency
A10	1) Idea generation - I have time and resources to keep updated on latest development within the market and my field of work.
A12	2) Idea generation - I collaborate with external partners (example: sub-contractors, universities, consultants) in order to develop and acquire new ideas.
A11	3) Idea generation - I use customer input (example: knowledge and experiences) to create new ideas in my work.
A9	4) Idea generation - I exchange and shara ideas with colleagues in the other departments in my firm
A7	5) Idea generation - I think that assistance is in developing new ideas is readily available
A26	6) Implementation and diffusion - For the implementation of new ideas in practice, I search for new technologies, processes or procedures
A16	7) Development and conversion - When I have a new idea, I try to involve people who are able to collaborate on it.
A25	8) Implementation and diffusion - I look for and secure funds needed for the implementation of new ideas.
A28	9) Implementation and diffusion - When I have a new idea, I look for people who are able to push it through.
A20	10) Development and conversion - I have a systematic way to follow-up on the selected idea generated.

The results in Table 3 indicate that the employees saw challenges in:

- Idea generation, concerning adequate resources and time,
- Idea generation, concerning collaboration with external partners such as customers,
- Idea generation, concerning cross-functional collaboration,
- Development and conversion, collaboration, and systematic way of selection,
- Implementation and diffusion, securing resources, technologies, and support.

When comparing challenges in innovation capacity with challenges in innovation capabilities they both indicated challenges in adequate resources and time for idea generation and implementation and diffusion as well as learning from and collaboration with external and internal partners. Thus, deficiencies in structural innovation support, i.e., innovation capacity, were reflected in the employees' perceptions of challenges in innovation capabilities, i.e., adequate resources and time for innovation activities as well as lack of collaboration and learning with internal and external partners. The timing of distributing the survey, roughly 6 months after Covid-19 restrictions were put in effect, may very well have affected the results. Some of the participants in the Danish enterprise worked from home during Covid-19, while all the participants in the Swedish enterprise worked from home.

The results from the survey were shared with representatives of the two enterprises to investigate the validity of the instrument. The enterprise representatives found the results reasonable and valid. One of the participating enterprises has later integrated some of the items in their own internal surveys on innovation and learning. Our conclusion is that the survey instrument has good validity and can be used to measure an enterprise's innovation ability.

The number of respondents from each enterprise, 19 respondents (n=38), is too limited to make any more advanced statistical calculations but a good testing ground for developing the BIC innovation ability measure. Thus, we cannot make any statistically based conclusions regarding each enterprises' baseline. Low or high means, with limited variance, can at best be interpreted as indications of weaknesses or strengths related to the different components of innovation capacity, innovation

capability and network orientation. With more respondents our survey instrument can be used also for multivariate statistical analysis.

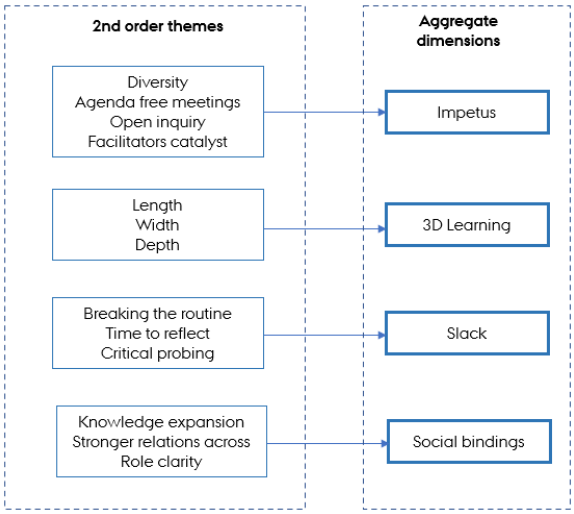
5.2/ Building the Ability to Innovate

In section 5.2, we show the outcomes from the test of the Nordic-inspired learning model, the LLs, on the Swedish and Danish enterprise abilities to innovate. Based on an explorative case study, the BIC project studied what concrete changes the LLs have produced as representations of innovation ability. This section ends with a presentation of a theoretical model that illustrates how innovation ability is built from LLs as an organizational learning process. Reflections on aspects of sustainability and the Nordic features are explained at the end of this section.

5.2.1/ Changes from the Learning Labs

To describe and document the outcomes from our inductively founded analysis, we present an overview of our data structure in Table 7 (see the more expanded data structure including 1st order themes excerpts in Appendix 5) using Gioia et al. (2013) analytical strategy. The data structure outlines the full set of 2nd order themes that are assembled into aggregate dimensions emerging from analysis of interviews, observations, and process data.

Table 7. Data structure overview for the BIC case study.



Four key dimensions to model development of innovation ability emerged from the analysis of case data in the two enterprises: 1. Impetus, 2. 3D Learning, 3. Social binding, 4. Slack, and 5. Contextual dimension. Themes 2, 3, and 4 show the changes in the ability to innovate as experienced by the LL participants. We integrated the results and outcomes from the two case data sets as we observed similar recurrent themes and dimensions across the samples in the Swedish and Danish enterprises. To better understand the setting of each aggregate dimension and their constitutive themes, we first

briefly outlined indicative results from the survey analysis of innovation ability in the participating enterprises before the employment of the LLs.

Innovation Ability before

In Section 5.1, the participating enterprises' ability to innovate was measured. It is indicated from comparing challenges in innovation capacity with challenges in innovation capabilities that they both showed challenges in adequate resources and time for idea generation and implementation and diffusion as well as learning from and collaboration with external and internal partners. Thus, deficiencies in structural innovation support, i.e., innovation capacity, were reflected in the employees' perceptions of challenges in innovation capabilities, i.e., adequate resources and time for innovation activities as well as lack of collaboration and learning with internal and external partners.

Impetus

Four themes relating to the LLs as impetus for change in the enterprise innovation ability were mined analytically from the informant's experiences: 1. Diversity, 2. Agenda free, 3. Uncertainty, and 4. Facilitator as catalyst.

Diversity. The first impetus from the LLs referred to the composition of the different LL groups. It became clear for most participants, covering leader, and employee groups in the Swedish and Danish enterprises that meeting and interacting with colleagues with a diverse set of knowledge, experiences, and competencies created a space for fresh perspectives on problems and challenges. In terms of the learning process initiated and sustained by the LLs, to meet other employees in the enterprise that the LL participant did not know or had collaborated with previously, expanded professional connections generating a multiplicity of new perspectives, experiences, and possibilities for task analysis and solutions.

Agenda free**.** A general feature underlined by the LL participants was that the LLs were agenda free spaces. Agenda free spaces represent instances of the LL in which the participants had to themselves construct and develop the form and content of each single LL. This feature of the Nordic learning model developed and tested by the BIC project collided with established meeting standards and templates in both enterprises that took some time to adapt to. Yet, the informants' experiences were that especially two aspects of the LL as an agenda free meeting space had value for abilities to innovate and do learning and development work. First, the agenda free meeting created by the LL reinforced a "real" space for unfolding, sharing, and using everyday experiences and events. Second, the agenda free space was characterized by being "non-controlled" compared to more traditional meetings in both enterprises that were characterized by a fixed and goal-oriented agenda.

Uncertainty**.** The LLs' attempt to stimulate a development of the ability to innovate was also intended to be built on how the participants generated and used different types of uncertainties in the LL. It is well-known in organizational learning theory that the identification and use of an uncertain situation is the starting point for learning to take place (Brandi & Elkjaer, 2011; Cohen, 2007; Crossan et al., 1999). Thus, for the BIC project to generate a development of abilities to innovate based on a Nordic learning model it was important that the LL was designed as a space where open inquiry could

flourish. Thus, instead of imbuing the LLs with external, fixed and ready to deploy knowledge, the open and agenda free space encouraged the participants to reflect on, illustrate, and share potential problems and challenging situations. In this way, the informants' experiences underscored the strong participant and practice-based element as an important impetus in the employed Nordic learning model.

Facilitator as catalyst**.** As a fourth impetus, a recurrent theme running throughout the interviews accounted for the role of the facilitator. It became clear that the facilitator – that is, the external developer in the BIC project - worked as what was termed 'catalyst' in the LLs. Catalyst means that the facilitator supported the sharing and use of experiences, understandings, and knowledge related to uncertain situations. Consequently, the facilitator supported actualizing the explorations and developments in and throughout the LL processes without giving direction nor solutions for how to develop, for instance, new solutions or way to do things in practice.

3D learning

3D learning describes a change in how the learning processes were understood and performed by the informants via the implemented LLs. 3D learning refers to the individuals' and groups' construction, sharing, and use of knowledge, experiences, and competencies to solve tasks. The three themes show that the LLs supported an advance of a multifaceted mode for framing and realizing learning for individuals and on a collective level. Instead of viewing learning as a matter of formal acquisition - or injection - of knowledge and skills from an internal or external source, learning was experienced as integrated in the participants' practices through time and space. Learning included not only one single dimension but were performed as part of experiences, everyday practices, and task solutions expanding the ability to innovate.

Three themes emerged analytically as related to a change in the ability to innovate associated with learning emerging from the informant's experiences of 3D learning: 1. Length, 2. Width, and 3. Depth. It should be underlined that the application of the three types of learning in 3D learning were not necessarily done simultaneously. 3D learning reflects a fundamental change in how learning was viewed and used expanding the general ability to innovate. For example, some tasks needed deep knowledge and a high level of expertise while other tasks primarily needed employees that were able to collaborate across functions. And sometimes all three types of learning were needed to solve a task.

Length**.** For the first identified theme in 3D learning, case data specify that participants, covering the employee and manager LLs, discovered the value of seeing innovation as a phenomenon that are integrated in a broad spectrum of processes and activities in the enterprise on a continuous basis. To comprehend that innovation is continuous adds an important aspect to the learning dimension in the LLs as well as organizational ability to innovate. Innovation is not to be confined to specific prioritized time. Innovation happened and was present in all types of tasks, not only formal innovation time, thus one first important expansion of how to handle learning in the enterprises was to see innovation and development as a potential in all processes.

Width**.** Learning in the width dimension underlined the importance of understanding innovation as a phenomenon that is independent of specific positions and functions in a formal organizational structure. It was an important insight for the participants that innovation was not automatically function dependent, for instance only the responsibility of the R&D unit. From the LLs, it became apparent that innovation is an integrated part in all types of work. From employees on the floor to top management, across business functions as for example marketing, production, and sales. Knowledge, skills, and competencies across the enterprise's different functions and occupations must be included when dealing with innovation able to create sustainable change in an enterprise's ability to innovate.

Depth**.** The last dimension of the 3D learning dimensions, depth, refers to innovation being dependent on learning processes that are connected to practice and experiences as they are realized in everyday work. A vast number of different types of knowledge, explicit and tacit, and competencies are deployed by employees to solve tasks – to find new and more efficient methods and procedures to develop products, processes, and services.

Social bindings

One of the most widespread analytical outcomes from the case studies was an increase in social bindings for the participants in the LLs that connects directly to innovation ability in the capability dimension. Social binding is analytically characterized by the quality and type of relations between participants. Three themes were identified: 1. Knowledge expansion, 2. Stronger relations across, and 3. Role clarity. Each theme reflects an important change in the relations between employees that has made work-related connections easier and smoother.

Knowledge expansion. Data analysis shows, independent of group or enterprise, that during and after the LLs participants had improved their understanding and meaning of knowledge and competencies available amongst the other LL participants. We identified a reinforcing of collective understandings and knowledge across functions and occupations throughout the performed LLs that was very distinctive.

Stronger relations across. Another theme emerging from the case studies was that the LLs positively influenced the relationships among the participants in the LLs. This theme covers social norms and values. We observed an increase in the quality of participants' trust and joint responsibility, that is social relationships, that made it possible to open the space for sharing new ideas that the participants or teams normally would evade and sometimes resulting in keeping knowledge or important feedback for themselves.

Role clarity embody the third theme analytically identified as a structural type of social binding. Role clarity refers to how employees in different functions and levels represented in the case study can connect with each other. Connections from role clarity in the third theme is about how work is organized and who is responsible for what. This theme links to a recurrent type of changed behavior identified in the data that shows that it became clearer for the participants to know who were relevant to connect with and how to connect with them as regards specific tasks and job challenges.

Slack

Another substantial outcome from the analysis of case study data was the representation of what is termed 'slack'. Usually, in economic studies slack is a concept used to define the volume of resources that are not used in production, for instance machines not in use or people away from key production. We use slack as an analytical concept characterizing that the LLs shaped a room for critical inquiry and reflection that represented an improved potential and level of innovation in the Swedish and Danish enterprises. The participants generally did not experience that there was any slack in their daily work life, thus task solutions and challenges were met with already well-known routines and practices. Three themes emerged analytically: 1. Breaking the routine, 2. Time to reflect, and 3. Critical probing.

Breaking the routine. Generally, across the interviews in both enterprises it was underlined that the LLs represented a central break from what they termed routine work. For the participants, everyday work life quickly ended up being characterized by using already well-known procedures and incremental adjustments, which were aimed at being effective with a minimum of resources. The LLs' breaks of routine challenged the dominating practice and made it possible to find new ways, for example, to solve tasks, create products, or construct new business models underscoring the first steps of sustaining explorative processes.

Time to reflect. The time to reflect refers to the value of careful consideration, listening to and be listened to, provided by the LLs. The LLs participants experienced the development of a more fixed and systematized way of organizing thoughts, new insights, and experiences. Reflection time are connected to breaking the routine as breaks and stops of existing practices need to be followed up by giving space and time for reflection processes to find new modes of actions. It is emphasized that reflection time was very valuable for working with changes by the LLs if the ability to innovate was to become more than injections of additional financial resources into R&D functions or new strategies but also to expand the possibilities of innovation by the Swedish and Danish enterprises as tied to the dimension of capabilities more generally.

Critical probing. The last theme identified in the slack dimension describes the type of exploration processes in the LLs as critical and curiosity driven. The participants experienced the development of how they interacted throughout the LLs as an open space where it was acceptable to ask each other difficult – critical - questions as a spark for creating new approaches and understandings.

Organizational context

In the analysis of qualitative data, three structural and cultural traits were identified as recurrent and descriptive of the organizational context for the learning processes initiated and continued in the LLs. The three traits should be taken into consideration as an explanatory frame and background for innovation ability development. Across groups and organizations, we observed that a low power distance characterized organizational structure in the Swedish and Danish enterprises. High levels of trust shaped the organizational conditions for developing the ability to innovate change observed. For instance, enterprise engagement with the BIC Nordic learning model can challenge existing preunderstandings of innovation, learning, and development. Regardless of whether the participants were managers or employees they openly shared experiences and understandings within their LL

group. And finally, a third trait that emerged from the analysis was that both enterprises and their employees had a low preference for avoiding uncertainty that is characterized by a high-risk orientation and behavior.

5.2.2/ Modelling innovation ability development

In Section 5.2.1, the changes from the implementation of LL in one Swedish and one Danish enterprise have been analytically outlined. Before the LL implementation, deficiencies in structural innovation support, i.e., innovation capacity, were reflected in the employees' perceptions of challenges in innovation capabilities, i.e., adequate resources and time for innovation activities as well as lack of collaboration, creation, and implementation of new ideas, and learning with internal and external partners.

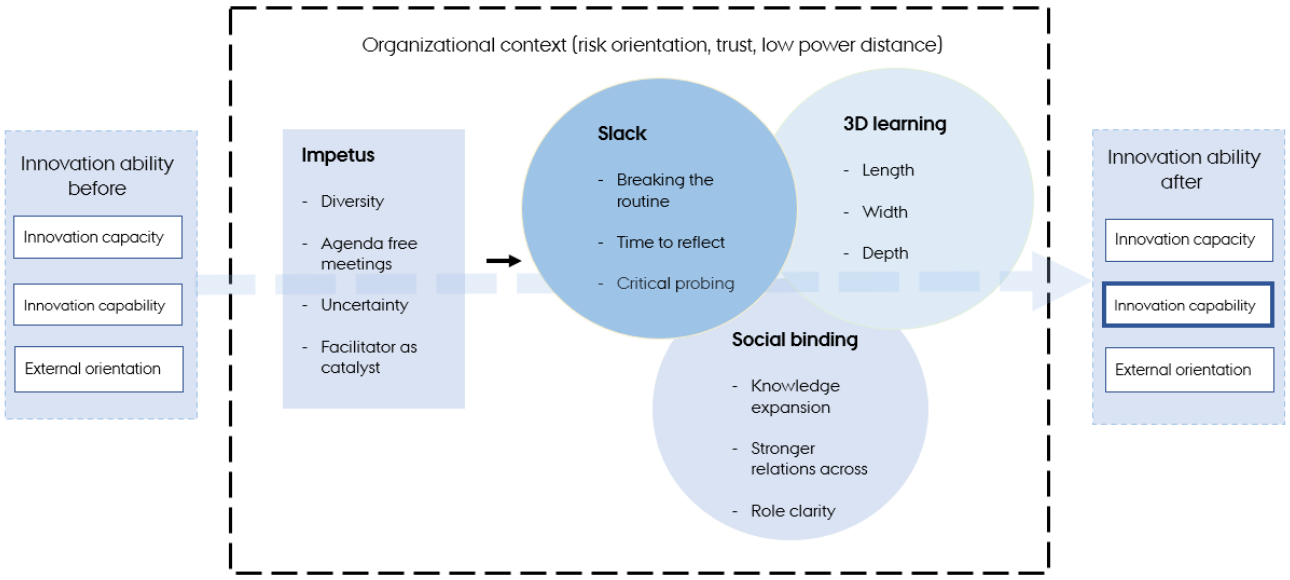
A Nordic-inspired learning model, designed and deployed as LLs, characterizes a learning process in the two organizations by high-involvement and participant and experience-founded activities. After the application of LLs, we have observed by survey and a case study an improvement of the Swedish and Danish enterprises' ability to innovate from: 1. New ways of framing and realizing learning in the organization as 3D learning, 2. Bolster the social bindings and knowledge ties in the LL groups, and 3. Using reflection to build new knowledge and sustain explorative learning and innovation as slack. The three aggregated dimensions emerging from the case data analysis highlight a change in the conditions that connects to and explains an organization's ability to innovate as shown in BIC's constructed conceptual model.

Particularly, the innovation capability dimensions variables of internal cross-functional collaboration, idea generation and implementation, and learning have been influenced positively. Capabilities refers to the available and used human competencies and knowledge in the organization. Learning, stronger social bindings across functions, and reflection time for new explorations all reflect impactful continuous improvement of the ability to innovate. We also observe that providing time for innovation activities by the LLs is basically to be viewed as a capacity change as invested time is a resource owned by an organization.

While resources of giving time to apply LLs refers to the capacity dimension, which can be managed and simply controlled by the organization, it is a much more challenging organizational task to change and improve the capability dimension to improve organizations' innovation ability. The Nordic learning model designed and deployed as LLs have shown to hold promise as a change model for improving an organization's ability to innovate with a special outlook on the capability dimension. It should be highlighted, based on data from the survey and case study, that the external orientation was not influenced in any significant measurable way by the LLs that were focused on building stronger internal relations and intra-organizational learning.

In Figure 2, we present an aggregated model that explains how innovation ability is built and developed from the implemented LLs by the BIC project development part. The model is explained and corroborated in Section 5.1.1.

Figure 2. Model for developing innovation ability from LLs.



The model in Figure 2 illustrates what characterizes the impetus via the developed and tested LLs and what changes were realized in the Swedish and Danish enterprises for the participating groups. The impetus, the Nordic learning model in the shape of an LL, was determined by four common themes: diversity, agenda free space, uncertainty, and the facilitator as a catalyst. The four recurrent themes portray how LLs were experienced and realized in all four groups as a starting point and fundamental principles for how to design and implement LLs in other business contexts. The changes, 3D learning, social binding, and slack signify themes of importance for the continuous improvement of innovation ability in future research and development projects that focus on especially the capability dimension.

In this way, the BIC project has added a new dimension to the construct of innovation ability. Not only from the conceptual work and survey tool. But also from the deeper inquiry into the value of including human and collective knowledge, experiences, and competencies for how innovation management researchers and practitioner are to explain and manage organizations' abilities to innovate. Levels of availability, use, sharing, and development of the LL participants knowledge and competencies have been improved through the LLs as shown in the case study. Essentially, the LLs have increased the quality and number of combinations and use of existing knowledge, experiences, and competencies in the Swedish and Danish enterprises. Thus, from the active participation in the BIC project the Swedish and Danish enterprises have been able to create a continuous improvement of capacity and specifically capabilities that have positively influenced the possibility of mobilizing and transforming knowledge and ideas into renewals of different types.

From the case study interviews in both companies, it was indicated that the LLs would survive and see future use in both organizations. Yet, the continuation of the LL, it was stated, would see deviations and modifications to form and content in their specific adoption. In the Swedish enterprise, it was highlighted that the LL principles would be integrated as a learning model and method in future

leadership development programs on a more wide-ranging scale. In the Danish enterprise, the LL would continue with less frequency in smaller designated groups organized and facilitated by employees to sustain engagement and responsibility around innovation. The facilitator role was planned to change between each LL. Another feature in the Danish enterprise was that two types of LLs would be organized following the format from the BIC project. The LLs would alternate between smaller and larger group LLs to meet one of the weaknesses in the design, the transfer and sharing of the LL outcomes on a larger scale in the enterprise. This weakness in design was also underlined by the Swedish enterprise interviewees as a hindrance for expansion of the LL as a method for improvement of their ability to innovate on a larger scale.

6.0 Conclusion and Future Research

This final report accounts for the framework and key outcomes from the VINNOVA funded research and development project, Building Innovation Capacity (BIC). The overall account from the BIC project is that enterprises' potential for innovation and bolstering of their competitiveness are dependent on existing and available knowledge and competencies retained by employees regardless of level and function. How available knowledge and competencies can be put into use by employees are vital for the creation of new ideas and finding new solutions. Existing knowledge shows that strategic management of human and material resources for innovation or investment and importing expertise and knowledge are important features for organizations' ability to innovate. Yet, the principal narrative is that organizations need to work with more wide-ranging understandings of innovation management including the capability dimension to create stronger and more sustainable innovation processes and outcomes. Specifically, the purpose of the BIC project was to explore two features of innovation capacity: 1. How is innovation capacity explained and measured; 2. How can innovation capacity be developed.

The first exploration asked, 'what characterize main determinants of innovation capacity?'. From a content analysis, a conceptual model was constructed with an elaborate explanation of what determines an organization's innovation ability - not capacity - that used three measures and definitions: capacity, capabilities, and external orientation dimensions. We have shown that the innovation ability is constituted on how capacities, capabilities, and external orientation are developed and employed to mobilize, transform, and use knowledge and ideas to create and sustain enterprises' competitive advantage, and innovative performance. The principal line of argument is that for a broad understanding of innovation, we need a corresponding wide-ranging explanation of innovation ability that, besides recognized managerial structures and resources or external orientation, includes how available knowledge and competencies are used in the organization to fully understand abilities to innovate in organizations. The capability dimension is a novel add-on to existing models and measures of innovation ability.

For the second exploration, we studied how a Nordic learning model influences the development of organizations' ability for innovation. First, researchers, developers, and industry partners in the BIC collaborated in the further design of the form and content of a Nordic inspired learning model. This model was labelled 'Learning Labs' characterized by open experimentation and recognizing of participant experiences and practices as valuable for organizations working with innovation processes and creating novel solutions. Second, from the inductive analysis of collected case data, we observed concrete changes in the participating enterprises' sample groups from testing of the LLs on an individual and collective level. The changes primarily connect to a development in the capability dimension from actualizing a multifaceted learning mode, change in social relations quality and time to reflect as slack. Changes that overall expanded the possible number and quality of connections between employees and the use of available knowledge, experience, and competencies to develop, share, and apply new ideas and solutions.

The two explorations have supported our earlier explicated expectation that managers and employees would overall improve their innovation competencies from participating in the LLs. Further, we supported our expectation that the LLs would improve the collective ability to innovate by bolstering and expanding the quality and number of combinations of available and used knowledge and competencies. In contrast, the LLs appeared to have less influence on the capacity and external orientation dimensions that most likely require different types of learning models and methods to see improvement. Still, for the Swedish and Danish enterprises, to join a very experimental and highly collaborative research and development project, devoting resources to have employees participate in 8-10 LLs of approx. 3 hours length each, reflects a significant capacity for innovation that must be included in the full account of our research study of organizations' ability to innovate.

It must be noted that the Covid-19 pandemic greatly affected the whole situation including the LLs, i.e., in several instances they had to be performed remotely as virtual video meetings. Thus, effects on innovation ability caused by LL and/or by the pandemic are sometimes hard to disentangle also for the participating managers and employee groups. Thus, the findings and conclusions from the project need to be interpreted with caution and keeping the pandemic situation in mind.

From the conducted research and development activities in the BIC project, three imperative future research areas in innovation management studies were identified. First, as regards the feature of sustainability the BIC project showed that we need more knowledge on whether the improved ability to innovate remains at the improved level or whether the enhanced capability regresses to previous levels or continue to improve. One of the initial expectations in the BIC project was to study the outcomes of the LLs in a sustainability perspective. It was expected that the tested LLs would be beneficial for long term improvement of the enterprise's innovation ability.

However, due to the Covid-19 pandemic many of the project activities were delayed and the data collection saw a parallel postponement. We need more longitudinal research on what happens after intended development activities (LLs) end and in what ways the changes as regards innovation ability are integrated into the organization's routines and practices. Related to the feature of sustainability, we are uncertain how, in the aftermath of intended learning and competence development, innovation ability performs in the different LL groups. For instance, does function or organizational level influence whether acquired competencies stay or perish after the LLs? In addition, for future studies in BIC a stronger connection to innovation performance measures would benefit the research showing the direct quantifiable value of the LLs in an enterprise context. However, in a future study the innovation performance measure needs to also include the sustainability perspective measuring innovation performance from its social, environmental, and economical output.

Second, how can the designed and tested LLs be advanced to have more organizational wide impact is still a lingering question that – together with most intended organizational development projects – needs further work. This second future area of research also has significant industry relevance as, for instance, both participating enterprises underlined the high value of the BIC project. Still, in the last part of the BIC project, researchers, developers, and industry partners discussed potentials of how to share and transfer the form and content of the LLs so it could have value and impact on a larger scale.

Third, a future promising area of interest would be to further develop our knowledge of the form, content, and effects from employing a Nordic learning model, the LLs, to improve innovation management in other country contexts than in Sweden or Denmark and in different industry contexts as well.

7.0 References

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Dissemination and Expected Publications

Dissemination to enterprises, industry agents, and the public in Sweden and the Nordic countries
9th Nordic Conference on Adult Education and Learning, Tønsberg (NOR), May 18-20, 2022. Two BIC symposia's presenting and discussing Learning Labs as a Nordic learning model for improved competence development. Participants: researchers, developers, and industry partners from the BIC project as well as conference participants.
Network meeting with Aarhus University industry network, Copenhagen, October 24, 2022. Theme: A Nordic approach to improvement of innovation ability. Participants: Researchers, enterprises, and students.
General dissemination articles on the Nordic Network for Adult Learning platform, DialogWeb: Leder i Husqvarna: Man kan ikke gøre, som man plejer>Content>NVL - Nordiskt nätverk för vuxnas lärande NVL- Learning Labs – en bæredygtig nordisk model for innovationskompetence>Content>NVL - Nordiskt nätverk för vuxnas lärande
Three webinars in the Nordic Network for Adult Learning series: 'Læring og udvikling på arbejdspladsen gennem leder- og medarbejderinvolvering: en nordisk model for fleksibel, praksisnær og erfaringsbaseret kompetenceudvikling'. 40-70 listed participants from institutions and the private sector for each webinar from Sweden, Denmark, Norway, Finland, and Iceland. Samskabende læring - en nordisk tilgang? Webinar 1, d. 26/10, 2022. https://youtu.be/whJH-k94llo Learning labs som metode til udvikling af innovationsevnen. Webinar 2, d. 7/11, 2022. https://youtu.be/M061eJ_KBeI Læringscirkler – en generisk model for kompetenceudvikling af ansatte i voksenlæring? Webinar 3, d. 5/12, 2022. https://youtu.be/jWr1f7nMmeE
Nordic Network for Adult Learning expert seminar, Hanasaari (FIN), December 6-7, 2022. Co-created Learning in Learning Circles and Learning Labs: A model for learning in working life and civil society. Participants: Researchers and consultants.
An article to *Erhvervspsykologi*. Title 'En nordisk tilgang til organisationsudvikling – refleksioner og indsigter fra et casestudie'. Authors: Inga Beckmann, Ulrik Brandi, Stine Lajer & Maria Marquard.
Spridningskonferrans in collaboration with Lindholmens Sciencepark. Expected date: January or March 2023. Organizers: Maria Jönssön (Swedish enterprise) and Maria Marquard (NVL/AU).
An article to *Management of Innovation & Technology*. Working title 'Building innovation ability' Authors: Lars Bengtsson, Ulrik Brandi, Åsa L. Dahlstrand & Jessica Wadin.

Research dissemination (expected publications)
Bengtsson, L, Brandi, U, Dahlstrand, Å. L. & Wadin, J. (second review). Conceptualizing organizational learning by game theory – results from a Swedish case study. *The Learning Organization.*
Bengtsson, L, Brandi, U, Dahlstrand, Å. L. & Wadin, J. (expected publication). Conceptualizing and developing innovation ability from Learning Labs. *International Journal of Innovation Management*
Bengtsson, L, Brandi, U, Dahlstrand, Å. L. & Wadin, J. (expected publication). Social capital and innovation ability. *European Journal of Innovation Management*
Bengtsson, L, Brandi, U, Dahlstrand, Å. L. & Wadin, J. (expected publication). Organizational learning in three dimensions. *Management Learning.*
Bengtsson, L, Brandi, U, Dahlstrand, Å. L. & Wadin, J. (expected publication). Slack as a factor in building innovation capabilities.

Participating Parties and Contact Persons

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Maria Jönssön, Learning and Development Manager, Husqvarna Group.

Flemming Paasch, CEO, Easyfood.

Appendix

6.1/ Appendix 1: Review documentation

Data collection documentation overview (not the whole review protocol) and results from literature searches in the scopus.com database. Based on abstract reading, 14 articles have been selected as relevant for explaining the constructs of innovation capacity and capability including an outlook to measurement tools. From the 14 selected studies, six were decided to be relevant for the general construction of the conceptual framework and dimensions while elements from the last eight were used to improve parts of the BIC conceptual framework and survey. Selection criteria for the abstract reading and selection:

Level of analysis. Only include texts that address organisational and/or team/individual level.

Scope. Addressing the two constructs, capacity, and capability, in a precise way.

Relevance. Robust connection to innovation and learning studies is considered strong/weak.

Quality. Quality of the article is high, i.e. connection to previous studies, definition transparent, methodology explained, findings coherent and valid.

Search words	*Scope*	*Date of search*	*Date range*	*Entries no. 1 (Eng and articles and reviews)*	*Entries no. 2 (Social science AND Business Management and Accounting)*	*Entries no. 3 (selected journals)*	*Relevant from abstract reading*	*Include*
"innovati* capacity"	Title, keywordsand abstract	25 03 2020	2000-	1215	889	185	13	8
"innovati* capacity" AND measure*	Title, keyword and abstract	25 03 2020	2000-	159	114	37	19	4
"innovation capability*" OR "innovatio	Title, keywords and abstract	26 03 2020	2000-	1733	1378	229	8	2

n climate" OR "innovation value chain"								
Total								14

6.2/ Appendix 2: Survey instrument

INNOVATION ABILITY - QUESTIONNARIE

Thank you for participating in this research and development project called "Building Innovation Capacity" (BIC), financed and supported by the Swedish Innovation Agency. BIC is a collaboration-oriented project, where the Swedish enterprise collaborates with Lund University and PLU partners in Sweden, and Aarhus University, Nordic Networks for Adult Learning (NVL), IBA Kolding and the Danish enterprise.

This questionnaire comprises two parts. In the first part, we ask you to answer some questions related to how you perceive your individual opportunities for innovation in your daily work. This part is called innovation capabilities. In the second part, we ask you to answer some questions, focused on how you perceive organisational opportunities for innovation in your daily work. This part is called organizational innovation capacity. The survey is based on a integrated model of research in the area, that mirrors how we should understand the individual's ability to innovate in her or his job.

We use different types of response scales in this survey, and we briefly explain with an example before each questionnaire how to answer.

Thank you in advance and best regards,

The research team behind BIC (Lund University and Aarhus University)

If you have any questions, please contact on of the researchers at either Lund University or Aarhus University:

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Ulrik Brandi, brandi@edu.au.dk

BACKGROUND

What organizational unit/department are you employed in? Please, give only one answer.

Click or tap here to enter text.

What is your age? Click or tap here to enter text.

What is your gender?

What is your gender? Choose an item. What is your gender?

In which year did you started working for your current employer?

Please specify year: Click or tap here to enter text.

How many years of work experience do you have in total? (not including education, sick leave, unemployment, maternity leave, etc)?

Please specify years: Click or tap here to enter text.

What is your current occupation/profession? Click or tap here to enter text.

What is the highest degree or level of education you have completed?

Level of education Choose an item. Level of education

The company's innovation strategy is well-known to me?

Company's innovation strategy is well k Choose an item. Company's innovation strategy is well k

My unit's or department's role in the innovation strategy is well-known to me?

My unit's role in the nnovation strateg Choose an item.

INFORMATION ON HOW TO RESPOND TO THE FIRST PART OF THIS SURVEY:

innovation capability

1. We often use the term "ideas" or "new ideas" throughout. Ideas/new ideas can, for example, be a new work method, new product, new process or service, new practice, new technology.

2. In the BIC project, we employ a broad definition of innovation capability and capacity: "*the ability to continuously improve the organizations overall capacity, capabilities and external relations to develop and apply knowledge and ideas into new products, processes, services and systems*".

3. In this part of the BIC survey, we present some statements to you. Please answer, how important you think the statements are to you, and how often you experience it happens to you in your professional work life. Thus, for the response tables, please provide two answers, noting one answer in the "importance" category and one answer in the "frequency" category (how often it happens to you).

Example:

For each category 1. importance and 2. frequency, please choose one answer from the drop-down list.

	1. Importance	2. Frequency
I search for new ways of looking at problems.	Importance (Choose an item.)	Frequency (Choose an item.)

IDEA GENERATION

For each category 1. importance and 2. frequency, please choose one answer from the drop-down list		
	1. Importance.	2. Frequency.
I search for new ways of looking at problems.	Importance (Choose an item.)	Frequency (Choose an item.)
I can quickly change procedures to meet new conditions and solve new problems as they arise.	Importance (Choose an item.)	Frequency (Choose an item.)
I come up with new ideas in my work	Importance (Choose an item.)	Frequency (Choose an item.)
I help colleagues continuously in developing new ideas	Importance (Choose an item.)	Frequency (Choose an item.)
I exchange and share ideas with colleagues in the other departments in my firm.	Importance (Choose an item.)	Frequency (Choose an item.)

For each category 1. importance and 2. frequency, please choose one answer from the drop-down list.		
	1. Importance.	2. Frequency.
I explore knowledge and experiences developed from inside the organization in my idea generation at work.	Importance (Choose an item.)	Frequency (Choose an item.)
I think that assistance in developing new ideas is readily available.	Importance (Choose an item.)	Frequency (Choose an item.)
I have time and resources to keep updated on latest development within the market and my field of work.	Importance (Choose an item.)	Frequency (Choose an item.)

For each category 1. importance and 2. frequency, please choose one answer from the drop-down list.		
	1. Importance.	2. Frequency.
I use customer input (example: knowledge and experiences) to create new ideas in my work.	Importance (Choose an item.)	Frequency (Choose an item.)
I collaborate with external partners (example: sub-contractors, universities, consultants) to develop and acquire new ideas.	Importance (Choose an item.)	Frequency (Choose an item.)

DEVELOPMENT AND CONVERSION

For each category 1. importance and 2. frequency, please choose one answer from the drop-down list.		
	1. Importance.	2. Frequency
When I have a new idea, I try to share it with my colleagues.	Importance (Choose an item.)	Frequency (Choose an item.)
When I have a new idea, I try to get support for it from management.	Importance (Choose an item.)	Frequency (Choose an item.)
I try to show my colleagues positive sides of new ideas.	Importance (Choose an item.)	Frequency (Choose an item.)
When I have a new idea, I try to involve people who can collaborate on it.	Importance (Choose an item.)	Frequency (Choose an item.)

For each category 1. importance and 2. frequency, please choose one answer from the drop-down list.

	1. Importance.	2. Frequency
I invest resources and time in the development of new ideas	Importance (Choose an item.)	Frequency (Choose an item.)
I have a risk-tolerant attitude toward investing my resources and time in developing new ideas	Importance (Choose an item.)	Frequency (Choose an item.)
I take the necessary time to review organizational objectives in my work.	Importance (Choose an item.)	Frequency (Choose an item.)
I have a systematic way to follow-up on the selected idea generated.	Importance (Choose an item.)	Frequency (Choose an item.)

For each category 1. importance and 2. frequency, please choose one answer from the drop-down list.

	1. Importance.	2. Frequency
I openly discuss the methods used by this department to get the job done with colleagues and management.	Importance (Choose an item.)	Frequency (Choose an item.)
I participate in discussions as to whether people in my department are working effectively together.	Importance (Choose an item.)	Frequency (Choose an item.)
I modify objectives and work processes considering changing circumstances.	Importance (Choose an item.)	Frequency (Choose an item.)

IMPLEMENTATION AND DIFFUSION

For each category 1. importance and 2. frequency, please choose one answer from the drop-down list

	1. Importance.		2. Frequency
I develop suitable plans and schedules for the implementation of new ideas	Importance (Choose an item.)		Frequency (Choose an item.)
I look for and secure funds needed for the implementation of new ideas	Importance (Choose an item.)		Frequency (Choose an item.)
For the implementation of new ideas in practice, I search for new technologies, processes, or procedures	Importance (Choose an item.)		Frequency (Choose an item.)
When problems occur during implementation, I get them into the hands of those who can solve them.	Importance (Choose an item.)		Frequency (Choose an item.)

For each category 1. importance and 2. frequency, please choose one answer from the drop-down list.

	1. Importance.		2. Frequency
When I have a new idea, I look for people who can push it through.	Importance (Choose an item.)		Frequency (Choose an item.)
I share and disseminate knowledge and experiences (examples: new work methods, product development, processes, business models) with external partners and institutions.	Importance (Choose an item.)		Frequency (Choose an item.)
I share and disseminate knowledge and experiences (examples: new work methods, product development, processes, business models) internally in my organization.	Importance (Choose an item.)		Frequency (Choose an item.)

For each category 1. importance and 2. frequency, please choose one answer from the drop-down list.

	1. Importance.		2. Frequency
I can persistently overcome obstacles when implementing an idea.	Importance (Choose an item.)		Frequency (Choose an item.)
I do not give up even when others say it cannot be done.	Importance (Choose an item.)		Frequency (Choose an item.)
During idea implementation, I can persist even when work is not going well at the moment.	Importance (Choose an item.)		Frequency (Choose an item.)

I easily develop new ideas but struggle with realizing the ideas into concrete action.

Please choose one answer from the drop-down list.

Choose one item Choose an item. Choose one item

In the last year (2020), I realized and use more new ideas than in previous years.

Please choose one answer from the drop-down list.

Choose one item Choose an item.

INFORMATION ON HOW TO RESPOND TO THE SECOND PART OF THIS SURVEY:

organizational innovation capacity

1. We often use the term "ideas" or "new ideas" throughout. Ideas/new ideas can, for example, be a new work method, new product, new process or service, new practice, new technology.

2. In the following, we present some statements. Please respond to what degree you agree with the statements.

Example:

For each statement in the table below, please provide one answer from the drop down list.

	Agreement
My firm recognize the importance of innovations in competitiveness	Choose one item Choose an item. Choose one item

STRATEGY

For each statement in the table below, please provide one answer from the drop-down list.

	Agreement
My firm recognize the importance of innovations in competitiveness.	Choose one item Choose an item. Choose one item
My firm shares innovation strategies with employees, and employees are aware of targets.	Choose one item Choose an item. Choose one item
In my firm, we understand and recognize that for the organization to remain competitive, distinctive competence(s) are necessary.	Choose one item Choose an item. Choose one item

STRATEGY

For each statement in the table below, please provide one answer from the drop-down list.

	Agreement
My firm anticipates threats and opportunities (through forecasting techniques).	Choose one item Choose an item. Choose one item

	Agreement
My management perceive innovation to be a determinant factor in future firm development.	Choose one item Choose an item. Choose one item
My firm's management demonstrates commitment to supporting innovation.	Choose one item Choose an item. Choose one item
My firm uses methods to analyze new technological and market developments, that help assess their impact on organizational strategy.	Choose one item Choose an item. Choose one item

I experience a connection between innovation projects and our business strategies.

Please, choose one item from the drop-down list below.

Choose one item Choose an item. Choose one item

PROCESS

For each statement in the table below, please provide one answer from the drop-down list.

	Agreement
My firm uses methods and practices that help design, develop, and launch new products.	Choose one item Choose an item. Choose one item
My manager motivates me to come to him/her with new ideas.	Choose one item Choose an item. Choose one item
My management is tolerant of mistakes and errors during the implementation of something new.	Choose one item Choose an item. Choose one item
My firm normally implement innovation projects within deadlines and budgets.	Choose one item Choose an item. Choose one item

	Agreement
My firm uses methods and tools to ensure that I fully understand all consumer needs (not just marketing)	Choose one item Choose an item. Choose one item
My firm implements clear management practices to tailor procedures and achieve success.	Choose one item Choose an item. Choose one item
My firm systematically researches ideas for new products and processes.	Choose one item Choose an item. Choose one item

	Agreement
My management supports me in implementing good ideas as soon as possible.	Choose one item Choose an item. Choose one item

	Agreement
My firm uses management tools and practices that ensures that all departments are the involved in the development of new products and processes.	Choose one item Choose an item. Choose one item
My firm uses a clear systematics in selection of innovation projects.	Choose one item Choose an item. Choose one item
The firm's management and production systems are flexible and encourages rapid implementation of small-scale innovation projects.	Choose one item Choose an item. Choose one item

ORGANIZATION

For each statement in the table below, please provide one answer from the drop-down list

	Agreement
My firm's organization structure promotes innovation.	Choose one item Choose an item. Choose one item
In my firm, employees work well together and across departmental borders.	Choose one item Choose an item. Choose one item
In my firm, employees suggest ideas for better products and	Choose one item Choose an item. Choose one item

ORGANIZATION

For each statement in the table below, please provide one answer from the drop-down list

	Agreement
processes to the management without meeting resistance.	
The structure of my firm make it possible to make quick decisions.	Choose one item Choose an item. Choose one item

	Agreement
In my firm, communication between hierarchical levels is functional and effective.	Choose one item Choose an item. Choose one item
My firm has a support and reward system for innovation initiatives.	Choose one item Choose an item. Choose one item
My firm has set aside sufficient resources to support the implementation and realization of new ideas.	Choose one item Choose an item.
My firm fosters creativity and new ideas and encourages employees to submit proposals pro-actively.	Choose one item Choose an item. Choose one item

	Agreement
My firm provides employees time for putting ideas and innovations into practice.	Choose one item Choose an item. Choose one item

	Agreement
In my firm, we work as a team (or in teams).	Choose one item Choose an item. Choose one item

LEARNING

For each statement in the table below, please provide one answer from the drop-down list

	Agreement
My firm displays a high level of commitment to employee training.	Choose one item Choose an item. Choose one item
My firm reviews employees' development projects to improve them and achieve better results.	Choose one item Choose an item. Choose one item
My firm works with universities and other research centers to build our knowledge and experience.	Choose one item Choose an item.
My firm systematically compares products and processes with those of our competitors.	Choose one item Choose an item. Choose one item

	Agreement
My firm shares experiences with other firms, thereby gaining a better understanding of my company's business areas.	Choose one item Choose an item. Choose one item

	Agreement
My firm registers and records its developments to benefit its employees.	Choose one item Choose an item. Choose one item
My firm learns from other firms.	Choose one item Choose an item.
My firm seeks knowledge on how and when the firm can improve our innovation results	Choose one item Choose an item. Choose one item

NETWORK

For each statement in the table below, please provide one answer from the drop-down list

	Agreement
My department uses ideas (examples: new work methods, product development, processes, business model) that come from outside our organization.	Choose one item Choose an item. Choose one item
My firm maintains good relationships (win–win) with suppliers.	Choose one item Choose an item. Choose one item
My firm reports a thorough understanding of consumers' needs.	Choose one item Choose an item.
My firm analyzes and learn from its failures, to improve our activities and processes.	Choose one item Choose an item. Choose one item

	Agreement
My firm works closely with consumers to develop new concepts.	Choose one item Choose an item. Choose one item
My firm collaborates closely with other firms to develop new products and processes.	Choose one item Choose an item. Choose one item
My firm is constantly trying to develop networks with external people and institutions that can help the firm (e.g., with specialists in specific areas).	Choose one item Choose an item.
My firm shares its competence needs with relevant actors in the education sector.	Choose one item Choose an item. Choose one item
The firm works closely with end users to develop new products and services.	Choose one item Choose an item. Choose one item

My overall assessment of my firm's ability to innovate

Please, choose one item from the drop-down list below.

Choose one item Choose an item. Choose one item

THANK YOU FOR YOUR TIME AND PARTICIPATION!

6.3/ Appendix 3: Interview guide and consent form

1. Introduction (interviewer)

Thank you for participating in this research and development project called "Building Innovation Capacity" (BIC), financed and supported by the Swedish Innovation Agency, VINNOVA. BIC is a collaborative project, where `The Swedish enterprise' collaborates with Lund University and PLU partners in Sweden, and Aarhus University, Nordic Networks for Adult Learning (NVL), IBA Kolding and the Danish enterprise in Denmark.

In the BIC project, we employ a broad definition of innovation ability: "*the ability to continuously improve and use the organizations overall capacity, capabilities and external relations to develop and apply knowledge and ideas into new products, processes, services and systems*". This qualitative interview aims at exploring your experiences and meanings from participating in the Learning Labs throughout 2021 to better understand how organizations can improve their ability to innovate.

Thus, we explore how you perceive the Learning Labs have influenced you and your organizations opportunities for innovation – developing new ideas (see section 2 for an explanation) – in daily work. We are especially keen on inquiring into how you have experienced changes and innovation in your work and your organization from partaking in the Learning Labs. This interview is structured around three main topics.

- The *first* topic is about how you have experienced your participation in the **Learning Labs** covering the process and learning outcome.
- The *second* topic cover **changes and innovation** that occurred from the Learning Labs – what concretely changed during the Learning Labs and how **sustainable** do you perceive the changes to be.
- The *third* topic inquire deeper into your reflections on the **meaning of the Nordic aspect** for the development of your company's ability to innovate. We inquire into strengths and weaknesses of the Learning Lab and ask for your reflections on what the Nordic means for innovation and learning in organizations.

Before we start the interview, we kindly ask you to read and sign a consent form [interviewer explain the content of the consent form, anonymity and that the interview will be recorded].

Please, if you have any further questions before we start or during the interview do not hesitate to ask the interviewer. If you have any questions after the interview, please contact the researcher in your country. (see info in the consent form)

Thank you! *The BIC research team* (Lund University and Aarhus University)

2. Background info (for DK interviews conducted in Danish, English for the SWE interviews**)**

Hvilken Learning Lab gruppe har du deltaget i?

Hvilken organisatorisk enhed/afdeling er du ansat i?
Hvad er din nuværende jobtitel?
Hvilket år startede du med at arbejde for din nuværende arbejdsgiver? Angiv venligst årstal:
Hvad er din alder?
Hvad er dit køn? ☐Kvinde ☐Mand ☐Andet:
Hvad er titlen på din længst varende uddannelse (fx bager, elektriker, ingeniør)?

2. Interview guide

Check list: Introduction given*;* Consent form described and signed*;* Recording explained and started; data documentation sheet completed.

2.1. Learning Lab participants

BIC Interview guide		
Sample: LL1 (managerial level, group 1), LL2 (employee level, group 2)		
Dimension	Sub-dimension	Interview questions
A. Introduction (1)	Warm up	1. Please, tell us about your current position, role and job responsibilities in the company?
B. Learning Labs (2)	Learning Lab descriptions	1. Please, tell us about ***your experiences*** from participating in the Learning Labs? *Support questions*: - how did you experience the concrete meetings and how did the Learning Labs evolve during your participation?
	Learning from LL	2. What are the key "***lessons learned***" from you and your groups participation in the Learning Labs?

		Support questions: - Did anything "not expected" happened in the Learning Labs? - Perhaps, something comes up that correlate to responses from the survey and/or observations (we observed "this" in the enquete – can you say more…) – elaborate here
C. Changes and sustainability (4)	Change and innovations from LL – individual level	1.Tell us about – from your perspective (for you ***personally what do you do differently in your work***) – the most important changes and/or new ideas from participating in the Learning Labs throughout 2021 until now? *Support:* *Exemplify* the changes please and reflect on "what made this possible?"
	Changes and innovations from LL – team and org level	2. Thinking about your participation in the Learning Labs, did any changes/innovations influenced your company on a larger scale (for example, concrete new routines, products, services) e.g. ***in your team/between teams/whole organization that you do differently than before BIC (BIC influence)***? If *yes*, elaborate why and what made this possible If *no*, elaborate why and what impeded this to happen
	Sustainability	3. Tell us about changes – innovations – that you and your organization ***has decided to continue or has planned*** to use/diffuse in your company based on your group's Learning Lab participation? If the answer is "*positive regarding the decision"*, please, describe/exemplify why this is the case and how your

		organization have planned to continue integrating and using the new activities (changes and innovation)? If the answer is "*negative regarding your decision*", please elaborate why this is the case and how your organization is intending/planning to work with change and innovation? *Support question*: On what level will decided and planned changes from the Learning Labs be used/diffused in your company (e.g. team, cross-team, larger organizational level)?
		4. Thinking **ahead/into the future** – and on a more general level - is there anything else that you hope to see being used from the Learning Labs to improve how you and your organization work with change and development? If "*yes*", please elaborate and exemplify your reflections. If "*unsure*", please elaborate and exemplify your reflections. If "*no*", please elaborate and exemplify your reflections. *Support questions*: - Please, specify which elements in the Learning Labs that you foresee will have a positive long-lasting impact on you/your team/organization and why you foresee these elements will have an impact? - Do you see the innovations/results from Learning Lab participation as relevant in you and your groups and organization's ability to meet future changes and challenges?

D. Nordic features (2)	Nordic #1	1. Please, tell us about **strengths and weaknesses** of the Learning Lab model as a tool to develop your (you, your team, organization) organization's ability to innovate as a response to internal and external changes and challenges? *Strengths* – exemplify *Weaknesses* - exemplify
	Nordic #2	2. In this project, we have aimed to work with **Nordic inspired principles** as the foundation for influencing innovation and change processes and outcomes in organizations (realized through the Learning Lab model). In your view, can you elaborate on what the "Nordic" mean to you working in a Nordic founded organization? *Support questions:* - *Positive*, *mixed* as well as *negative* views are all acceptable answers – just curious on your views on the Nordic dimension on innovation and learning - Your work – your team – organization.
E. Open dimension to explore deeper into topics and results from survey and/or observations that are company specific (2)	Mod og mindset	1. I jeres afsluttende workshop blev der talt om et ændret **mindset og modet** til at arbejde med innovationsprocesser – og ikke så meget et snævert produktfokus - som et resultat fra deltagelse i Learning Labs. Kan du fortælle mere konkret om, hvad du forstår ved "mindset og modet til" som en forandring i din virksomhed?
	Ærlig og åben på tværs	2. Et andet emne fra jeres afsluttende workshop satte fokus på, at Learning Labs havde været med til at skabe et rum, hvor man kunne **udfordre hinandens "vaner og rutiner" på en ærlig og åben**

		måde på tværs af forskelle – dvs. både i ens egen gruppe men også på tværs af andre afdelinger og ledelsesniveauer. Er du enig i denne observation? Hvis "*ja*", uddyb og eksemplificer dit svar. Hvis "*nej*", uddyb og eksemplificer dit svar. Hvis "*måske/uklar observation*", må interviewer uddybe sps.
F. Closing (2)		1. What important experiences and insights do you want to pass on to other teams or organizations that are trying to develop their ability to innovate and realize changes in their daily work? Please, use the Learning Lab as your basis for your reflection.
		2. In your view - from participating in the Learning Labs - are there any other experiences and knowledge that you want to highlight are of importance for future work with improving innovation and change initiatives in organizations? Have we missed something essential – something you miss overall – in this interview?
Thank you for your time and answers!		

Building Innovation Capacity project

Case study: Consent form

Consent to the processing of your personal data in a research project at Lund University and Aarhus University and

In connection with your participation in a research project at Lund University and Aarhus University, we require your consent to our processing of your personal data pursuant to the rules of the General Data Protection Regulation.

Read more about the project and our processing of your personal data in the information form.

Title of the research project: Building Innovation Capacity (BIC)/no. 33369

I acknowledge that I have read and understood the content of the information form as the basis for my consent to the processing of my personal data in the project.

I hereby consent to ´Lund University and Aarhus University and registering and processing my personal data in the research project referred to above. Furthermore, I consent to processing taking place in the following ways:

☐I consent to the storing of my personal data in a database for use in the BIC research project during and after the end of the project.

☐I consent to the provision of my personal anonymized data for use in education, projects or theses at Lund University and Aarhus University.

☐I consent to my anonymized data from interviews and survey being included in a publication in a scientific journal or other types of scientific publication, e.g. report, working paper, general dissemination.

Name: _____

[To be completed in capital letters]

Date and signature: _____

Giving your consent is **voluntary** and **you may at any time withdraw your consent to the processing of your personal data** by contacting project manager Ulrik Brandi, brandi@edu.au.dk and mobile 87 16 35 91 or a research er at Lund Universitet represented by Lars Bengtsson lars.bengtsson@design.lth.se, Åsa Lindholm Dahlstrand asa.lindholm_dahlstrand@circle.lu.se and Jessica Wadin jessica.wadin@design.lth.se.

If you withdraw your consent, it will not affect the lawfulness of our work with your personal data in the project before the withdrawal. Your personal data will therefore continue to be included in the work carried out in the project before you withdrew your consent.

Information to participants in research projects at Aarhus University about processing of personal data

The data controllers	**Aarhus University** **Nordre Ringgade 1** **DK-8000 Aarhus C** **CVR no.: 31119103** and **Lund Universitet** **Box 117** **SE-221 00** **Lund, Sweden** **Reg. no.: 202100-3211** are the data controllers responsible for the processing of personal data in the research project. The research project is headed by Ulrik Brandi, brandi@edu.au.dk and mobile 87 16 35 91 or a research er at Lund Universitet represented by Lars Bengtsson lars.bengtsson@design.lth.se, Åsa Lindholm Dahlstrand asa.lindholm_dahlstrand@circle.lu.se and Jessica Wadin jessica.wadin@design.lth.se.
The arrangement between the joint controllers	Aarhus University and Lund University are both responsible for: Data collection and collation, storage, and analysis included dissemination of results.
Data protection officer at Aarhus University	Aarhus University: Søren Broberg Nielsen Data protection officer/DPO dpo@au.dk
Title of the research project	Building Innovation Capacity (BIC)/no. 33369
The purpose of the project and of processing your personal data	Your information will be used to explain and understand your organizations innovation ability defined as a measure comprised of innovation competences and innovations capacity. We use survey data and qualitative interview data to measure your

	company's innovation ability. Your personal information will be anonymized in processing data and published work from BIC.
Which personal data will be processed in the project?	The project will process the following information about you as a participant: ☐Name ☒Age ☒Gender ☒Seniority ☒Job function ☒Seniority ☐Educational level ☒Experienced opportunities for innovation in your job
Use of automated processing (profiling)	Profiling is the automated processing of your personal data. For example processing determined by an algorithm. See below whether processing of your personal data will involve automated processing. ☐Your personal data will be subject to automated processing. ☒ Your personal data will <u>not</u> be subject to automated processing.
For how long do we store your other personal data?	At present, we cannot say for how long we will be processing your personal data. Your personal data will be processed by Aarhus University and Lund University in a non-personally identifiable form for as long as required by the research purpose and the rules on storage according to responsible conduct of research. When we no longer need your personal data for processing, the data will be anonymised, transferred to the Danish National Archives or erased.
Will personal data be made available or disclosed to others, e.g. researchers at other universities?	☒Your personal data collected for the project will only be disclosed to the other joint controller. ☐Your personal data collected for the project will be processed by one or more external data processors pursuant to the rules in Article 28 of the General Data Protection Regulation.

	☐Your personal data collected for the project will be included in a research collaboration with researchers outside Aarhus University and will therefore be shared with data controllers. ☐Your personal data collected for the project will be used in the education of students if you have consented to this.
The personal data has been obtained:	☒From you ☐From you and others* ☐From others*
We are entitled to process your personal data pursuant to the rules of the General Data Protection Regulation and the Danish Data Protection Act. We are obligated to inform you about the rules that apply to our work with your personal data.	☒Article 6(1)(a) entitles Aarhus University to process non-sensitive personal data about you on the basis of your consent. ☐Article 6(1)(a) and Article 9(2)(a) entitle Aarhus University to process sensitive personal data about you on the basis of your consent. ☐Section 11(1) of the Danish Data Protection Act entitles Aarhus University to process your civil registration number for the purpose of unique identification. ☐ Section 8(5) of the Danish Data Protection Act entitles Aarhus University to process data on criminal offences on the basis of your consent.
Participants' rights under the General Data Protection Regulation	You have the following rights if Aarhus University processes your personal data: • Right of access - you have the right to see the personal data concerning you that is processed by the data controller and to receive various information concerning the processing. • Right to rectification - you have the right to have inaccurate/incorrect personal data about you corrected. • Right to erasure or the "right to be forgotten". • Right to restriction of processing. • Right to data portability - in some cases, you have the right to receive your personal data and to request that the personal data be transferred from one data controller to another.

	• Right of objection - you have the right to object to the otherwise lawful processing of your personal data. • Right not to be subject to an automatic decision based solely on automated processing, including profiling. Note that your rights may be limited by other legislation or be subject to exemptions, e.g. in relation to research and the exercising of public authority.
Complaints	If you wish to complain about the processing of your personal data, you can do so by contacting the supervisory authority: **The Danish Data Protection Agency** **Carl Jacobsens Vej 35** **DK-2500 Valby**

6.4/ Appendix 5: Case analysis data structure.

1st order* →	**2nd order** →	**Aggregate dimensions**
ikke vant til at arbejde tæt eller have dialoger eller have cases eller samtaler, opgaver sammen med de andre (DK1_LL5delproces_Bente)	Diversity	**Impetus**
Det hjälpte en ofta att få nya insikter och nya vink... Ofta insikter men alltid en ny vinkel att tänka vidare på åtminstone (SWE_Frederik o Mikael_p. 15)		
et rum hvor man rent faktisk kan sige de ting man, altså der fylder i ens hverdag[...] det agendaløse rum (DK1_LL4proces_Solveig)	Agenda free	
strukturerad, men utan innehåll, om jag upplever det som så. Normalt sett så är vi alltid styrda av att vi har möten och agendan (SWE_Lisa_2)		
det var sådan den var enormt åben, så det var sådan med nysgerrighed, skepsis, hvad er det her for noget (DK1_LL5delproces_Bente)	Uncertainty	
här var det en möjlighet att ja, kanske tänka lite mer fritt och även låta diskussionen vara det lite också (SWE_Hans_2)		
en faciliterande roll, utan ibland är just exakt den där bara katalysatorn, som bara får i gång sakerna (SWE_Frederik o Mikael_6)	Facilitator as catalyst	
Men arbejdet i LL var faktisk mere, at vi selv skulle finde frem til, hvordan vi kunne forbedre vores processer (DK1_LL1delproces_Christina)		
kendte ikke så meget til hinanden alligevel, men det kom vi til i de der learning labs [...] (DK1_LL7delproces_Pia)	Knowledge expansion	**Social binding**
vi lärde känna varandra och fick en bra gemensam förståelse. Det var jättebra Så att där kom in influenser från många olika håll (SWE_Frederik o Mikael_10)		
[...] med de styrkede bånd, der er på tværs af vores proces, der vil vi alt andet lige være blevet hurtigere (DK1_LL4proces_Solveig)	Stronger relations across	
öppna klimat, högt i tak, möjlighet att utmana varandra, möjlighet att lyfta upp idéer utan risk för att bli nedskjuten och så där [...] (SWE_Bosse_3)		
opstod der også sådan en, en tillid og fortrolighed i det rum, altså vi er helt klart kommet tættere på hinanden (DK1_LL2delproces_Sara)		
Jeg ved, hvem der skal gøre hvad, jeg ved hvem der skal udfylde hvilke roller, og hvilke opgaver (DK1_LL5delproces_Bente)	Role clarity	

1st order* →	2nd order →	Aggregate dimensions
ta hjälp av kollegor och så vidare det är en viktig byggsten utöver allt det tekniska kunnandet och lära sig (SWE_Stefan_10)		
får en til at reflektere over så man ikke bare sidder ude på motorvejen og kører ligeud, altså "det er sådan vi altid har gjort" (DK1_LL3delproces_Peter)	Breaking the routine	**Slack**
att det har varit en form av liten … av en paus från ens dagliga tåg, som sägs så komma in och snacka lite och lyssna på andra vad de gör. (SWE_John_3)		
at give tid og rum til refleksion, altså at folk kan få lov og bruge den tid […] uden og stille spørgsmålstegn ved, burde du ikke lavet noget andet (DK1_LL4proces_Solveig)	Time to reflect	
det har varit mycket med reflektionen, och kopplat till de här Learning Labs, så då blev det säkert att man tog sig lite extra tid att reflektera över det projektet. Den här reflektionstiden är väldigt värdefull generellt (SWE_Susanne_6)		
de kritiske spørgsmål, den måde vi arbejder på […] det der skaber innovationen, det er at du er nysgerrig på tingene (DK1_LL3delproces_Peter)	Critical probing	
där man ska vara öppen om våga ställa de här svåraste frågorna och kanske komma med ett påstående in i ett område där man egentligen inte är domänexpert (SWE_Frederik o Mikael_15)		
om någon bara kommer och säger det vi ska göra, kravställ det jag ska göra, så gör jag det, så har vi uppnått innovation. Men nej, men så fungerar det inte. Det är ett samspel (SWE_Susanne_10)	Learning in the width dimension	**3D Learning**
det kan godt være vi er dygtige på innovation, men hvis vi ikke har kvalitet, logistik, produktionen, teknik, hvis vi ikke har alle de andre afdelinger, men at det hele faktisk er jo innovation (DK1_LL5delproces_Bente_32)		
Så att vad har jag för mandat? Just innovationsdelen blir ganska nedtryckt och därmed blir det inget som man pratar om på de högre nivåerna inom bolaget. Och därmed så händer det inte lika mycket, tyvärr. Även att det är viktigt att innovation kommer nedifrån, så måste den också kunna sitta hela vägen upp på något sätt. (SWE_Frederik o Mikael_7)	Learning in the length dimensions	
[…] det kan jo være hvem som helst, der kommer med en rigtig vigtig del, det kan måske spare os masser af penge, produktionsmæssigt eller noget, det er jo ikke innovationen der kommer med alle guldkornene (DK1_LL1delproces_Christina_17)		

1st order* →	2nd order →	Aggregate dimensions
Det er jo helt indgroet, at man har nogle procedurer at arbejde efter, og de kan jo være forskellige fra virksomhed til virksomhed Og her sad vi lige pludselig og alt dette var brudt ned. (DK1_LL6delproces_Jan_37)	Learning in the depth dimension	
idéerna i all ära, men det är många andra pusselbitar som är viktiga för att faktiskt lyckas med … få ut värdet av innovationen i ett bolag. Och det är väl en insikt som förstärktes under våra diskussioner där (SWE_Bosse_9)		
det er at vi skal være modige, og vi skal kunne turde fejle, og det er okay at fejle, vi bliver ikke bonget omme i hoved (DK1_LL3delproces_Peter_19)	Risk orientation	**Organizational context**
För tio år sen gjorde vi absolut inte det […] ett misstag var ett misstag, och det skulle pekas ut och ingen vågade. De senaste åren så har det blivit en helt annan stämning i det, och att man vågar ta en del risker (SWE_Frederik o Mikael_17)		
[…] mod til at sige, hvis der er noget der ikke er okay, og det kan også være mod til at sige, hvis der er noget der er godt. (DK1_LL1delproces_Christina_18)	Trust	
vi har helt klart blevet tættere i afdelingen, også på tværs af funktioner, i forhold til de her møder her. Vi har, er blevet, kan bedre kalde en spade for en spade (DK1_LL2delproces_Sara_7)		
[…] når vi føler os så trygge ved hinanden, så skal vi også kunne gå til chefen og sige, vi ikke er enige. (DK1_LL7delproces_Pia_42)	Low power distance	
så är det ganska prestigelöst ofta från grunden, och det är ganska … man vågar ifrågasätta även högre chefer. Men kanske inte kritisera, utan ifrågasätta på ett positivt sätt och det där (SWE_Frederik o Mikael_14)		

*All names and tags have been anonymized.