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# Work engagement and innovative work behavior

Necessary condition analysis

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**ABSTRACT:**

The rivalry for new products and services has challenged traditional operating methods and increased the pressure for various innovations and the commitment of employees who are excited about their creation. It's no wonder that the needs of the changing working life have touched management practices. Managerial coaching as well as the leader-member exchange has continuously increased their popularity among managers, supervisors, employees, and researchers. Managerial coaching has been perceived as creating a foundation for both work engagement and positive results. Empirical research and evidence on the effects and connections between managerial coaching, leader-member exchange, work engagement, and innovative work behavior have still been rather scarce. The objective of the present research was to investigate these relationships in greater depth.

The study's main goal was to find out whether managerial coaching, leader-member exchange, and work engagement are necessary to enable employee innovative work behavior. The theoretical framework was the job demands and resources (JD-R) model and its positive motivation process, according to which work resources can result in positive results at work through work engagement. A survey was conducted between 2015-2016 during the HERMES research project. Data was collected in cooperation between the University of Vaasa and the Lappeenranta University of Technology. A total of 100 SMEs were contacted, and the final data included 88 SMEs. A necessary condition analysis was used as a statistical analysis method to provide new insights and new kinds of support to existing research.

Theoretical framework and previous research showed that managerial coaching and leader-member exchange are positively connected to work engagement as well as innovative work behavior, and that work engagement acts as a mediating factor. The results of this study confirm that work engagement is necessary for innovative work behavior, but managerial coaching and leader-member exchange were not found to be necessary for work engagement. In contrast to the theoretical framework, managerial coaching, and leader-member exchange were not found as necessary for employees' innovative work behavior or work engagement. However, the limitations of the study should be taken into account when interpreting the results or considering practical applications. Researchers in the future need to focus on finding out other factors necessary for work engagement. The research provides additional understanding and evidence for the influence between work engagement and innovative work behavior and supports the idea that engaged employees can increase innovativeness.

**KEYWORDS:** Innovative work behavior, Innovatiivisuus, IWB, Innovaatio, Innovation, NCA, necessary condition analysis, Managerial coaching, valmentava esimiestyö, LMX, esimies-alaissuhde, Leader-member exchange

**VAASAN YLIOPISTO**
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**TIIVISTELMÄ:**

Organisaatioiden jatkuvasti kiristyvä kilpailu ja pyrkimys parempaan tuottavuuteen luovat painetta uusille innovatiivisille tuotteille ja palveluille. Innovatiivisuutta lisätäkseen on organisaatioiden saatava innovatiiviset työntekijät sitoutuneeksi. Tämä tuo haasteita totuttuihin toimintatapoihin ja organisaatiot ovat alkaneetkin etsiä vaikutusmahdollisuuksia johtamiskäytänteistä. Johtamiskäytänteistä esimiesten sekä tutkijoiden katseet ovat lisääntyvissä määrin kohdistuneet valmentavaan johtamiseen sekä esimies-alaissuhteeseen (LMX). Organisaatiot pyrkivät luomaan valmentavalla johtamisella perustuksen, joka tukee työn innostavuutta ja positiivisia tuloksia. Työn innostavuuden, valmentavan johtamisen, esimies-alaissuhteen ja innovatiivisuuden keskinäisien vaikutusmekanismien sekä hyötyjen vaikutuksia on tutkittu vielä vähän ja näyttö hyödyistä on vähäistä. Tämän tutkimuksen tarkoituksena oli tarkastella näitä yhteyksiä lähemmin ja tuoda uutta tietoa niiden tarpeellisuudesta.

Tutkimuksen päätavoitteena oli selvittää, ovatko valmentava johtaminen, esimies-alaissuhde ja työhön sitoutuminen välttämättömiä työntekijöiden innovatiivisen työkäyttäytymisen mahdollistamiseksi. Teoreettisena viitekehyksenä tutkimuksessa oli työn vaatimukset ja resurssit (JD-R) -malli ja sen positiivinen motivaatioprosessi. Tämän prosessin mukaisesti nämä resurssit saattavat parantaa tuloksia työhön sitoutumisen kautta. Tutkimuksen aineisto kerättiin vuosina 2015–2016 toteutetun HERMES-tutkimusprojektin aikana. Projekti toteutettiin Vaasan yliopiston ja Lappeenrannan teknillisen yliopiston yhteistyönä. Projektissa otettiin yhteyttä yhteensä 100 pk-yritykseen mutta lopulliseen aineistoon sisältyi 88 pk-yritystä. Tilastollisena analyysimenetelmänä käytettiin välttämättömyys (NCA) analyysiä uudenlaisen näkemyksen ja uudenlaisen näkökannan saavuttamiseksi.

Teoreettinen viitekehys ja aiemmat tutkimukset osoittivat, että valmentava esimiestyö ja esimies-alaissuhde liittyvät positiivisesti sekä työhön sitoutumiseen että innovatiivisuuteen ja että työhön sitoutuminen toimii välittäjänä. Tämän tutkimuksen tulokset vahvistavat, että työhön sitoutuminen on välttämätöntä innovatiivisuudelle, mutta valmentavan esimiestyön ja esimies-alaissuhteen ei havaittu olevan välttämätöntä työhön sitoutumiselle. Toisin kuin teoreettinen viitekehys esittää, valmentavaa esimiestyötä ja esimies-alaissuhdetta ei analyysin perusteella voi pitää välttämättöminä innovatiivisuudelle tai työhön sitoutumiselle. Tämän tutkielman rajoitukset täytyy huomioida tuloksia analysoitaessa tai käytännön sovellutuksia harkittaessa. Tulevaisuuden tutkimuksessa tulisi keskittyä muiden työhön sitoutumisen kannalta välttämättömien tekijöiden selvittämiseen. Tutkimus antaa tarkemman kuvan sekä todisteita työhön sitoutumisen ja innovatiivisuuden vaikutuksista ja vahvistaa ymmärrystä sille että sitoutuneet työntekijät voivat lisätä innovatiivisuutta.

**AVAINSANAT:** Innovative work behavior, Innovatiivisuus, IWB, Innovaatio, Innovation, NCA, necessary condition analysis, Managerial coaching, valmentava esimiestyö, LMX, esimies-alaissuhde, Leader-member exchange

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## Abbreviations

**HRM = Human Resource Management**
**IWB = Innovative Work Behavior**
**WE = Work Engagement**
**LMX = Leader-Member Exchange**
**MC = Managerial Coaching**
**POS = Perceived Organizational Support**
**HRD = Human Resource Development**

# 1 Introduction

Ways of encouraging and enhancing performance as well as innovations are some of the fundamental factors that enable organizations to adjust quickly to economic fluctuations and to achieve an edge over the competition (Bos-Nehles et al., 2017, p. 1228; Tanskanen et al., 2019, p. 2). According to a study by Huhtala and Parzefall (2007, p. 299), fostering employees' innovativeness is an essential challenge that managers, as well as scholars, are grappling with. They claim innovative employees as the primary currency of modern organizations. Employee innovativeness is an essential source of innovations and a crucial resource for an organization's resource capacity (Bos-Nehles et al., 2017, p. 1229). Employees can improve organizational effectiveness by coming up with fresh, innovative concepts which they can then use as components to create better procedures, services, and products (Kwon & Kim, 2020, p. 41). Focusing on process improvement can help an organization increase efficiency, improve quality, and reduce costs (Damanpour, 1991; Johne, 1999).

Innovativeness is not only a competitive advantage or a success factor for a company but it is also a driving force for economic growth (Shunlong & Weiming, 2012). Many companies are pursuing innovativeness because it has been recognized to affect performance and process efficiency (Janssen, 2001; Lee, 2008). Alasoini & Lyly-Yrjänäinen (2014) claim that for example in Finland, economic growth can only be achieved through improved productivity. This ranks the company’s ability to produce innovations as a high priority.

In recent years, innovation research has without a doubt evolved significantly. Several factors at the individual, team, and group levels of analysis have been identified and found to be consistently supportive or restrictive of innovative results (Anderson et al., 2004). In recent years, numerous studies have looked at the impact of individual and contextual factors on innovation or how they link to innovation. (Huhtala & Parzefall, 2007, pp. 299–300). An expanding amount of research has been directed at comprehending innovation, its predecessors, and relationships across all levels of

innovation (Denti & Hemlin, 2012; Lin & Sanders, 2017). Several factors, including organizational structure, size, culture, and climate, as well as motivation, training, team structure, autonomy, and environment, have been discovered (Anderson et al., 2004, pp. 149–152).

The impacts of managerial actions on the employee's innovativeness have been previously studied through different leadership styles and the results have been contradictory (See e.g., Hammond et al., 2011; Hunter et al., 2007; Rosing et al., 2011). However, research has consistently found the importance of managerial support regarding innovativeness. Previous research has demonstrated that leadership is necessary in order to create an atmosphere that spurs creative thinking and innovation among employees (Amabile et al., 1996; Mumford & Gustafson, 1988). Redmond et al. (1993) claim that managerial actions support constructive problem-solving and improve the employee's self-confidence and thereby giving an impulse to innovativeness. Managers also face challenges in their tasks, as efforts toward creativity and innovation are often tied to various constraints, such as rules and regulations, time limits, and limited resources (Acar et al., 2019).

A systematic literature review from Bos-Nehles et al. (2017), examines the connections between HRM practices and innovative work behavior. They recognized seven separate HRM practices which could be classified as most beneficial for encouraging employees' innovative work behavior. The following are the practices that they recognize: training and development, work composition, job demands, time pressure, job stability, autonomy, feedback, and reward. Training and development were considered to be practices that enhanced one's abilities, rewards, and job stability were considered to be practices that enhanced one's motivation, and the remainder of the four practices were considered to be activities that enhanced one's opportunities.

According to the findings of a number of research (such as Tims et al., 2011; Zhu et al., 2009), different types of leadership styles, most notably transformational leadership,

have beneficial effects on the level of engagement that employees have in their jobs. As noted by Bakker and Demerouti (2017), this is something that will most likely take place as a result of the fact that transformational leaders provide abundant job resources for their staff. According to their research, job resources such as social support, autonomy, feedback, and possibilities for advancement may assist employees in overcoming the challenges they face on a daily basis, which in turn contributes to improved attitudes toward work and higher levels of job performance. The job demand-resource (JD-R) framework (Demerouti et al., 2001) explains that job resources, such as social support from the organization and managers, activate a motivational process and connect it to organizational outcomes via work engagement. This research, which is based on the JD-R theory, looks at work engagement as the mechanism connecting the job resource (in this instance, MC and LMX) with IWB.

A study by Agarwal (2014), explained that exchange-based constructs are frequently used by management researchers to explain organizationally desirable work attitudes and behaviors. In particular, interactions between an employee and the organization that employs him or her as well as interactions between the employee and his or her manager (immediate leader). The relationship between organization and employee is referred to as perceived organizational support and the relationship between employee and organization is the term leader-member exchange (LMX; Graen et al., 1987). Leader-member exchange has been identified as a major antecedent regarding innovative work performance (Agarwal, 2014). Research has also discovered that innovative work behavior and perceived organizational support or POS, have a positive link (Yuan & Woodman, 2010). Literature is still unsure if these factors work independently or together to impact IWB (Cole et al., 2002). Apart from the uncertainty previously mentioned, the majority of the research investigating the effect of POS and LMX on IWB utilizes either a direct or main effect point of view. The intermediate psychological processes that could clarify how and why distinct individual and contextual antecedents impact innovative behavior are still unresolved and undeveloped (Yuan & Woodman, 2010).

## 1.1 Goals of this research and research questions

The objective of this research is to determine if work engagement is a necessary condition for innovative work behavior. The research was carried out using quantitative and qualitative methods. Previously collected data was utilized in the empirical part of the study. Data was collected as part of the HERMES research project during the years 2015-2016 in the form of a research survey. Also, this study seeks to support the study of Pajuoja (2022), which proposed a connection between innovative work behavior and managerial coaching. In addition to innovative work behavior, the HERMES research survey mapped the level of individual know-how and performance and work well-being (Viitala et al., 2016).

The focus of this research is to look deeper into the connection between innovative work behavior and work engagement. The JD-R model provides some context into the factors, like LMX and MC, that influence work engagement. As a potential moderator for innovative work behavior, scholars have frequently examined work engagement (See e.g., (Agarwal, 2014; Koroglu & Ozmen, 2022). Necessary condition analysis brings new insights to a previously recognized important aspect of the connection between innovative work behavior and psychological states. The main research question is: *Is work engagement necessary but not sufficient state for innovative work behavior?* In the case of work engagement being a necessary but not sufficient variable for innovative work behavior, the analysis as well brings new insight into what the necessary level of work engagement is to achieve success.

The relationship between innovative work behavior and work engagement will be studied mainly using necessary condition analysis. Some more traditional statistical methods are also used to check data validity. The results are then analyzed based on previous research. The relationship between innovative work behavior and work engagement has been studied previously by traditional statistical methods such as regression analysis. Previous studies have not yet made use of the recently developed analyzing tool, necessary condition analysis, which views a relationship between two

variables, work engagement and innovative work behavior in this case, in a new light. This will give new insights into the importance of work engagement to innovative behavior in small and medium-sized companies.

## 1.2 Structure of the thesis

This research is shared into 7 main chapters. The introduction describes the structure of the study and introduces the research questions. The second and third chapter together form the theoretical framework for this study. Chapter two digs deeper into the concept of innovativeness at work, the innovation process, and factors affecting innovativeness. The third chapter takes a detailed view of managing innovations and related previous studies.

The empirical part of the study starts from chapter four, which describes the chosen methodology, data collection, measurement scales, and necessary condition analysis used to examine the relationship between innovative work behavior, managerial actions, and work engagement. The fifth chapter introduces the results of the NCA analyses. The findings and answers to research questions stated at the beginning of the thesis are introduced in chapter five. The sixth chapter contains a discussion of the practical applicability, potential implications, and proposals for future research, and chapter seven introduces an overall conclusion of the findings.

# 2 Employee innovation

To keep up with the fast-developing and rapidly changing markets, the aptitude to continuously produce innovative products, services, and work processes has become a high priority for organizations. Hence, it has gained high attention from scholars and managers (King & Anderson, 2002). The focal point of this study is individual-level innovation in organizations. To enable continuous innovation and improvement in organizations, each individual action is vital. This concept appears in academic papers (see e.g., Van de Ven, 1986; Janssen, 2000) and is also highlighted in practice, for example in total quality management (Osayawe Ehigie & Clement Akpan, 2004) and corporate entrepreneurship (Rich, 1999).

The challenge of management to benefit from innovations has gained the interest of researchers and practitioners for a long time (Arrow, 1962; Cohen et al., 2000; Holgersson et al., 2018; Teece, 1986). More than seventy percent of managers who responded to a poll conducted worldwide by McKinsey stated that they believe innovation would be one of the biggest growth drivers over the course of the next five years (Soken & Barnes, 2014). Today's strong competition between companies, technological development, and global market trends have indeed forced companies to innovate (Saray et al., 2017).

It has been recognized that innovativeness is a general trend and that success may be attained by providing more attention to innovative resources and less attention to specific innovation initiatives (Siguaw et al., 2006). Researchers are in agreement that innovativeness within organizations is a critical component in achieving both a competitive advantage and strategic renewal (Zhang & Bartol, 2010). Regarding this, the role of employees is seen as important, as they are responsible for idea generation, idea forming, and response (Scott & Bruce, 1994). This behavior is also known as innovative behavior at work. The concept is established in the scientific literature and is often referred to by the abbreviation IWB (Innovative Work Behavior).

From organizational point of view, it has also been shown that the innovativeness of employees guarantees the efficiency of processes (Janssen, 2001) and positively affects the organization's performance (Janssen, 2001; Tewari, 2011). Innovativeness in the workplace has thus been characterized as a competitive advantage that enables organizational success in a changing business environment (Yuan & Woodman, 2010). In order for organizations to become innovative, they need to create and maintain workplaces that encourage people to think differently and behave innovatively on the job (Alpkan et al., 2010; Dobni, 2010).

Innovativeness has been seen as performing actions that deviate from the routines of the individual, team, or organization and a willingness to step up to a challenge (Yuan et al., 2010). However, studies on whether an employee's innovativeness affects the performance of normal work have shown that an individual's innovativeness does not reduce the quality or efficiency of normal work. Employees can balance between being innovative and performing daily work tasks (Miron et al., 2004). However, there is also scientific evidence that many employees experience innovation as a risky activity that requires extra effort (Lee, 2008; Vinarski-Peretz & Carmeli, 2011).

Innovative activity in the workplace has received special attention in the scientific literature because it focuses on innovative improvements within a work group or organization (Tewari, 2011). Job characteristics and organizational practices have both been considered separately by researchers as two distinct perspectives on innovative work behavior (Dorenbosch et al., 2005). The job planning perspective looks at innovative work behavior to be the result of interfering with work planning, while from the perspective of organizational practices, innovative work behavior is a practice that promotes opportunities and motivation to behave innovatively. In this study, the viewpoint related to job planning has been chosen, and in it, the effects of the manager's actions on innovation are analyzed. (Bysted, 2013)

The present research defines innovative work behavior as any employee acts related to the different innovation process phases that directly or indirectly enhance workplace innovation. However, creativity emphasizes "idea generation" and "new" invention (Anderson et al., 2004, pp. 148–149; De Spiegelaere et al., 2015). In addition, this study focuses on new analyzing methods and produces new insight into previously studied factors.

## 2.1 Definition of innovativeness

The research defines innovativeness that manifests in the workplace in different ways, varying from one unified concept to more detailed definitions. However, perhaps the best known and most referred to in the literature is West and Farr's (1990) definition of innovativeness. According to West and Farr (1990), innovativeness is the conscious introduction and application of processes, or new ideas, activities, or products, in a work role, workgroup, or organization. The innovations are new to the relevant working group, and they are designed to produce a significant benefit for an individual, group, organization, or wider society. Several other researchers have also relied on this definition (e.g. Hammond et al., 2011; Janssen, 2000) and therefore it is also seen as essential for this study.

Innovation, according to Baumol (2004), is the recognition of opportunities for profitable change and the pursuance of those opportunities until their implementation in practice. Baumol (2004) also claims that most of the economic growth we have witnessed after the 18th century is, in the end, related to innovation. Literature uncovers four target areas where innovations can help organizations increase competitiveness. These target areas, sometimes referred to as the 4Ps, are Process innovation, Product innovation, market Positioning, and redefining the Paradigm of the company (Francis & Bessant, 2005).

*Innovation* means a new way of doing things, a positive change to make something better (Janssen, 2000). Soken and Barnes (2014) defined innovation as optimizing the deep-hiding benefits of ideas. This definition includes two concepts of innovation;

innovation is adding value, and it demands that individuals and organizations accept or welcome new ideas. This view is also shared by the definition of West and Farr (1990), which sees innovation as a meaningful purpose to achieve positive results in the form of a new idea or product. Innovation refers to the improved unique results compared to existing results in an organization. On the other hand, the usefulness of ideas refers to the potential extent of value from an organization's point of view (Shalley et al., 2004).

Developing new and useful ideas requires a creative mindset. In a number of investigations, creativity, and inventiveness have frequently been examined together (Anderson et al., 2004). The views on the relationship between creativity and innovativeness vary depending on the research. Both innovativeness and creativity, have been studied as separate or compensatory phenomena. Tewari (2011) presents in her research that innovativeness means naturally embedded creative resources found in an individual and an organization. According to Wang and Ahmed (2004), innovativeness is the creative and efficient utilization of existing resources. In addition, researchers have presented the relationship between creativity and innovation that it is the employees' need for creativity that allows them to be innovative (Dobni, 2010; Hennessey & Amabile, 2010).

Innovativeness is more than just creativity. When comparing innovativeness and creativity, innovativeness is more intended to provide an advantage, its components are easier to apply and it is expected to bring some innovative end result (de Jong & den Hartog, 2010). Definitions of innovativeness emphasize innovativeness as a process that starts from idea generation and continues as commissioning and applicability. Creativity is often seen only as thinking and developing ideas and is missing the idea execution and application which are strongly embedded in innovativeness (Amabile, 1988).

Some studies draw the line between innovation and creativity by assuming that creativity is a factor influencing the innovation process (West, 2002). Creativity is important especially in the early steps of the innovation process when problems or

deficiencies in performance are detected and solutions are sought in the form of new ideas and functions (West, 2002). Innovation, on the other hand, is the successful implementation of these creative ideas in the organization (Amabile et al., 1996). This latter dimension has only later started to be examined in a scientific light, and through that, the current view of innovation as a more holistic process and behavioral model has developed (de Jong & den Hartog, 2010).

Amabile (1988) distinguishes between innovation and creativity. Creativity is the generation of excitingly new and high-value ideas by an individual or small group, while innovation is the organizational concept that guarantees the efficient implementation of creative ideas. These aforementioned concepts are related but undoubtedly distinct. The innovation process, according to West and Farr's (1990) research, consists of exploring and generating ideas (i.e., creativity) and applying those ideas. That approach views creativity as the first phase in the innovation process. Based on what they discovered, creativity is not just the first stage of the innovation process but also an independent concept on its own (Anderson et al., 2014). This assertion sparks a vivid discussion regarding the characteristics of innovation and creativity. According to Hughes et al., (2018), these two concepts are frequently confused with one another, and even some of the most highly regarded academic journals have released articles containing references to innovation yet cite sources from the literature on creativity.

## 2.2 Innovation process

Schumpeter and Opie (1934) were among the first ones to identify the innovation process and its effect on economic growth. They represent innovation as creating and applying new combinations connected with new products, work processes, or markets (Tewari, 2011). Since then, the role of innovation has been redefined several times. Even though different definitions might uncover important aspects of innovation, a core element that all researchers highlight is newness. This aforesaid aspect is still relevant and supports the definitions of today’s research which define innovation as actions that

enable the employee to develop or adopt new ideas and pushes to apply or execute them (See e.g., Janssen, 2000; King & Anderson, 2002).

Innovation has been present for a long period and it comes in different variations. Scholars like Bessant and Tidd (2015), Hamel et al. (2006), and Mulgan and Albury (2003) argue that it is important for organizations to innovate. This has led scholars to study how innovation can truly be managed. According to Hansen and Birkinshaw (2007), innovation management is an active and conscious organization, control, and execution of activities that result in innovation. Other scholars use the innovation journey rather than the innovation process to highlight the uncertain character of the innovation process (Van de Ven et al., 2008).

The activities and interactions needed to produce and execute innovation are referred to as the innovation process. When examining innovation on an individual level, the term "innovative work behavior" is commonly used as an accepted description of the phenomenon (Anderson et al., 2014). In the simplest innovation process model, there are only two stages: initiation and implementation. One of the most well-known models of the innovation process is the Zaltman et al. (1973) model. The model presents the innovation process as having two main stages: initiation and implementation, corresponding to actions and decisions before and after the point of the adoption of the innovation. Both stages are separated into substages. The initiation stage comprises three substages: knowledge awareness, the formation of attitudes, and decision. This stage leads to new innovative suggestions such as products, services, or a way of working. The implementation stage comprises two substages: initial and continued—sustained implementation. This second stage is aimed to develop and initiate innovations to harness their potential. The boundary between these two stages can be seen as a point where innovation is approved for the first time and the decision of implementation is made (King, 1992; King & Anderson, 2002).

The innovation process has also been seen to build up from the emerging problems in the way of working or unfulfilled needs (de Jong & Den Hartog, 2007), answering to aforesaid problems, knowledge sharing, and finally dealing with problems in a new way (see e.g., Woodman et al., 1993). In a model of Scott and Bruce (1994), employee innovativeness forms three phases that are idea generating, coalition building and sponsorship for the idea, and idea implementation. This model has received support from other scholars (see e.g., Janssen, 2000, 2004; Yidong & Xinxin, 2013). The employee's behavior is focused on the initiation, implementation, and application of new and practical, organizationally beneficial ideas, processes, products, or activities (Janssen, 2000).

Scholars like Kanter (1988) and King and Anderson (2002) argued that the condition for innovations would be more easily understood by assuming the discovery of ideas and their implementation as separate stages because real-world innovation processes go two ways with overlapping stages. Scott and Bruce (1994, p. 582) similarly described this: *"individuals can be expected to be involved in any combination of these behaviours at any time".*

**Table 1: Previous research proposed dimensions of IWB (Pajuoja, 2022)**

<table>
<tr><th>Kause, 2004</th><th>Scott & Bruce, 1994; Janssen, 2000</th><th>de Jong & den Hartog, 2010</th><th>Kleysen & Street, 2001</th><th>Hughes et al., 2018</th><th>Lukes & Stephan, 2017</th></tr>
<tr><td rowspan="3">Gene-ration & testing of Ideas</td><td rowspan="2">Idea gene-ration</td><td>Idea exploration</td><td>Opportunity exploration</td><td>Problem recognition</td><td>Idea search</td></tr>
<tr><td rowspan="2">Idea generation</td><td>Generativity</td><td>Idea introduction</td><td rowspan="2">Idea generation</td></tr>
<tr><td>Idea promotion</td><td>Idea championing</td><td>Formative investigation</td><td>Idea modification</td></tr>
<tr><td>Imple-mentation of ideas</td><td>Idea realization</td><td>Idea implementation</td><td>Application</td><td>Idea implementation</td><td>Implementation starting activities</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>Involving others</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>Overcoming obstacles</td></tr>
</table>

Table 1 shows different dimensions of innovative work behavior. According to the review by Hughes et al. (2018), some differences can be seen among the concepts, but also some similarities. The model by Scott and Bruce (1994) has received support from other researchers and is hence a reliable frame for this study. Scott and Bruce (1994) were among the first scholars to mention the concept of innovative work behavior. They developed and tested a model of innovative behavior at the individual level. Idea generation, Idea promotion, and Idea realization are discussed further in their subsections.

### 2.2.1 Idea generation

According to Van de Ven (1986, p.582), the bedrock of innovation is ideas. It is people that generate, perform, respond to, and transform ideas. Ideas can be called innovative when development effort has been added. The innovation process starts with idea generation, in other words producing a useful idea in any field of operation (Scott & Bruce, 1994). Drucker (2011) claims that problems, conflicts, interruptions, and growing

trends related to work are often triggers to idea generation. Lukes and Stephan's (2016) study claims that the detection of a problem by accident is often related to the beginning of the innovation process. The trigger can also be a systematic idea search from the work environment which allows for example improvements in working conditions, or noticing a threat that needs an immediate reaction.

Idea generation may relate to new products, services, or process improvement, shifting to new markets, improvement of way of working, or general level problem solving (Amabile, 1988; Kanter, 1988). Research aiming for process, service, or product improvement is also considered as idea searching (See e.g., Kanter, 1988).

### 2.2.2 Coalition building and sponsorship for the idea

The next phase in the innovation process is idea promotion. This means that after generating the idea, an individual must engage in social activities to find a support group or coalition that offers enough strength behind the idea (Galbraith, 1982; Kanter, 1988). The social nature of the innovation process is highlighted at this stage. Individuals must convince others about the value of an idea or they need help at the implementation stage. Interaction hence plays a very important role related to idea improvement (Lukes & Stephan, 2017; Tewari, 2011).

Ideas might need improving because they rarely meet the work group or organization's present way of working. Even though the idea fills a clear hole in performance, there is no guarantee about the benefits and how wide they reach or will the improved performance cover the required costs of development and implementation. Change resistance is very likely to occur in these kinds of circumstances (Kanter, 1988). Finding support and building a coalition defends the idea but it takes persistence, involving the right people as well as demonstrating enthusiasm and the trustworthiness of innovation (Howell et al., 2005).

### 2.2.3 Idea implementation

The final phase of the innovation process continues to implement the idea by making a prototype or a model. The idea can then be experienced and applied to individual, team or group, and organizational level. Simple innovations are implemented by the individual, but more complex innovations require teamwork that enables the use of mixed skill set qualifications and roles that belongs to this purpose, competence, and persons with the right level of authority (Kanter, 1988). The implementation of the idea requires considerable effort and a result-oriented attitude. It also involves establishing innovation as part of work processes (Kleysen & Street, 2001).

Ideas don't always progress to implementation. According to research by Krause (2004), the transition from creating an idea to the implementation phase may bring to light the contradiction that is hidden in the innovation process. Since every individual tries to protect their dominant position, creating and testing ideas does not sufficiently guarantee their implementation. Many of the ideas created and tested hence dry up. Therefore, the development and testing of ideas are thought to have a positive, if only moderately strong, connection with implementation (Krause 2004).

# 3 Factors affecting innovative behavior

Factors affecting innovativeness can be roughly divided into three categories: individual factors, work-related factors, and context-dependent factors (Hammond et al., 2011). Trust regarding innovation, work autonomy, and motivation have been considered as individual factors influencing innovativeness (Bysted, 2013). Individual creativity has also been considered one of the most important factors influencing innovativeness (Amabile, 1988). Factors that affect the organization are, for example, the resources needed for work and innovation management (Bysted, 2013).

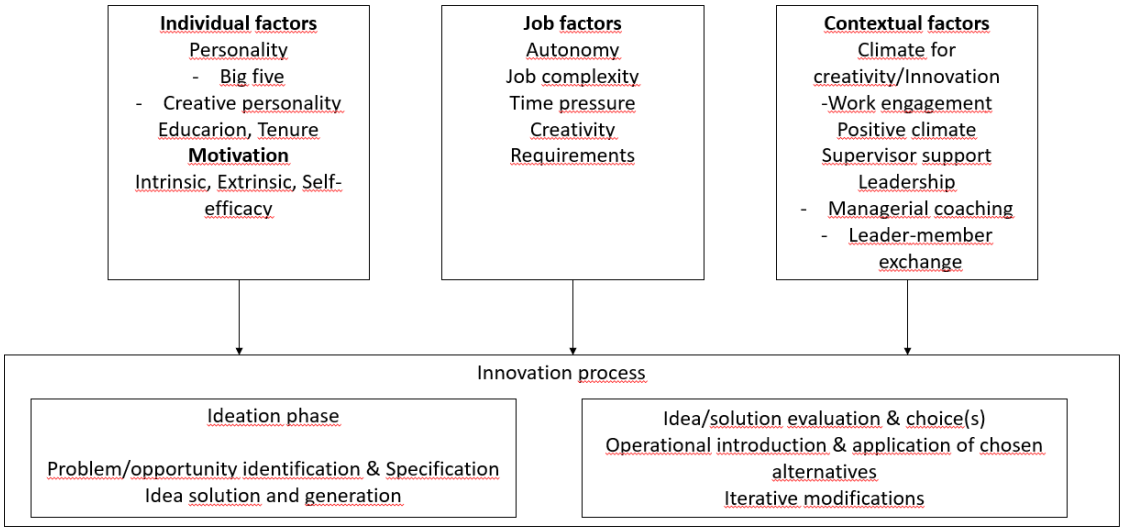


**Figure 1: Prevailing theory of the causes of individual innovation. (Adapted from Hammond et al., 2011)**

## 3.1 Individual factors

A lot of research has been accomplished to investigate managerial actions through natural motivation and creativity. Yidong and Xinxin (2013) approach innovation management from the perspective of ethical leadership. They studied the influence of leadership on innovativeness through intrinsic motivation. Their research discovered a connection between ethical leadership, individual and group-level experiences, and the employee's innovative behavior. The results also showed that intrinsic motivation acted as a mediator in these relationships, as expected. The actions of an ethical leader are

seen as a reflection of his or her values, views, and moral beliefs (Yidong & Xinxin, 2013). Such leaders with high self-awareness can influence subordinates' thinking, motivation, and usage choices (Zhou et al., 2014).

Authentic leadership has also been studied in the context of innovation, with positive results (Černe et al., 2013). Authentic leaders have been characterized as self-aware and loyal to themselves and they have been perceived as sticking to their values and beliefs (Černe et al., 2013). Authentic leadership is also seen as the enabler of a secure and devoted relationship between leader and subordinate leaving the subordinate to feel that the leader supports and appreciates his or her abilities (Zhou et al., 2014). When this kind of leadership is present in an organization, employees tend to be less hesitant to share new ideas that differ from the norm and more dedicated to contacting their managers and coworkers to implement these ideas (Janssen, 2004; Yidong & Xinxin, 2013; Zhou et al., 2014).

Zhang and Bartol (2010) studied the effect of empowering leadership on employee creativity. It was found that leadership, through psychological empowerment, first affects the employee's inherent motivation and participation in the creative process, which in turn had a positive effect on creativity. Empowering leadership was seen as the implementation of measures that enable the sharing of power with the employee by determining the meaningfulness of work, giving greater independence in decision-making, expressing confidence in the employee's abilities, and eliminating the roadblocks prohibiting good performance (Zhang & Bartol, 2010).

When it comes to innovation, the effects of transformational leadership are undoubtedly the ones that have been researched the most (e.g., this may be related to the view that transformational leaders themselves aim for innovation by finding new ways of doing work, challenging the current situation and not accepting traditional norms) (Conger & Kanungo, 1987). A transformational leader who aligns their own and the organization’s values with their subordinates is also able to increase the intrinsic motivation of his

subordinates (Gardner & Avolio, 1998). This kind of leadership inspires subordinates to try new approaches. In their study, Shunlong et al. (2012) discussed the connections between transformational leadership, LMX relationship, and innovativeness. The results showed that transformational leadership was positively related to employee innovativeness through the leader's vision and charisma (Shunlong & Weiming, 2012).

Lee (2008) has studied innovativeness, especially in companies focusing on R&D, where innovativeness has been seen to be of great importance, especially in terms of research and development work. In her research, she combined the view of multidimensional leadership and LMX theory and examined them in terms of the employee's innovativeness. Leadership is described in this study through transformational and transactional leadership. The results revealed that transformational leadership had a positive connection with dimensions of LMX relations and innovativeness. These leaders can improve the innovativeness of their subordinates, particularly through motivation and intellectual stimulation (Keller, 1992; Lee, 2008; Mumford et al., 2002).

## 3.2 Work-related factors

According to Yidong et al. (2013), a leader can also influence innovation by interfering with work arrangements and plans. For example, ethical leadership, which is characterized by people orientation, refining of neutral job characteristics through job meaningfulness and autonomy, and two-way communication reflected by trust, openness, and sincerity, have been found to have a positive effect on innovation. Ethical management style is also reflected by clear performance indicators and the corresponding rewards or penalties, which help to strengthen ethical rules in the organization.

Work autonomy has also been perceived to significantly promote innovation (e.g., Bysted, 2013). It has been seen to offer employees the necessary freedom and authority for innovativeness to emerge (Alpkan et al., 2010; Ramamoorthy et al., 2005). In her research, Krause (2004) has taken a closer look at the effects of managerial actions related to individual innovativeness. Identification, professionalism, granting freedom

and autonomy, support for innovation, and openness of the decision-making process were seen as such activities. Research indicated that granting freedom and autonomy and using professional skills had the most positive effect on innovativeness (Krause, 2004).

## 3.3 Contextual factors

Factors affecting innovation that depend on the context, are the experiences of the workplace atmosphere and the manager's support for innovation. In their research, Soken and Barnes (2014) suggested how a manager can build and maintain an innovative culture through his or her actions. A concisely expressed objective, an ability to embrace and exploit failure, and the facilitation of the ideation process are activities that foster an innovative culture. Leading by example, taking risks, measuring innovativeness and rewarding it, and breaking boundaries were also seen as factors that increase innovativeness. Conversely, innovativeness was made more unlikely and less successful by the manager's actions, which caused fear, lack of concentration, lack of resources, and the inability to discuss the organization's innovation strategy. An organization where creative or innovative culture does not exist or has been lost is usually characterized by fear and punishment, a lack of control, and a lack of flexibility and openness.

Janssen (2005) studied the joint effect of the employee's perceived influence and the manager's support on the employee's innovativeness. The results showed that the manager's support acted as a mediator between perceived influence and employee innovativeness. The results supported the hypothesis that when the employee feels that the manager supports innovative activities, employees are encouraged to use their influence to implement innovation in the workplace. In contrast, when the supervisor's support was not perceived, the employees' innovative activities were hindered.

There have been conflicting results about the effects of managerial support on innovation. The support given by the manager was measured in a study by finding out the extent to which the manager encourages the employee to participate, keeps the employees aware of issues, and rewards good performance. Based on the results, the

support received from the manager did not affect the employee's creativity or innovation. However, it was significant as an explanation of personal initiative (Ohly et al., 2006).

In their study, Odoardi et al. (2014) presented and tested a theoretical model that connected individual perceptions of inclusive leadership and leadership practices to individual innovativeness. Perceptions of the team's support for innovation and psychological empowerment act as mediating factors in the model. 394 employees from five different Italian companies were interviewed and the results showed that participative leadership, teamwork, and knowledge sharing had a positive connection with perceptions of team support for innovation. This connection, in turn, was seen to promote psychological empowerment, which had a positive connection with innovative performance.

Scott and Bruce (1994) saw that an individual's innovativeness is the result of four interacting parts. They tested a model in which leadership, work group, and individual characteristics influenced innovation, either directly or indirectly through a supportive environment for innovation. They interviewed engineers, researchers, and technicians who worked in an R&D company. In their research, leadership was reflected by the interaction between the manager and the subordinate, as well as the manager’s expectations of the subordinate's innovativeness. The research revealed a connection to innovativeness through leadership, support for innovativeness, manager's expectations, subordinate's career level, and systematic problem-solving ability.

Studies that examine the relationship between innovativeness and leadership have emerged with the theory of ambidexterity (Rosing et al., 2011; Zacher & Wilden, 2014). According to this theory, managers must demonstrate their skill in combining the two types of behavior to enhance the innovativeness of their subordinates. Exploration includes activities that stimulate the employee's inquisitiveness, such as encouraging alternative ways of working and independent thinking. Whereas exploitative behavior

includes activities that facilitate the utilization of ideas, such as creating routines and monitoring achievements (Rosing et al., 2011).

According to Zacher and Wilden (2014), the core assumption of the ambidexterity theory is that the mutual influence of a leader's opening and closing behavior predicts an employee's innovative performance. Innovative performance is at its highest when both, the opening and closing behavior, of a leader is great. Managers who present more exploitative behavior are more likely to facilitate the process of an employee turning their creative ideas into innovative products or services. Ideas, on the other hand, are seen to arise initially from the manager's explorative behavior. Another assumption related to the theory is that employee innovative performance should be worse when managers only engage in one of the two activities i.e., high explorative or high exploitative activities. A combination of high explorative and low exploitative activity should not lead to highly innovative activity, because managers then do not encourage employees to implement their creative ideas. Also, low explorative and high exploitative activity should not improve innovative behavior, because employees who are not motivated by their managers from the beginning will presumably not benefit from exploitative activities.

Zacher and Wilden (2014) investigated the relationship between ambidextrous leadership and innovation with a diary study. The results revealed that ambidextrous leadership predicts employees' daily self-reported innovativeness. Innovativeness was at its highest when both the manager's explorative and exploitative behavior were high. The research also revealed that the explorative behavior had a positive effect on innovativeness even independently without the exploitative behavior. All over the world, managers believe that proactive management is a significant factor in the success or failure of fostering an innovative, open organizational culture (Soken & Barnes, 2014).

Ethical leadership, authentic leadership, and transformational leadership have been found in studies to have a direct connection to innovativeness. Such leaders have been

characterized as self-aware and loyal to themselves. They stick to their values and beliefs, which are also reflected in their actions as a manager (Yidong & Xinxin, 2013; Zhou et al., 2014). In addition, participative leadership, whose most important feature can be considered the involvement and empowerment of employees, has been found to have a positive effect on the employee's intrinsic motivation, and thereby on creativity and innovation (Odoardi et al., 2015; Zhang & Bartol, 2010).

The support provided by the manager (Janssen, 2005) and the interaction between manager and subordinate (Graen & Scandura, 1987) has also been seen to have a significant effect on innovative activities. When employees feel that their manager supports innovative activities, they themselves are encouraged to use their influence to implement innovation in the workplace (Janssen, 2005). An interaction relationship characterized by trust, mutual liking, and appreciation also plays an important role. In such a relationship, subordinates are allowed more independence and decision-making freedom, which guides employees to more innovative activities (Janssen, 2004; Yidong & Xinxin, 2013; Zhou et al., 2014).

Granting freedom and autonomy and the use of professional skills can be mentioned as special features of managerial work that support innovation (Krause, 2004). In addition, multidimensional leadership holds the view that managers should take opposing but complementary actions to facilitate employee innovation. Such activities include activities that stimulate the employee's inquisitiveness, such as encouraging new ways of working and independent thinking, and activities that facilitate the utilization of ideas, such as creating routines and tracking achievements (Rosing et al., 2011).

## 3.4 Overview of managerial actions supporting innovativeness

Different management styles have been seen to have a positive effect on employee innovation. In this current study, managerial activities are examined based on the theory of managerial coaching. The focus is on the manager’s guidance, encouragement, and support for the performance, competence development, self-management, and

participation of both individuals and groups (Ellinger et al., 2008). A great deal of similarity can be observed in these traits with the characteristics associated with the leadership styles presented above.

## 3.5 Research model and hypothesis

JD-R model which was introduced by Demerouti et al. (2001) can be used to explain WE as well as IWB. This research uses this theoretical frame with a strong emphasis on job resources, especially managerial actions. The purpose is to find the necessary conditions for WE and IWB. This is done by investigating the relationship between managerial coaching, leader-member exchange, work engagement, and innovative work behavior.

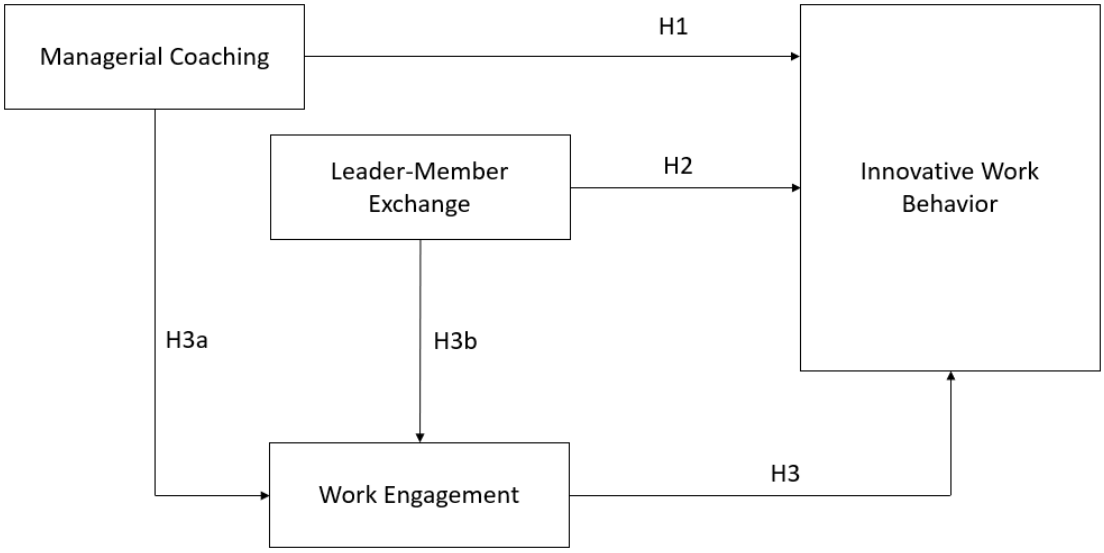


**Figure 2: Research model**

It is anticipated that every link would be confirmed. It has been suggested that managers who engage in management coaching behaviors, such as facilitating, fostering, and encouraging the work of their employees, trigger innovative work behavior by improving the rate of work engagement.

## 3.6 Innovative Work Behavior

Innovative work behavior, or IWB, can be defined as an individual's behavior that aims to gain the initiation and intentional presentation (within a work role, team, or organization) of new and valuable ideas, processes, products, or practices (Farr & Ford, 1990). According to Amabile (1988), employee creativity and innovative work behavior differ from each other. IWB also comprises the implementation of ideas. In contrast to creativity, IWB is specifically meant to deliver some form of gain. It has a clearer applied component and is predicted to be an outcome of innovative input. When challenges or performance gaps are identified and ideas are developed in response to a sense of need for innovation, creativity may be considered as an essential component of IWB. This is particularly true at the beginning of the innovation process (West, 2002).

The majority of behavioral research on individual innovation has explored creativity but fairly little is known about when and in what way creative ideas are put into practice (de Jong & den Hartog, 2007, p. 42). According to Basadur, (2004), the terms innovation and creativity often get mixed even among scholars. As a result, it is difficult to distinguish between creative behavior and employee creativity. For instance, some scholars like e.g., de Jong and den Hartog (2007) have put forth models of creativity that focus on how creative ideas are put into practice. Nonetheless, Huhtala and Parzefall (2007) claim that the main distinction between the two notions is that while innovation may not always result from creativity, it does require it.

de Jong and Den Hartog (2010) state that although both practitioners and scientists have stressed the value of innovative work behavior among specific employees, the measuring of it is still in the early stages of development. It is not unexpected that the measuring of innovative work behavior still requires improvement given the ambiguity of its description. In their publication, "Measuring Innovative Work Behaviour," de Jong and den Hartog (2010), created a list of current measures after analyzing previous research that attempted to establish a scale that would encompass a variety of features of innovative work behavior.

A lot of the theoretical work on IWB makes distinctions between different dimensions, many of which are connected to various stages of the innovation process. For instance, IWB is investigated as a multi-stage procedure by Scott and Bruce (1994). They propose three IWB-related stages—idea generation, coalition building, and implementation—drawing on Kanter (1988). In their study, de Jong & den Hartog (2010) suggested that this approach is supposed to cover behaviors that are both exploratory and idea-generating and conclude that idea creation is fairly broad. However, creativity research suggests that these two behaviors depend on different cognitive capacities (e.g., Basadur, 2004; Runco & Chand, 1995). A multidimensional measure of innovative work behavior introduced by de Jong and den Hartog (2010), has four possible dimensions connected with the various phases involved in the innovation process. These steps were idea creation, idea investigation, idea championing, and idea execution. This action was taken to deal with the shortcomings of the preceding measures.

A strong connection between these four dimensions was discovered, but there was no support for their distinctness, proposing that IWB is one-dimensional (de Jong and den Hartog, 2010). Nonetheless, assessments of the possible connections between innovative work behavior and participative leadership, external contacts, and inventive results indicated satisfactory dependability and criterion validity. Additionally, the research they conducted disclosed that autonomy and participation in decision-making motivate staff to develop and carry out new ideas. It was discovered as well that participatory leadership and external work contacts are favorable and significantly associated with innovative work behavior and inventive output.

Other factors that have been put forth as potential precursors to individual innovativeness include leader and follower traits (Zhou & George, 2003), transformational leadership (see for example, (Jaussi & Dionne, 2003; Jung et al., 2003), benevolent leadership (Wang & Cheng, 2010), and empowering leadership (Zhang & Bartol, 2010). Leader–member exchange (LMX) and creativity have also been studied

(Atwater & Carmeli, 2009; Scott & Bruce, 1994) as well as managerial coaching (Pajuoja, 2022), and work engagement (Hakanen et al., 2006; Pajuoja, 2022).

## 3.7 Managerial coaching

The coaching sector is growing quickly in several nations and organizations are investing vast amounts in HRD (Hamlin et al., 2008). According to Hamlin et al., (2008), coaching is a contemporary intent to develop HRM practices (HRD). However, coaching is often done by facilitation specialists with colorful backgrounds instead of HR specialists inside the organization. In addition to the multiple varieties of managerial coaching behaviors, Based on the literature searches executed by Grant (2001) and Joo (2010) for their respective studies into the psychology of coaching and executive coaching, Hamlin et al. (2008) gathered a list that comprised a total of 37 definitions for coaching. They then divided them further into four categories: coaching, executive coaching, business coaching, and life coaching. They discovered that the coaching process shared by all four variations of coaching is the provision of assistance to individuals and organizations via a facilitation act or intervention.

Compared to several other management techniques, meant to increase organizational effectiveness, managerial coaching is a relatively recent idea. There are still many different definitions of it in the literature, and there isn't one that is universally accepted in the context of business (Bond & Seneque, 2012, pp. 58–59; Hagen, 2012, p. 17). Because coaching research is still in its infancy, there is yet to be discovered consensus among scholars of what are the necessary competencies or practices that guarantee successful results (Kim & Kuo, 2015).

Previous investigation has characterized managerial coaching as a supervisor or manager acting as a coach or facilitator of learning by performing behaviors allowing employees to gain knowledge and improve their work-related abilities and capacities. These behaviors include structuring questions in a way that motivates employees to evaluate and think critically about challenges, generating resources, shifting ownership to

employees, not providing instant answers to problems, reciprocating feedback, discussing concerns with others, fostering and encouraging a positive learning environment, establishing and communicating precise requirements, challenging employees to see things from a different perspective, setting an example, and encouraging others to participate (See Ellinger et al., 2003, 2008, 2011; Ellinger & Bostrom, 1999; Hamlin et al., 2006).

There is very little empirical evidence to support managerial coaching, despite its increasing popularity among scholars and practitioners and the topic and content of numerous publications (Bond & Seneque, 2012; Hagen, 2012). A paradigm that shares remarkable similarities with managerial coaching called transformative leadership has become widely recognized and connected with positive results across all criteria types and levels of investigation (see Wang et al., 2011). However, it has been asserted that managerial coaching, as opposed to transformational leadership, offers a more pragmatic approach devoid of outstanding qualities, adoration, and risk-taking (see Milner & McCarthy, 2016).

Hagen (2012) executed a comprehensive literature review on prior factors influencing implementation, the behaviors, attitudes, and skills characterizing managerial coaching. He also examined the outcomes that managerial coaching generates. His goal was to integrate the limited studies between organizational and individual performance and managerial coaching. Figure 3 presents a framework of a manager as a coach.

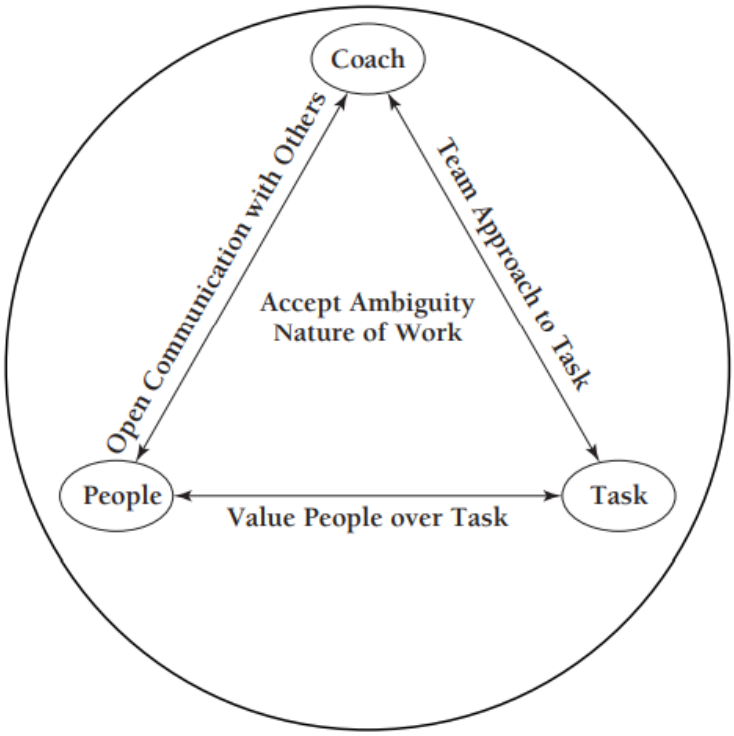


**Figure 3: Manager as a coach framework (Retrieved from McLean et al., 2005)**

A previously presented review on managerial coaching reveals how a manager affects innovative work behavior. It has been stated that managerial coaching is a powerful and effective management approach that boosts organizational performance (Hagen, 2012). Although there are notable exceptions, some research on the topic has adopted the notion that leadership impacts innovative work behavior. Axtell et al. 2000; Krause (2004); Magadley and Birdi (2012), all differentiated between two dimensions (implementation and generating ideas) and discovered that the manager can have the greatest impact on idea implementation. In their study, de Jong and den Hartog (2007) used two dimensions to examine 13 leadership behaviors. They discovered that some behaviors had a stronger influence on idea generation while others did on idea implementation. Hence hypothesis can be suggested:

H1: Managerial coaching is necessary but not sufficient condition for innovative work behavior.

### 3.7.1 LMX, Leader-member exchange

LMX theory was developed by Dansereau, Graen, and associates in the 1970s and was known at first as the vertical dyad linkage, VDL (Martin et al., 2016). LMX theory wraps around the central principle that leaders differentiate in how they treat their followers through different sorts of exchanges (Dansereau Jr et al., 1975), which results in quality connections at all levels between every employee and the leader. According to research (for reviews, see Anand et al., 2011; Breukelen et al., 2006; Martin et al., 2010; Schriesheim et al., 1998), beneficial employee outcomes are connected to high-quality LMX relationships.

According to the literature review of Suhaimi and Panatik (2016), the majority of research on the association between innovative work behavior and LMX supports LMX's beneficial influence on innovative work behavior (See e.g., Altunoğlu & Bulgurcu Gürel, 2015; Kheng & Mahmood, 2013; Sanders et al., 2010). Other studies (Agarwal et al., 2012; Sanders et al., 2010; Xerri, 2013), have suggested that innovative work behavior can be predicted by the quality of LMX. Employees that have high-quality LMX with their managers will be inspired to use greater creativity in their work. Managers who conduct supportive behaviors improve the likelihood that creative behavior will succeed. Employees are likely to have greater confidence in the performance that will come from their inventive behavior (Yuan & Woodman, 2010). Hence a hypothesis can be proposed:

H2: Leader-member exchange is a necessary but not sufficient condition for innovative work behavior.

## 3.8 Work Engagement

Work engagement is an enthusiastic, active state of being at work that is characterized by commitment, immersion, and vigor (Schaufeli et al., 2006). Vigor is the term for having a lot of energy and fortitude when working. Being deeply invested in one's work, as well as having a sense of purpose and passion, are traits of commitment. The state of

being completely focused and happily submerged in one's task is known as immersion (Bakker et al., 2012). Employees who are highly motivated and excited about their work are said to be engaged. Additionally, they frequently lose themselves in their work, which makes time fly (May et al., 2004).

According to Huhtala and Parzefall (2007, p. 301), as the positive psychology movement has gained momentum researchers attention has turned to positive wellbeing at work e.g., work engagement while previously the focus has been on job-related stress and burnout. Employee involvement has likewise attracted more attention in recent years, particularly from consulting firms and the media. It has even been hailed as the secret to an organization's prosperity and competitiveness. However, Gruman and Saks's (2011, pp. 124–125) research reveals that there has been debate over the definitions of employee involvement, just like there has been with managerial coaching.

Kahn's (1990) conceptual framework and hypothesis have been a base for a large number of research conducted on work engagement. He defines personal engagement as a state in which employees perform their own unique themselves within their roles at work, contributing their resources and experiencing an emotional connection to the work. The researchers' conceptions of each dimension as a temporally dynamic condition, a generally stable variable that fluctuates among individuals, or both, as well as whether they report for each individually or as a singular component, have varied. However, generally speaking, they have described it as a mentally stable state. (See Christian et al., 2011, pp. 91–94).

The literature has produced several models and theories that serve as a foundation for improving employee engagement. Three psychological factors that encourage personal interaction have been articulated and shown by Kahn (1990). These factors are safety, availability, and meaningfulness. In his research, he looked at how people's perceptions of themselves and the environments in which they worked affected their levels of personal engagement and disengagement. His research revealed a relationship between

psychological meaningfulness and the aspects of the job that encouraged or discouraged personal engagement. Comparatively, psychological safety was linked to aspects of social systems that produced social circumstances that were more or less safe, predictable, and consistent. Furthermore, psychological availability was linked to individual diversions.
Work engagement has been related to a large number of performance indicators in the past decade (Chughtai & Buckley, 2011, p. 685) and identified as a predecessor to, for example, performance at work. To provide additional context, employee innovativeness (Huhtala & Parzefall, 2007) and contextual and task performance (Christian et al., 2011). According to research by Farndale et al. (2014) active learning, organizational citizenship behavior, emotional commitment, initiative, and perceived organizational performance are all positively connected with work engagement,

There are various reasons why employees who are engaged in their work may perform better than the ones that are not. In this section, we will discuss two of the causes (for more information, see Demerouti and Cropanzano, 2010). First, Bindl and Parker (2010) found that motivated workers frequently experience positive emotions. According to Cropanzano and Wright (2001), people who are satisfied with what they're doing are more optimistic, more social, and more willing to provide a helping hand to those around them. According to the broaden-and-build theory developed by Fredrickson (2001), positive emotions such as interest, joy, and contentment can help people broaden their fleeting thought-action repertoires and assist them in the process of building their resources. These personal resources can include anything from intellectual and physical assets to social and psychological ones. For example, joy can enlarge available resources by igniting a desire to engage in creative and innovative activities. Another beneficial feeling is interest, which stimulates a need to study, take in new experiences as well as information, and improve (Fredrickson & Losada (2005). Engaged workers may have a higher rate of productivity because they experience positive emotions regularly and are more receptive to new experiences (Bakker et al., (2012).

The implication that engaged workers have more physical resources is a second factor that may contribute to their improved performance. In fact, studies have generally found a link between good health and job satisfaction. For instance, a study by Schaufeli et al. (2008) found that engaged employees complained less frequently about their psychosomatic symptoms than their disengaged peers. Similar findings were made by Demerouti et al. (2001), who discovered moderately negative relationships between participation (especially vigor) and reports of psychosomatic illness (e.g., headaches, chest pain). Additionally, Hakanen et al. (2006) study of Finnish teachers discovered a favorable correlation between work engagement and workability, as well as self-rated health.

According to West and Farr (1989), organizations frequently present innovations to deliver gains, but implementing innovations necessitates a significant amount of work from employees. Employee focus and absorption in their job are necessary for innovative behavior because it entails the production of something new (absorption). Furthermore, innovation is change-focused (Spreitzer, 1995; Woodman et al., 1993). Due to the uncertainties and insecurity changes may bring, other employees may oppose them (Argyris, 1960). Therefore, people who seek to resist change frequently oppose innovative personnel. It can be challenging and draining on the emotions to persuade skeptical employees of the advantages of innovations. Different behaviors are needed at each level of the innovation process (Janssen, 2004). According to Agarwal et al. (2012), employees must have the mental fortitude to resist the urge to take time away from their jobs (vigor). People also need to feel important and proud of what they are doing to consistently spend such cognitive and emotional resources. And they also need to believe that the extra effort is beneficial. Only when people are this fond of their employment can they give their work their entire attention (dedication).

Absorption, dedication, and vigor are the three crucial elements of work engagement. Absorption is defined as a feeling of being completely focused and profoundly involved in the tasks at hand, whereas vigor refers to having high amounts of mental resilience

and energy, and tenacity even in challenging situations. A feeling of likeability, relevance, and challenges in activities are considered dedication or devotion. Work engagement, a long-lasting beneficial affective–cognitive state marked by vigor, devotion, and absorption (Wefald & Downey, 2009), aids in the emergence of innovative work behaviors. A positive connection between the three facets of work engagement and innovativeness was discovered by Bakker et al., (2007):

- vigor
- dedication
- absorption

Hence, a hypothesis can be presented in the following way:

H3: Work engagement is a necessary but not sufficient condition for innovative work behavior.

## 3.9 Work engagement as a mediator of innovative work behavior

Based on the findings of several earlier studies (for example, Huang et al., 2016; Wheeler, 2011), coaching leadership is associated with improved individual efficiency. Impacts have been observed in a range of areas, such as job completion (Huang et al., 2016), sales performance (Agarwal et al., 2009), and overall client satisfaction (Wageman, 2001). Even while tangible proof of a connection between managerial coaching and an individual's performance is still not very common, there is a significant amount of indirect evidence in the research that has been conducted so far. According to the findings of several studies, managerial coaching, for example, is positively associated with employee satisfaction (Moen & Federici, 2012; Wheeler, 2011). This, in turn, leads to higher performance at work (for example, Baptiste, 2008; Killic & Dursun, 2008). In addition, the success of an organization's performance can be predicted by the quality of its leadership, as shown by several studies that have used a variety of leadership models (for example, Alimo-Metcalfe et al., 2008 and Kuvaas, 2007). According to the research that was discussed earlier, this leads to the conclusion that active coaching

behavior as a part of a leader's actions assists employees in achieving their goals and giving their best effort while they are on the job.
Hence, a hypothesis can be formed:

H3a: Managerial coaching is necessary but not sufficient for work engagement.

The connection between organizational outcomes and job resources through engagement is a key tenet of JD&R theory. Ample job resources (LMX in this study) lower workload requirements, promote target achievement and elicit favorable emotional responses, including work engagement (Hobfoll, 2001). Completely engaged employees that find their work to be interesting and relevant are motivated to persistently complete even the hardest tasks. Having positive feelings about one's job encourages experimentation, which produces fresh concepts and inventive solutions, like innovative work behavior (Fredrickson, 2001).

A comprehensive JD-R model framework is often used to elaborate on predecessors of work engagement. The base presumption of JD-R theory is that working environment characteristics can be categorized into two overall categories: job resources and job demands (Demerouti, Bakker, de Jonge, et al., 2001; Demerouti, Bakker, Nachreiner, et al., 2001). Job demands are defined as elements of a job's psychological, physical, organizational, or social requirements that involve sustained physical and/or psychological (emotional and cognitive) costs or/and effort. Role overcharge, excessive work pressure, bad environmental circumstances, and emotional demands are clear examples of job demands. High job demands have been discovered to correlate positively with emotional exhaustion (Bakker et al., 2007). Psychological, organizational, physical, or social aspects of a job such as reaching work goals, lower job demands, encouragement to personal growth and development, minimize psychological and physiological costs, are regarded as job resources (Agarwal et al., 2012).

Job resources can be found at different levels. The organizational level resources are e.g., salary, professional opportunities, and job security. Resources are also found amongst social and interpersonal relations e.g., team spirit, colleague and managerial support as well as within the organization of work e.g., participative decision making and clear description of the role and at the task level e.g., know-how, task identity, and significance, autonomy, and performance feedback. Feedback, autonomy, know-how, task control, and implementation (Bakker & Geurts, 2004; Hakanen et al., 2006; Salanova et al., 2005; Schaufeli et al., 2009; Xanthopoulou et al., 2009) and managerial and colleague support (May et al., 2004; Saks, 2006a) have been examined in the literature as predictors of work engagement.

An employee's immediate manager provides the job resources that enable employees to achieve their job demands (Joo, 2010; Rousseau & Greller, 1994). The immediate manager represents the organization and hence their actions have a major impact on employees' conduct and attitudes (Tymon et al., 2011; Whitener, 2001). A manager who supplies the necessary resources to achieve goals, leads by example, has the skills for developing people, and is personally effective appears to the employees as a supportive manager (Bhatnagar, 2007).

Research on the character of interactions between managers and their employees frequently employs LMX theory. Relationships of superior quality are identified by trust, regard, and fidelity. In contrast, low-quality relationships have been defined by a lack of trust, respect, and loyalty (Morrow et al., 2005). Sparrowe and Liden (1997) concluded that individuals with superior-quality leader-member relationships gain more time, directional information, and emotional assistance from their leader than those with low-quality relationships. Because their managers introduce them to critical members of the social network, these individuals have access to social and political resources and more information (Sparrow & Liden, 1997).

Psychological safety is the perception that interpersonal risk-taking is acceptable. This is experienced by employees whose relationships with their immediate managers are strong and of high quality (Bakker & Leiter, 2010). Psychological safety is essential for encouraging work engagement since it prevents the draining of vigor, a fundamental component of engagement. According to Bhatnagar (2007), mentors increase work engagement; managers of high-quality exchange relationships are resources that help with the achievement of work objectives, encourage individual growth, and improve work engagement. In exchange for relationships of high quality, managers mentor employees (Scandura & Schriesheim, 1994). Macey et al. (2009) claim that the quality of the exchange relationship between managers and employees is a key work resource that promotes work engagement. However, empirical tests of this relationship are frequently lacking.

The psychological contract theory can clarify the reciprocity between employees and immediate managers. The psychological contract encompasses the perceived promises offered to employees in exchange for effort (e.g., expertise, discretionary work behavior loyalty) (Rousseau, 2000). Employee performance corresponds to their interpretations of an implicit contract to the extent that value propositions satisfy needs (Macey et al., 2009). When managers meet the psychological contracts of employees by attending to their personal and professional demands and respecting these, employees feel obligated to respond similarly. Employees sense bound to respond by engaging their work with higher vigor, devotion, and absorption (Saks, 2006a).

Several studies have demonstrated that work engagement acts as a mediator between organizational success and job resources, demonstrating the strength of the motivational process. According to Saks (2006), researchers discovered that relationships existing between antecedents (recognized leadership support, job characteristics, procedural justice, rewards and recognition, and distributive justice) and intention to quit organizational dedication, and organizational citizenship behavior(individual) are mediated by work engagement. Engagement also mediated the

relationships between other outcomes such as organizational citizenship behavior (organization) and job satisfaction but to a lesser extent. In Sonnentag's (2003) study, proactive behavior was found to be affected by recovery through engagement. Other studies claim that engagement mediates the link between job resources and turnover intentions (Schaufeli & Bakker, 2004).

According to research carried out by Richardsen et al. (2006), work engagement acted as a partial mediator among the effects of job demands, job resources, personal characteristics, and self-efficacy and organizational loyalty. Work engagement has also been found to act as a mediating link between workplace resources (feedback, control, and variety) and proactive behavior (Salanova & Schaufeli, 2008). Furthermore, Rich et al. (2010) discovered that engagement functions as a mediator between links among observable organizational support, value congruence, task performance, core self-evaluations, and organizational citizenship behavior. As a consequence of this, it is expected that work engagement will play the role of a mediator in the connection between LMX and creative work practices. Based on previous research a hypothesis can be suggested:

H3b: Leader-member exchange is necessary but not sufficient for work engagement.

# 4 Data and methodology

This chapter takes a closer look at the empirical part of the study. Starting by introducing the general features of quantitative research and closer examination of collected data and its origin. Chapter 4.4 presents the variables and measures used in this study and views the validity and reliability. The end of this chapter presents the analytical methods used.

Rstudio was used to execute all data analysis. To enable the NCA analysis, a separate extension package, NCA 3.2.0, was installed in accordance with Dul's (2022) instructions. The information from the questionnaires, which had been obtained from the HERMES project in Microsoft Excel, was imported into IBM SPSS so that the sum variables for the factors that had been chosen for this study could be calculated. After that, the file from SPSS was brought into Rstudio so that more analysis could be done. IBM SPSS is an efficient statistical software platform that contains a wide range of features that enable various statistical tests to be performed even on very large and complex data sets. Hence, it was chosen to be used in this study (See SPSS Statistics | IBM, 2020).

A listwise deletion for the data from participants who did not complete all items related to questions regarding research variables was done. Listwise deletion of data is possible to use to get an intact data set and was chosen for this study. The remaining sample was still relatively large, N=3579, and complete case analysis was considered to suit the best for this study. After performing the listwise deletion, also known as eliminating rows that had some values missing on the variables concerning this research, the data was ready to be examined.

## 4.1 Descriptive-experimental study based on quantitative methods

Quantitative research is a method that gives a general picture of the relationships and differences between variables. Quantitative research is characterized by a quantitative, numerical examination of the phenomenon. Questions related to numbers or

percentages are often studied with the help of quantitative research methods. Quantitative research answers questions such as How many? How often? How much? The researcher requires the data in numerical form or quantifies qualitative data in numerical form. Conclusions are made based on statistical analysis and the results are often illustrated in the form of tables and figures. Dependencies between things can also be studied quantitatively. Compared to qualitative research, the collection of quantitative data is more structured, and the most common data collection method is a standardized survey (Heikkilä, 2001, p. 15; Vilkka, 2005, p. 43.).

Previous theories and conclusions, observation material based on quantitative measuring, and conclusions based on statistical analysis are key features of quantitative research. In addition, hypotheses can also be used in quantitative research. Hypotheses are justified presumptions about solutions to set problems and they are often stated in the form of statements (Hirsjärvi et al., 2009, pp. 136, 154).

This study can be characterized as a descriptive-experimental study that measures the relationship between antecedents such as work engagement, managerial coaching and leader-member exchange, and innovative work behavior. The descriptive part of the study aims to map the current situation and describe events, beliefs, and processes related to these phenomena. Based on the researcher's background and previous studies, there is a strong assumption that work engagement affects innovative work behavior positively, this study is also partly explanatory. Explanatory research is often used to search explanation of the phenomenon in the form of causal relations (Hirsjärvi et al., 2009, p. 134).

## 4.2 Necessary Condition Analysis (NCA)

According to Chung (1969); Goertz et al. (2002), scholars often mix necessity and sufficiency although they are different. The distinction between a necessary cause and a sufficient cause is that a necessary cause enables the outcome to take place, while a sufficient cause guarantees that the outcome occurs. A necessary cause is a limitation,

impediment, or obstruction that must be resolved for the outcome that is wanted to occur. Traditional models of multi-causality of outputs assume that every cause is enough, but not necessary, to contribute to the outcome. This additive model can be put into mathematical form as follows:

$$\boldsymbol{Y = a + b_1 \times X_1 + b_2 \times X_2 + b_n \times X_n} \ldots \quad (1)$$

Necessary causality is more of a multiplicative phenomenon and Goertz (2003) expresses it as follows:

$$\boldsymbol{Y = X_1 \times X_2 \times X_3 \times X_n} \ldots \quad (2)$$

Everyday experiences provide great examples of zero values in necessary conditions. Let's say a car gas tank is determinant and desired outcome is driving the car. The outcome can't come true without filling the tank. Obstacles preventing the outcome to exist must be corrected first to achieve the desired outcome. Traditional approaches can only tell how to improve or achieve certain outcomes if none of the determinants are critical. NCA completes traditional causal approaches instead of replacing them (Dul, 2016).

### 4.2.1 Logic behind NCA

In the previous example about an empty car tank, the outcome can only have 2 values: empty or full. This is dichotomous logic, which is fundamental binary logic in which the outcome can only be 0 or 1. Necessary conditions and outcomes can also have other values depending on the situation. In the situation of a discrete variable, like the Likert scale variable. The necessary condition and its outcome could result in more than two values, and the value has no limit in continuous cases. (Dul, 2018). This study uses a 7-step Likert scale and hence the outcome can have more than two values, but it is not a continuous situation.

### 4.2.2 Ceiling Techniques

According to Dul (2016), the necessary condition analysis starts by drawing a scatter plot that visualizes the data, in a Cartesian coordinate system. This scatter plot reveals the contrast between X and Y. A necessary condition can be identified by visually examining the scatter plot and identifying if an unoccupied area can be located in the high left section of the scatter plot. If an empty space can be identified, a necessary condition of X for Y may exist. A ceiling line can then separate the zone with observations from the unoccupied zone without observations. Accuracy entails making the empty zone as big as possible and keeping it free of any observations. Nevertheless, choosing an appropriate ceiling line typically involves weighing the extent of the unoccupied zone and the number of observations in the unoccupied zone. The "ceiling zone" is the name given to the unfilled zone because it is not necessarily always unfilled. The location of the data cloud surrounding the ceiling line could suggest that the optimal ceiling line is neither linear nor increasing. An optimal ceiling line could either be a piecewise (linear) function or a smooth line. In general terms, a ceiling function can be written as follows:

$$\boldsymbol{Y_c} = f(\boldsymbol{X_c}) \text{ (Dul, 2016)} \qquad (3)$$

Dul (2016) reviewed suitable ceiling techniques in his article. These results are presented in Table 2 and the most suitable techniques are highlighted.

**Table 2:Ceiling line techniques comparison**

| Ceiling Line Technique | Observations That Are Used | Predefined Ceiling Function | Allow Points Above Ceiling | Drawing Procedure |
|---|---|---|---|---|
| CE-VRS | Upper left | No | No | Optimization |
| CE-FDH | Upper left | No | No | Optimization |
| CR-VRS | Upper left | Yes | Yes | Optimization+statistical |
| CR-FDH | Upper left | Yes | Yes | Optimization+statistical |
| COLS | All | Yes | No | Statistical |
| QR | All | Yes | Yes | Statistical |
| SFA | All | Yes | Yes | Statistical |
| LH | Lowest left and highest right | Yes | Yes | Mathematical |

CE-FDH is recommended as the default ceiling envelopment technique for NCA due to its flexibility and intuitive and straightforward suitability to continuous, discrete, and dichotomous necessary conditions. An upper left set of observations along a piecewise linear function is the outcome (Dul, 2016). The percentage of observations that are located either above or below a ceiling line, multiplied by 100 percent is used to determine the ceiling line's precision. Hence, the accuracy for CE-FDH, CE-VRS, and COLS is 100%, however, the accuracy for the other approaches can be less than 100%.

### 4.2.3 Permutation test

For testing statistical significance, statisticians have utilized the permutation test since Fisher (1960). Due to the test's high processing requirements, it remained unpopular until recently (Hayes, 1996; Ludbrook & Dudley, 1998). Since the widespread availability of quick computers, permutation tests have been designed for regression and correlation (Anderson & Robinson, 2001; DiCiccio & Romano, 2017), qualitative comparative analysis (Braumoeller, 2015), the general linear model (Winkler et al., 2014), and ANOVA (Anderson, 2001). The permutation test gives an outcome of the p-value. The test is especially helpful when there are no analytical methods for estimating the p-value or when the presumptions for these methods are not true.

## 4.3 Research data

This study utilizes previously collected data. Data were collected as a part of a broader, HERMES, research project during the years 2015-2016. The main purpose of the research project was to map the current status of HRM in SMEs in the participating companies. A total of 100 SMEs were engaged, mainly via direct contact, to participate in the employee questionnaire. Companies were scattered all over Finland from Helsinki to Kittilä. Data collection was performed in the second step of the HERMES project. The research project is presented in more detail in Figure 4 (See Viitala et al., 2016, pp. 29–33).

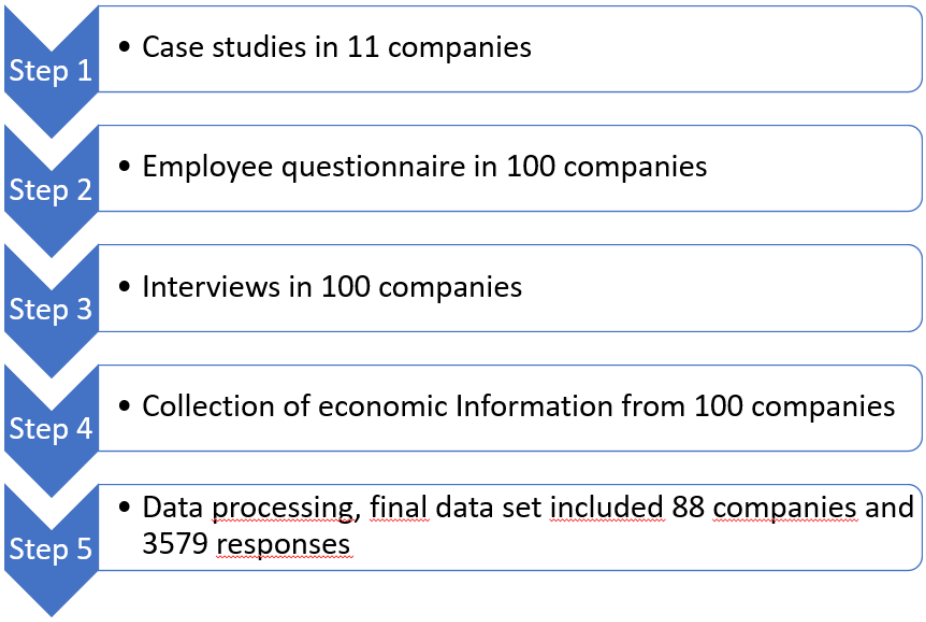


**Figure 4: The HERMES-research project phases as a diagram. (Edited from Viitala et al., 2016)**

Starting in the fall of 2015, the researchers sought for the appropriate businesses to participate in the project by promoting it through a variety of media, including local periodicals, the news, social media (Facebook, LinkedIn), and direct contact with the businesses. The research team also presented the topic at various seminars, forums, and MBA programs. They also obtained support from networks, including entrepreneurs from Oulu and Vaasa who endorsed the research initiative to their stakeholders. Eventually, researchers from the Lappeenranta University of Technology recruited the majority of the businesses by calling the managing directors and human resource directors of fitting businesses (Viitala et al., 2016, pp. 33–34).

Each company was given a researcher who was also in charge of organizing the data collection. A large portion of the data was gathered via an electronic questionnaire. For approximately one-third of the companies involved, a paper version of the questionnaire was shared and a research assistant typed the questionnaires into a Webropol application afterward. English, Swedish, and Finnish versions of the questionnaires were available (Viitala et al., 2016, p. 90).

### 4.3.1 Sample

The initial HERMES-project sample consisted of 4418 participants from 100 different SMEs and various regions of Finland. The enterprises ranged in size from a little under 30 to just over 250 people (Viitala et al., 2016, pp. 34–90). However, only the data sets that were filled out were used in the analysis for the current study. 10434 employees had received the questionnaires. 821 of the 4418 replies that were received were missing data for the factors that were important to this research. After a listwise deletion of these 821 responses, 3579 responses were included in the final research data. 88 SMEs made up the final sample, which included businesses from a variety of industries such as manufacturing, IT, construction, services, retail, and education.

## 4.4 Measures

To predict or explain behavior, scientists frequently develop hypotheses that incorporate speculative mechanisms and abstract components. This happens because these give the best explanation and description for the observed phenomenon. In truth, a lot of study variables, particularly those relevant to behavioral scientists, are called constructs and are fictitious objects derived from theory and conjecture. Although hypothetical and fictitious, constructs are crucial for describing and projecting behavior in a theory. This is because it is easy to look at the variables that could, in theory, affect a concept and research the behaviors that could, potentially, follow from it (Privitera, 2018).

The participant questionnaire for the HERMES project included 101 statements in total and addressed 17 different themes or study constructs. Goal orientation, leader-member interchange, and work motivation were among the themes that were covered in addition to the three constructs that were of interest in the current study—managerial coaching (including LMX), work engagement, and innovative work behavior. Participants were also asked about whether they hold a managerial role or not, their gender, what type of employment they had when they were born, their socioeconomic situation, and how long they had worked for their current employer to give proper background

information for the study (Viitala et al., 2016, p. 34). Background variables were chosen to be left out of this current study.

All the factors selected for this study were measured using a Likert scale from 1-7. By using a Likert scale from 1-7 in their study, the researchers sought to increase the variation and deviation of the replies (see Viitala et al., 2016, p. 34). According to Allen and Seaman (2007), it has been demonstrated that the reliability of the seven-point scale reaches its upper bounds. Likert and others advise using a scale that is as broad as possible as a general guideline. The seven-point scale is more accurate because it is more sensitive than the five-point scale to reduce interpolations but small enough to allow for effective response (Finstad, 2010). In their research, Pajuoja and Viitala (2020) as well as Tanskanen et al. (2019), explored similar constructs and utilized a seven-point Likert scale. de Jong and den Hartog (2010) claim that it is common for researchers not to reveal the used response scale.

The following sections include descriptions of the measurement scales and research constructs that were chosen to address the study's research topics. Chapter 4.4.1 onwards, presenting all the construct elements as well as the findings from this study (such as bottleneck tables, p-value tests, and NCA graphs). For the complete list of measurement scales and the original Finnish questionnaire, view Viitala et al. (2016, pp. 168–173). Appendix 1 contains the English translation of the complete questionnaire.

### 4.4.1 Innovative Work Behavior

Except for two items, de Jong and den Hartog's (2010) ten-item scale was used for the HERMES project. The additional questions were included to measure how co-operatively ideas are applied and how well they are received (see Pajuoja & Viitala, 2020). Consequently, there were twelve elements in total. Every item had also been changed to allow participants to rate their activities with a Likert scale ranging from 1-7, "never" to "very often" respectively (Viitala et al., 2016).

### 4.4.2 Work engagement

Work engagement (WE) has also been featured in recent years with the concept of work absorption. The 9-part Finnish version of the UWES-9 meter was used as the instrument (Schaufeli et al., 2006; Seppälä et al., 2009). It deals with job absorption through three sub-dimensions (ownership, immersion, and vigor). Participants were requested to answer on a scale from 1 to 7, where 1 = never, 7 = every day (Viitala et al., 2016, p. 45).

### 4.4.3 Managerial coaching

Evaluation of the supervisor's activities in the reference framework of coaching leadership. It was measured with nine statements, which were selected from the 29 variables, with the statistically strongest explanation as a criterion. The original set of indicators has been developed and tested extensively in the Finnish organizational environment (Viitala et al., 2016). A full list of questions can be found in Appendix 1.

### 4.4.4 Leader-member exchange

Interaction with the manager was defined as a somewhat separate dimension from the manager’s activities, where the emotional experience of the relationship with one's manager is central. The quality of bilateral manager-subordinate relationships was measured by using the measurement system developed and validated in the Läike project. The measurement system was based on the LMX theory (Dansereau Jr et al., 1975; Graen & Uhl-Bien, 1995; Mäkelä et al., 2013). In addition to the seven statements of the traditional LMX indicator, the meter contains new statements, making a total of 12. The question battery can be found in Appendix 1.

# 5 Results

We start to examine if determinants MC, LMX, and WE are necessary for IWB. The analysis was started by doing a scatter plot where innovative work behavior (outcome) is on the Y-axis and managerial coaching (condition) on the X-axis. Each dot represents a case. Default ceiling lines were added to help in the interpretation of the scatter plot. If there is a necessary but not sufficient state among these variables there should be an area without cases in the high-left coign of the scatter plot. If there is no ‘‘empty space,’’ (i.e., the high left coign has observations) a necessary condition is not present. In Figure 5 there is a barely noticeable area without observations in the high-left coign. The green regression line shows the relationship between innovative work behavior and managerial coaching (additive analyzing methods). The regression line indicates that there is a positive correlation between these variables.

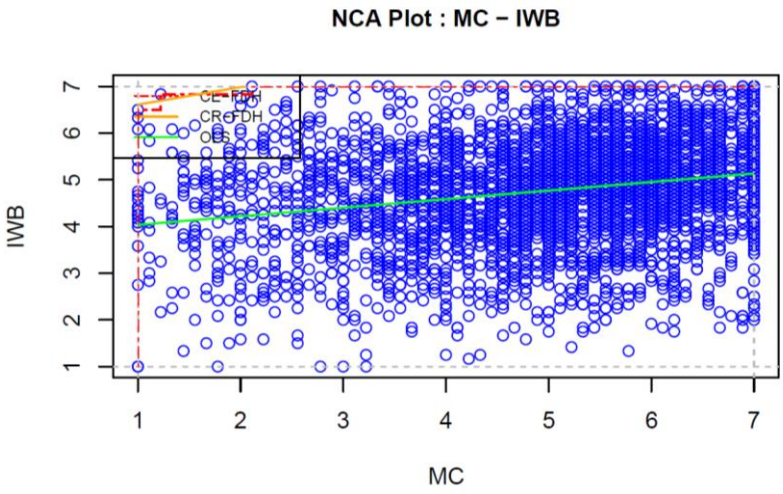


**Figure 5: Managerial coaching-innovative work behavior**

The next step in the analysis is to quantify the results of the scatter plots. According to Dul (2018), the scope over the ceiling line is the necessary condition effect size (d). It has a range of 0 to 1. The effect size expresses the degree to which the condition is required for the outcome (i.e., the extent to which the condition constrains the outcome). Depending on the situation, an effect magnitude may or may not be considered essential. According to Dul (2022), an effect size may be enormous in one situation while being minor in another. Therefore, it is debatable whether an influence may be classified as

"small", "medium", "large", or "very large". Effect size full scale from 0 to 1 can be divided according to these categories: 0-0.1, 0.1-0.3, 0.3-0.5, and 0.5-1. Dul et al. (2020) mentioned in their article that if the empty space above the data is at least 10% of the scope a hypothesis is said to be supported, which is typically applied as a 0.1 threshold level for effect magnitude. Testing a necessary condition hypothesis solely based on effect size, however, could lead to inaccurate conclusions because the outcome might not be statistically significant. **Error! Reference source not found.** shows the effect size of 0,007 for MC when IWB is the outcome, which indicates that MC has a very small or non-effect on innovative work behavior.

**Table 3: Effect size and p-value**

| Y=WE | ce-fdh | p |
|---|---|---|
| LMX | 0,002 | 0,231 |
| MC | 0,002 | 0,04 |
| | | |

| Y=IWB | ce-fhd | p |
|---|---|---|
| LMX | 0,021 | 0,093 |
| MC | 0,007 | 0,252 |
| WE | 0,068 | 0,000 |

In the NCA analysis, the effect size can be subjected to a statistical significance test, which is an approximate permutation test. The significance test increases the reliability of the analysis. This significance test utilizes a large number of random samples, 10,000 in this research, to determine the distribution of effect sizes under the null hypothesis (X and Y are unrelated). This distribution is compared to the observed effect size and used to calculate the p-value. This helps prevent the misconception that an empty space indicates necessity when it is merely a coincidental occurrence (Dul et al., 2020). **Error! Reference source not found.** shows a p-value of 0,252 for MC when IWB is the outcome. The p-value of MC reveals that the empty space in the scatterplot is likely to happen by random occurrence. This indicates that there is evidence against the null hypothesis. By rejecting the null hypothesis, H1, we can conclude that MC is not a necessary condition for innovative work behavior. The regression line on the other hand indicates that there is an increase in IWB if MC is more present.

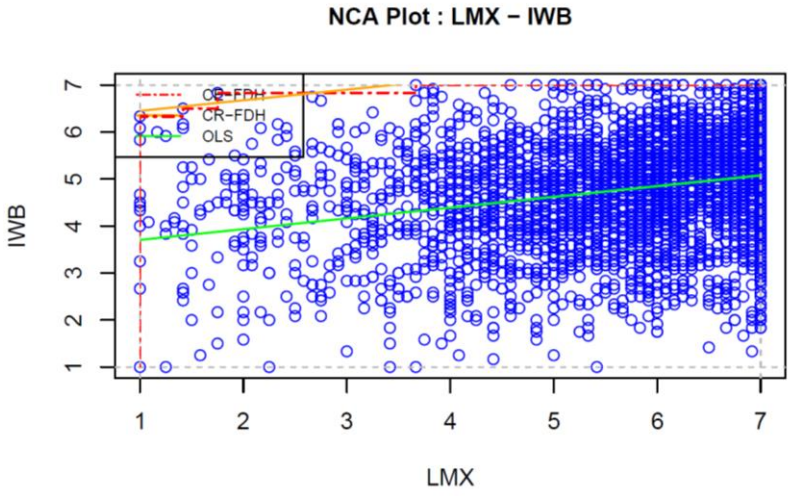


**Figure 6: Leader-Member eXhange - innovative work behavior**

LMX as shown in Figure 9, suggested a similar result as the MC in Figure 5. There is no or very vague empty space in the high left coign of the scatter plot. The effect size for LMX was 0,021 and the p value was 0,093. The p-value of LMX reveals that the empty space in the scatterplot is likely to happen by random occurrence. This indicates that there is evidence against the null hypothesis. By rejecting the null hypothesis, H2, we can conclude that LMX is not a necessary condition for innovative work behavior. Like in the previous case, the regression line indicates that there is an increase in IWB if LMX is more present.

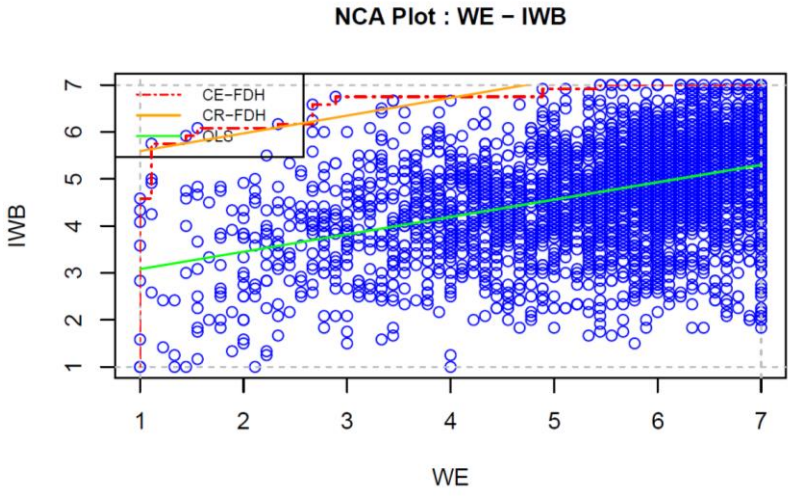


**Figure 7: Work engagement - innovative work behavior**

As can be seen from Figure 7, there is a noticeable empty space in the high-left coign of the scatter plot. The effect size for WE were 0,068 and the p-value 0,000. The p-value reveals that the empty space in the scatterplot is not likely to happen by a random occurrence. This indicates that work engagement is necessary to achieve outcome Y(IWB) and hence the null hypothesis, H3, is supported. The regression line also indicates that there is an increase in IWB if WE is more present.

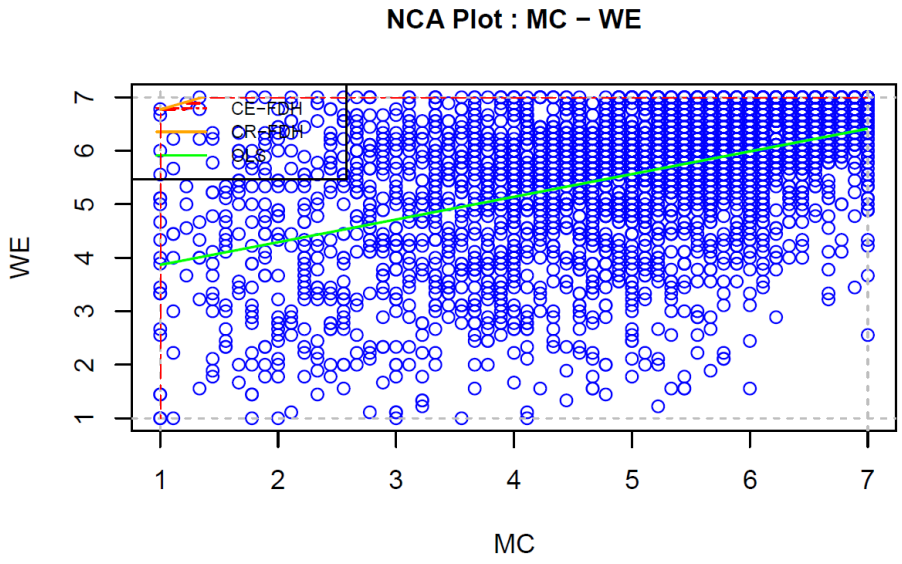


**Figure 8: Managerial coaching – work engagement**

The second outcome of this study was work engagement. According to the theoretical framework, work engagement acts as a mediator for managerial coaching and leader-member exchange and results in innovative work behavior. Figure 8 shows that there is no or very vague empty space in the scatterplot. Analysis shows that the effect size is 0,002 which according to Dul et al. (2020) does not reach the 0,1 threshold. An effect size smaller than 0,1 indicates a small effect. The p-value was 0,04 indicating that there is evidence supporting the null hypothesis. The regression line in the scatterplot also shows an increase in work engagement when more managerial coaching is present.

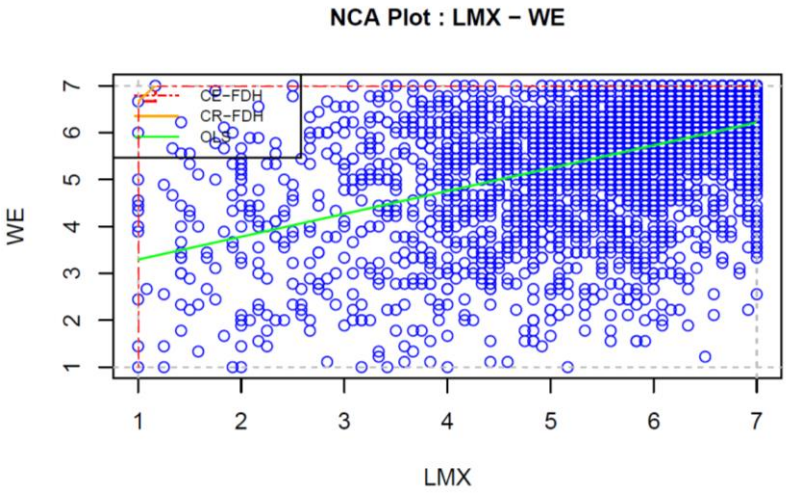


**Figure 9: Leader-Member eXchange-Work engagement**

The theoretical framework also emphasizes the positive effect of leader-member exchange to work engagement. Figure 9 shows that there is no or very vague empty space in the scatterplot. Analysis shows that the effect size is 0,002 which according to Dul et al. (2020) does not reach the 0,1 threshold. An effect size smaller than 0,1 indicates a small effect. The p-value was 0,231 indicating that effect size is more likely being caused by a random occurrence. Hence, we can reject the null hypothesis H3b. The regression line in the scatterplot reveals an increase in work engagement when more leader-member exchange is present.

**Table 4: Bottleneck table (WE and IWB)**

| Y=WE | LMX | MC | | Y=IWB | LMX | MC | WE |
|---|---|---|---|---|---|---|---|
| 10 | NN | NN | | 10 | NN | NN | NN |
| 20 | NN | NN | | 20 | NN | NN | NN |
| 30 | NN | NN | | 30 | NN | NN | NN |
| 40 | NN | NN | | 40 | NN | NN | NN |
| 50 | NN | NN | | 50 | NN | NN | NN |
| 60 | NN | NN | | 60 | NN | NN | 1,9 |
| 70 | NN | NN | | 70 | NN | NN | 1,9 |
| 80 | NN | NN | | 80 | NN | NN | 7,4 |
| 90 | NN | NN | | 90 | 6,9 | NN | 27,8 |
| 100 | 2,8 | 5,6 | | 100 | 44,4 | 18,5 | 74,1 |

The bottleneck table shows the percent values of the variable needed to achieve the outcome percent. Regarding work engagement as an outcome, we concluded that LMX is not a necessary condition and the null hypothesis couldn't be rejected. Managerial coaching on the other hand revealed a necessary condition even though the suggested effect size of 0,1 was not met. According to the bottleneck table, to achieve 100% outcome (work engagement), 5,6% of managerial coaching is necessary. In the previous results, we confirmed that hypotheses H3 and H3a were supported. Hypothesis H1, H2, and H3b were rejected and it is concluded that work engagement is a necessary condition for innovative work behavior. The bottleneck table indicates that to achieve a 70% outcome, 1.9% of work engagement is needed and to achieve a 100% outcome, 74,1% of work engagement is needed and for 100% of work engagement, 5,6% of managerial coaching has to be present. LMX was found not to be a necessary factor for IWB or WE.

# 6 Discussion and implications

Some employees wind up investing additional effort at work. For instance, they work longer hours than required, work on holidays, and give up their utmost effort to finish a task. This voluntarily applied approach to work is referred to as discretionary effort (Zigarmi et al., 2012). Executives are drawn to discretionary effort because they understand that not every action is governed by management control and design. The need for employees who recognize and act to an urge and do not require encouragement is of growing importance among organizations. Organizations require enthusiastic personnel who go above and beyond and are engaged (Macey & Schneider, 2008). Given its importance, executives and academics continue to call for a deeper comprehension of the characteristics that encourage involvement. This study investigates links between work engagement, leader-member exchange, and managerial coaching, testing the necessity of these variables to innovative work behavior.

## 6.1 Theoretical contributions

The research presented here brings valuable theoretical contributions to three different areas of study. The study contributes to a small but growing area of research on work engagement that examines the variables that affect employee engagement and its results. This study adds to the area of research regarding organizational resources that encourage a willingness to devote time and skills to a task at work by further analyzing the relationship between LMX and managerial coaching on work engagement. The study also adds context, which is its final contribution. Understanding employee engagement is a key issue for global organizations looking to improve performance.

Three conclusions can be drawn from the study's findings. First, work engagement is a necessary but not sufficient condition for a high level of innovative work behavior. Second, managerial coaching and LMX are not necessary conditions for innovative work behavior. Third, managerial coaching and LMX do not act as necessary conditions for work engagement. The conclusion based on this study is that work engagement is a

necessary but not sufficient variable for innovative work behavior, and more research must be done to discover what are the determinants affecting work engagement.

Findings from this study indicate that work engagement plays a crucial role in achieving a high level of innovative work behavior. Supportive supervisors provide direction and information, unlock untapped potential, and encourage subordinates' willingness to dedicate their efforts and abilities to completing work duties (Meijman & Mulder, 2013). When immediate leaders show support and concern for their employees, they give back by working hard to complete duties. Based on this study, these are additive functions that are not necessary but might increase the outcome if present. This study was done using NCA methods and hence it is important to notice that any results that are additive i.e., regression lines, have to be confirmed with other suitable analyzing methods.

This research focuses on the behavioral and attitude impacts that engaged employees make on the success of their organizations. Engaged employees encourage organizational efficiency by exhibiting independent, innovative work behaviors (Borman & Motowidlo, 1997). The Broaden-and-Build theory of positive emotions introduced by Fredrickson (2001), states that experiencing positive emotions increases the probability of innovative work behavior by broadening thought-action repertoires. This is consistent with the positive impacts of work engagement on innovative behavior.

The discovery that work engagement is a prerequisite for innovative work behavior is a significant contribution made by this study. LMX and managerial coaching only appear to function as additive factors; neither is a necessary condition for innovative work behavior. Innovative behavior depends on how engaged the employee is at work, even when organizations exhibit supportive practices. For businesses to achieve their strategic goals of innovative work behaviors and keeping highly competent employees, work engagement is crucial.

## 6.2 Implications for managers

Because work engagement is a necessary condition with significant impacts, businesses have to nurture the vigor and enthusiasm employees contribute to their work. Based on the results of this study managerial actions, MC and LMX, are not necessary for achieving a high level of employee engagement. But the results do indicate additive benefit and are hence aligned with the theoretical framework. Taking a closer look at the regression lines in the scatter plots indicates that organizations should not forget the possible benefits of MC and LMX. Hence it is important to continue to practice and learn to better utilize supportive work behaviors. Organizations should attempt to create cultures where employees are engaged in their work if their strategic goals are to promote innovative behavior. Following are a few considerations for managers and organizations.

According to Bakker and Demerouti (2014), managers should communicate clear and specific goals, expectations, and roles to employees. These actions have been shown to increase work engagement. In their research, Deci and Ryan (2000) argue that providing employees with autonomy can lead to increased work engagement. Managers should allow employees to make decisions and provide them with opportunities to use their skills and creativity. Offering regular feedback and recognition for a job well done can improve engagement (Harter et al., 2002). Managers should provide timely and specific feedback, recognizing employees' achievements and contributions. A study by Saks (2006) suggests that a positive work environment, including social support and positive relationships among employees, can improve work engagement. Managers should encourage social support and positive relationships among employees, as well as promote work-life balance and well-being. Shuck and Wollard (2010) propose that leadership is an important factor in promoting work engagement. Managers should lead by example, modeling behaviors that promote engagement, such as enthusiasm, commitment, and passion for their work. Finally, Tims et al. (2011) argue that job crafting, or allowing employees to modify their work tasks and roles, can increase work engagement by providing employees with a sense of control over their work. Employees

who have opportunities to learn and grow in their jobs are more likely to be engaged. Managers should provide training, coaching, and other development opportunities.

## 6.3 Limitations and future research

Regardless of considerable theoretical advancements, the research faces certain restrictions. Keeping in mind the limitations of this research the potential implications and conclusions should be evaluated with caution. Using a single source for getting the data for criterion and predictor variables, a sense of anonymity, and using a self-report questionnaire, are examples of the study's common method bias-related restrictions. Future research should place greater emphasis on excluding every possible common method effect to reduce the influence of common method biases. Researchers might meticulously adhere to the methods suggested by Podsakoff et al. (2003) and develop even more effective strategies for mitigating their effects. The methodology and statistical controls have to be taken extra notice. Despite recommendations for studies to switch to independent evaluations to minimize percept-percept bias, Anderson et al. (2004) highlight a concern regarding the continued use of self-report measures of innovativeness (Anderson et al., (2004, p. 157). Finding patterns in the criterion variables and predictor similarities and reducing such patterns through the study's design is necessary to control the common method variance. Future research could attempt to quantify managerial coaching from the employees and the innovative work behavior of the employee from the leader or historical organizational data. Even though this method has drawbacks and is not practical in all circumstances, it does have some advantages (see Podsakoff et al., 2003, pp. 887–888).

When employing the method that was proposed, there is a lower probability that the observed connection between the dependent and independent variables is influenced by bias. Additionally, it removes of any additional tendency on the side of the rater to give lenient responses, such as implicit theories, consistency motifs, dispositional and temporary mood states, and social desirability tendencies. Another workable alternative is to assess work engagement and innovative work behavior apart from managerial

coaching. This could be achieved, for example, by introducing a delay between measurements, concealing the relationship with a cover story, and/or providing different media, situations for the measurement, and answer designs of different variables. Prior to data collection, respondents could have been informed that they must answer all questions honestly and that there are no correct or incorrect answers to help lessen assessment anxiety (See Podsakoff et al., 2003, pp. 887–887).

The survey utilized for this study permitted respondents to respond anonymously, but they were still required to write down information like their gender, title, role, and their supervisor's name. The responses and sense of anonymity may have been impacted by these requirements. To improve respondents' feeling of anonymity, future research may ask participants to complete their background information and question replies on a distinct answer form. These answers can be linked with the respondent number and by doing so increasing anonymity. In case the respondents changed their minds, this would still allow them to remove their information by using their respondent number.

Comparing the results to corresponding concepts used in other reviews or studies, such as executive coaching, leadership coaching, workplace coaching or business coaching, should be done with caution (see e.g., Bozer & Jones, 2018). This research does not imply to cover all the coaching literature. Future research should assess the benefits of various coaching techniques on employee work engagement and innovativeness. For instance, mentoring, team coaching, and leadership coaching may all, though in different ways, have a good impact on employees' work engagement and innovative work behavior. Also, the review ignored all other employee well-being measures and focus on the term work engagement as well as innovative behavior even though creativity and innovation are sometimes used synonymously in the literature.

To incorporate leadership into the JD-R model, Schaufeli (2015) stated that it is a separate characteristic that plays a larger function than that of a simple resource. Additionally, he has argued that it is crucial to look into the effects of leadership in and

of itself since leaders are expected to strike a balance between the resources available to them and the demands of their positions so that their subordinates can be productive, healthy, and motivated.

It is imperative that managers and leaders understand the significance of their coaching behaviors to foster positive changes in the attitudes and actions of their subordinates, such as IWB. Since managerial coaching was considered a JD-R theory extension, future research should examine whether managers who use managerial coaching behaviors manage different job demands and resources in ways that promote work engagement and prevent burnout, or whether managerial coaching indirectly influences work engagement and burnout by reducing demands and increasing resources. This study's limited focus on JD-R model motivation process is another issue. A strong emphasis was placed on the job resources of JD-R model and especially the motivational process. Schaufeli et al. (2009) suggested decreasing job demands rather than increasing job resources because, while increasing job resources (social support, team building, and participative management) would eventually increase job engagement, its indirect effect on turnover intention and direct effect on burnout were found to be relatively small.

# 7 Conclusion

The study agenda linked to management practices, particularly in employment relationships, includes a significant focus on the motivational underpinnings of employee work attitudes and behaviors. This study adds to the current discussion concerning the influence that job resources might have on work engagement. The findings indicate that employee work engagement improves organizations by inspiring workers to adopt innovative work behavior. These findings underline the need of doing research into the conditions that promote affective reactions (work engagement) and their effects. Organizations should investigate more about the necessary factors to boost work engagement.

## References

Acar, O. A., Tarakci, M., & van Knippenberg, D. (2019). Creativity and Innovation Under Constraints: A Cross-Disciplinary Integrative Review. *Journal of Management*, *45*(1), 96–121. https://doi.org/10.1177/0149206318805832

Agarwal, U. A. (2014). Examining the impact of social exchange relationships on innovative work behaviour: Role of work engagement. *Team Performance Management*, *20*(3/4), 102–120. https://doi.org/10.1108/TPM-01-2013-0004

Agarwal, U. A., Datta, S., Blake-Beard, S., & Bhargava, S. (2012). Linking LMX, innovative work behaviour and turnover intentions: The mediating role of work engagement. *Career Development International*, *17*(3), 208–230.

Alasoini, T., Lyly-Yrjänäinen, M., Ramstad, E., & Heikkilä, A. (2014). 311/2014 Innovatiivisuus Suomen työpaikoilla – Menestys versoo työelämää uudistamalla. *Helsinki:Tekes 2014*, 41.

Allen, I. E., & Seaman, C. A. (2007). Likert scales and data analyses. *Quality Progress*, *40*(7), 64–65.

Alpkan, L., Bulut, C., Gunday, G., Ulusoy, G., & Kilic, K. (2010). Organizational support for intrapreneurship and its interaction with human capital to enhance innovative performance. *Management Decision*, *48*(5), 732–755. https://doi.org/10.1108/00251741011043902

Altunoğlu, A. E., & Bulgurcu Gürel, E. B. (2015). Effects of Leader–member Exchange and Perceived Organizational Support on Organizational Innovation: The Case of Denizli Technopark. *Procedia, Social and Behavioral Sciences*, *207*, 175–181.

Amabile, T. M. (1988). A model of creativity and innovation in organizations. *Research in Organizational Behavior*, *10*(1), 123–167.

Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). ASSESSING THE WORK ENVIRONMENT FOR CREATIVITY. *Academy of Management Journal*, *39*(5), 1154–1184. https://doi.org/10.2307/256995

Anand, S., Hu, J., Liden, R. C., & Vidyarthi, P. R. (2011). Leader-member exchange: Recent research findings and prospects for the future. *The Sage Handbook of Leadership*, 311–325.

Anderson, M. J. (2001). Permutation tests for univariate or multivariate analysis of variance and regression. *Canadian Journal of Fisheries and Aquatic Sciences*, *58*(3), 626–639.

Anderson, M. J., & Robinson, J. (2001). Permutation tests for linear models. *Australian & New Zealand Journal of Statistics*, *43*(1), 75–88.

Anderson, N., De Dreu, C. K. W., & Nijstad, B. A. (2004). The routinization of innovation research: A constructively critical review of the state-of-the-science. *Journal of Organizational Behavior*, *25*(2), 147–173. https://doi.org/10.1002/job.236

Argyris, C. (1960). *Understanding organizational behavior.*

Arrow, K. J. (1962). *Economic Welfare and the Allocation of Resources for Invention*.

Atwater, L., & Carmeli, A. (2009). Leader–member exchange, feelings of energy, and involvement in creative work. *The Leadership Quarterly*, *20*(3), 264–275.

Axtell, C. M., Holman, D. J., Unsworth, K. L., Wall, T. D., Waterson, P. E., & Harrington, E. (2000). Shopfloor innovation: Facilitating the suggestion and implementation of ideas. *Journal of Occupational and Organizational Psychology*, *73*(3), 265–285.

Bakker, A. B., & Demerouti, E. (2014). Job demands–resources theory. *Wellbeing: A Complete Reference Guide*, 1–28.

Bakker, A. B., Demerouti, E., & ten Brummelhuis, L. L. (2012). Work engagement, performance, and active learning: The role of conscientiousness. *Journal of Vocational Behavior*, *80*(2), 555–564.

Bakker, A. B., & Geurts, S. A. E. (2004). Toward a Dual-Process Model of Work-Home Interference. *Work and Occupations*, *31*(3), 345–366. https://doi.org/10.1177/0730888404266349

Bakker, A. B., Hakanen, J. J., Demerouti, E., & Xanthopoulou, D. (2007). Job Resources Boost Work Engagement, Particularly When Job Demands Are High. *Journal of Educational Psychology*, *99*(2), 274–284.

Bakker, A. B., & Leiter, M. P. (2010). *A meta-analysis of work engagement: Relationships with burnout, demands, resources, and consequences*.

Basadur, M. (2004). Leading others to think innovatively together: Creative leadership. *The Leadership Quarterly*, *15*(1), 103–121.

Baumol, W. J. (2004). *The free-market innovation machine: Analyzing the growth miracle of capitalism* (4. print., and 1. paperback print). Princeton Univ. Press.

Bessant, J. R., & Tidd, J. (2015). *Innovation and entrepreneurship* (Third Edition). Wiley.

Bhatnagar, J. (2007). Talent management strategy of employee engagement in Indian ITES employees: Key to retention. *Employee Relations*, *29*(6), 640–663.

Blackman, A., Moscardo, G., & Gray, D. E. (2016). Challenges for the Theory and Practice of Business Coaching: A Systematic Review of Empirical Evidence. *Human Resource Development Review*, *15*(4), 459–486.

Bond, C., & Seneque, M. (2012). Conceptualizing coaching as an approach to management and organizational development. *The Journal of Management Development*, *32*(1), 57–72.

Borman, W. C., & Motowidlo, S. J. (1997). Task performance and contextual performance: The meaning for personnel selection research. *Human Performance*, *10*(2), 99–109.

Bos-Nehles, A., Renkema, M., & Janssen, M. (2017). HRM and innovative work behaviour: A systematic literature review. *Personnel Review*, *46*(7), 1228–1253. https://doi.org/10.1108/PR-09-2016-0257

Bozer, G., & Jones, R. J. (2018). Understanding the factors that determine workplace coaching effectiveness: A systematic literature review. *European Journal of Work and Organizational Psychology*, *27*(3), 342–361.

Braumoeller, B. F. (2015). Guarding against false positives in qualitative comparative analysis. *Political Analysis*, *23*(4), 471–487.

Breukelen, van, Schyns, B., & Blanc, L. (2006). Leader-member exchange theory and research: Accomplishments and future challenges. *Leadership (London, England)*, *2*(3), 295–316.

Bysted, R. (2013). Innovative employee behaviour: The moderating effects of mental involvement and job satisfaction on contextual variables. *European Journal of Innovation Management*, *16*(3), 268–284. https://doi.org/10.1108/EJIM-09-2011-0069

Černe, M., Jaklič, M., & Škerlavaj, M. (2013). Authentic leadership, creativity, and innovation: A multilevel perspective. *Leadership*, *9*(1), 63–85. https://doi.org/10.1177/1742715012455130

Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work engagement: A quantitative review and test of its relations with task and contextual performance. *Personnel Psychology*, *64*(1), 89–136.

Chung, K. H. (1969). Can We Defend Subjective Performance Appraisal?: (A Comment). *Academy of Management Journal*, *12*(4), 507–510.

Cohen, W., Nelson, R., & Walsh, J. (2000). *Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or Not)* (No. w7552; p. w7552). National Bureau of Economic Research. https://doi.org/10.3386/w7552

Cole, M. S., Schaninger, W. S., & Harris, S. G. (2002). The Workplace Social Exchange Network: A Multilevel, Conceptual Examination. *Group & Organization Management*, *27*(1), 142–167. https://doi.org/10.1177/1059601102027001008

Conger, J. A., & Kanungo, R. N. (1987). Toward a Behavioral Theory of Charismatic Leadership in Organizational Settings. *The Academy of Management Review*, *12*(4), 637–647.

Cropanzano, R., & Wright, T. A. (2001). When a “Happy” Worker Is Really a “Productive” Worker: A Review and Further Refinement of the Happy-Productive Worker Thesis. *Consulting Psychology Journal*, *53*(3), 182–199.

Damanpour, F. (1991). ORGANIZATIONAL INNOVATION: A META-ANALYSIS OF EFFECTS OF DETERMINANTS AND MODERATORS. *Academy of Management Journal*, *34*(3), 555–590. https://doi.org/10.2307/256406

Dansereau Jr, F., Graen, G., & Haga, W. J. (1975). A vertical dyad linkage approach to leadership within formal organizations. A longitudinal investigation of the role making process. *Organizational Behavior and Human Performance*, *13*(1), 46–78.

de Jong, J., & den Hartog, D. (2010). Measuring Innovative Work Behaviour. *Creativity and Innovation Management*, *19*(1), 23–36. https://doi.org/10.1111/j.1467-8691.2010.00547.x

de Jong, J. P. J., & Den Hartog, D. N. (2007). How leaders influence employees' innovative behaviour. *European Journal of Innovation Management*, *10*(1), 41–64. https://doi.org/10.1108/14601060710720546

De Spiegelaere, S., Van Gyes, G., & De Witte, H. (2015). Job design, work engagement and innovative work behavior: A multi-level study on Karasek's learning hypothesis. *Management Revue. Socio-Economic Studies*, *2*, 123–137. https://doi.org/10.1688/mrev-2015-02-DeSpiegelaere

Deci, E. L., & Ryan, R. M. (2000). The "What" and "Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychological Inquiry*, *11*(4), 227–268.

Demerouti, E., Bakker, A. B., de Jonge, J., Janssen, P. P., & Schaufeli, W. B. (2001). Burnout and engagement at work as a function of demands and control. *Scandinavian Journal of Work, Environment & Health*, *27*(4), 279–286. https://doi.org/10.5271/sjweh.615

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The Job Demands-Resources Model of Burnout. *Journal of Applied Psychology*, *86*(3), 499–512.

DiCiccio, C. J., & Romano, J. P. (2017). Robust permutation tests for correlation and regression coefficients. *Journal of the American Statistical Association*, *112*(519), 1211–1220.

Dobni, C. B. (2010). THE RELATIONSHIP BETWEEN AN INNOVATION ORIENTATION AND COMPETITIVE STRATEGY. *International Journal of Innovation Management*, *14*(02), 331–357. https://doi.org/10.1142/S1363919610002660

Dorenbosch, L., Engen, M. L. van, & Verhagen, M. (2005). On-the-job Innovation: The Impact of Job Design and Human Resource Management through Production Ownership. *Creativity and Innovation Management*, *14*(2), 129–141. https://doi.org/10.1111/j.1476-8691.2005.00333.x

Drucker, P. F. (2011). *Innovation and entrepreneurship: Practice and principles* (Rev. ed). Routledge.

Dul, J. (2016). Necessary Condition Analysis (NCA):Logic and Methodology of "Necessary but Not Sufficient" Causality. In *Organizational Research Methods* (Vol. 19, Issue 1, pp. 10–52).

Dul, J. (2018). Necessary condition analysis. In *Oxford research Encyclopedia of business and management*.

Dul, J. (2022). *Necessary Condition Analysis (NCA) with R (Version 3.2.0) A Quick Start Guide*.

Dul, J., van der Laan, E., & Kuik, R. (2020). A Statistical Significance Test for Necessary Condition Analysis. *Organizational Research Methods*, *23*(2), 385–395.

Ellinger, A. D., Hamlin, R. G., & Beattie, R. S. (2008). Behavioural indicators of ineffective managerial coaching: A cross‐national study. *Journal of European Industrial Training*, *32*(4), 240–257.

Farndale, E., E. Beijer, S., J. P.M. Van Veldhoven, M., Kelliher, C., & Hope-Hailey, V. (2014). Work and organisation engagement: Aligning research and practice. *Journal of Organizational Effectiveness : People and Performance*, *1*(2), 157–176.

Farr, J. L., & Ford, C. M. (1990). *Individual innovation.*

Fisher, R. A. (1960). The design of experiments. *The Design of Experiments.*, *7th Ed*.

Francis, D., & Bessant, J. (2005). Targeting innovation and implications for capability development. *Technovation*, *25*(3), 171–183. https://doi.org/10.1016/j.technovation.2004.03.004

Fredrickson, B. L. (2001). The Role of Positive Emotions in Positive Psychology: The Broaden-and-Build Theory of Positive Emotions. *The American Psychologist*, *56*(3), 218–226.

Galbraith, J. R. (1982). Designing the innovating organization. *Organizational Dynamics*, *10*(3), 5–25. https://doi.org/10.1016/0090-2616(82)90033-X

Gardner, W. L., & Avolio, B. J. (1998). The Charismatic Relationship: A Dramaturgical Perspective. *The Academy of Management Review*, *23*(1), 32–58.

Goertz, G. (2003). The substantive importance of necessary condition hypotheses. *Necessary Conditions: Theory, Methodology, and Applications*, 65–94.

Goertz, G., Starr, H., Braumoeller, B. F., Dion, D., & Cioffi-Revilla, C. (2002). *Necessary Conditions: Theory, Methodology, and Applications*. Rowman & Littlefield. https://books.google.fi/books?id=zq7sFOOi1YcC

Graen, G. B., & Scandura, T. A. (1987). Toward a psychology of dyadic organizing. *Research in Organizational Behavior*.

Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *The Leadership Quarterly*, *6*(2), 219–247.

Grant, A. (2001). *Towards a psychology of coaching*.

Gruman, J. A., & Saks, A. M. (2011). Performance management and employee engagement. *Human Resource Management Review*, *21*(2), 123–136.

H. Soken, N., & Kim Barnes, B. (2014). What kills innovation? Your role as a leader in supporting an innovative culture. *Industrial and Commercial Training*, *46*(1), 7–15. https://doi.org/10.1108/ICT-09-2013-0057

Hagen, M. S. (2012). Managerial coaching: A review of the literature. *Performance Improvement Quarterly*, *24*(4), 17–39.

Hakanen, J. J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology*, *43*(6), 495–513.

Hamel, G., Prahalad, C. K., & Mikkonen, M. (2006). Kilpajuoksu tulevasta. In *Talouselämän klassikot, ISSN 1796-5365*. Talentum. https://tritonia.finna.fi/uva/Record/tria.277466

Hamlin, R. G., Ellinger, A. D., & Beattie, R. S. (2008). The emergent “coaching industry”: A wake-up call for HRD professionals. *Human Resource Development International*, *11*(3), 287–305.

Hammond, M. M., Neff, N. L., Farr, J. L., Schwall, A. R., & Zhao, X. (2011). Predictors of individual-level innovation at work: A meta-analysis. *Psychology of Aesthetics, Creativity, and the Arts*, *5*(1), 90–105. https://doi.org/10.1037/a0018556

Hansen, M. T., & Birkinshaw, J. (2007). The innovation value chain. *Harvard Business Review*, *85*(6), 121.

Harter, J. K., Schmidt, F. L., & Hayes, T. L. (2002). Business-Unit-Level Relationship Between Employee Satisfaction, Employee Engagement, and Business Outcomes: A Meta-Analysis. *Journal of Applied Psychology*, *87*(2), 268–279.

Hayes, A. F. (1996). Permutation test is not distribution-free: Testing $H_o$: P= 0. *Psychological Methods*, *1*(2), 184.

Heikkilä, T. (2001). Tilastollinen tutkimus. In *Business Edita* (3. uud. p.). Edita. https://tritonia.finna.fi/uva/Record/tria.145126

Hennessey, B. A., & Amabile, T. M. (2010). Creativity. *Annual Review of Psychology*, *61*(1), 569–598. https://doi.org/10.1146/annurev.psych.093008.100416

Hirsjärvi, S., Remes, P., Sajavaara, P., & Sinivuori, E. (2009). *Tutki ja kirjoita* (15. uud. p.). Tammi. https://tritonia.finna.fi/uva/Record/tria.206177

Hobfoll, S. E. (2001). The Influence of Culture, Community, and the Nested-Self in the Stress Process: Advancing Conservation of Resources Theory. *Applied Psychology*, *50*(3), 337–421.

Holgersson, M., Granstrand, O., & Bogers, M. (2018). The evolution of intellectual property strategy in innovation ecosystems: Uncovering complementary and substitute appropriability regimes. *Long Range Planning*, *51*(2), 303–319. https://doi.org/10.1016/j.lrp.2017.08.007

Howell, J. M., Shea, C. M., & Higgins, C. A. (2005). Champions of product innovations: Defining, developing, and validating a measure of champion behavior. *Journal of Business Venturing*, *20*(5), 641–661. https://doi.org/10.1016/j.jbusvent.2004.06.001

Hughes, D. J., Lee, A., Tian, A. W., Newman, A., & Legood, A. (2018). Leadership, creativity, and innovation: A critical review and practical recommendations. *The Leadership Quarterly*, *29*(5), 549–569.

Huhtala, H., & Parzefall, M.-R. (2007). A Review of Employee Well-Being and Innovativeness: An Opportunity for a Mutual Benefit. *Creativity and Innovation Management*, *16*(3), 299–306. https://doi.org/10.1111/j.1467-8691.2007.00442.x

Hunter, S. T., Bedell, K. E., & Mumford, M. D. (2007). Climate for Creativity: A Quantitative Review. *Creativity Research Journal*, *19*(1), 69–90. https://doi.org/10.1080/10400410709336883

Janssen, O. (2000). Job demands, perceptions of effort-reward fairness and innovative work behaviour. *Journal of Occupational and Organizational Psychology*, *73*(3), 287–302. https://doi.org/10.1348/096317900167038

Janssen, O. (2001). FAIRNESS PERCEPTIONS AS A MODERATOR IN THE CURVILINEAR RELATIONSHIPS BETWEEN JOB DEMANDS, AND JOB PERFORMANCE AND JOB SATISFACTION. *Academy of Management Journal*, *44*(5), 1039–1050. https://doi.org/10.2307/3069447

Janssen, O. (2004). How fairness perceptions make innovative behavior more or less stressful. *Journal of Organizational Behavior*, *25*(2), 201–215. https://doi.org/10.1002/job.238

Janssen, O. (2005). The joint impact of perceived influence and supervisor supportiveness on employee innovative behaviour. *Journal of Occupational and Organizational Psychology*, *78*(4), 573–579. https://doi.org/10.1348/096317905X25823

Jaussi, K. S., & Dionne, S. D. (2003). Leading for creativity: The role of unconventional leader behavior. *The Leadership Quarterly*, *14*(4), 475–498.

Johne, A. (1999). Successful market innovation. *European Journal of Innovation Management*, *2*(1), 6–11. https://doi.org/10.1108/14601069910248838

Joo, B.-K. (Brian). (2010). Organizational commitment for knowledge workers: The roles of perceived organizational learning culture, leader-member exchange quality, and turnover intention. *Human Resource Development Quarterly*, *21*(1), 69–85.

Jung, D. I., Chow, C., & Wu, A. (2003). The role of transformational leadership in enhancing organizational innovation: Hypotheses and some preliminary findings. *The Leadership Quarterly*, *14*(4), 525–544.

Kahn, W. (1990). Psychological Conditions of Personal Engagement and Disengagement at Work. *Academy of Management Journal*, *33*(4), 692–724.

KANTER, R. (1988). When a Thousand Flowers Bloom: Structural, Collective, and Social Conditions for Innovation in Organization. *Research in Organizational Behavior*, *10*, 169.

Keller, R. T. (1992). Transformational Leadership and the Performance of Research and Development Project Groups. *Journal of Management*, *18*(3), 489–501.

Kheng, Y. K., & Mahmood, R. (2013). The Relationship between Pro-Innovation Organizational Climate, Leader-Member Exchange and Innovative Work Behavior: A Study among the Knowledge Workers of the Knowledge Intensive Business Services in Malaysia. *Business Management Dynamics*, *2*(8), 15.

Kim, S., & Kuo, M.-H. (2015). Examining the Relationships Among Coaching, Trustworthiness, and Role Behaviors: A Social Exchange Perspective. *The Journal of Applied Behavioral Science*, *51*(2), 152–176.

King, N. (1992). Modelling the innovation process: An empirical comparison of approaches. *Journal of Occupational and Organizational Psychology*, *65*(Jun 92), 89–100.

King, N., & Anderson, N. (2002). *Managing innovation and change: A critical guide for organizations* ([2. ed.], reprinted). Thomson Learning.

Kleysen, R. F., & Street, C. T. (2001). Toward a multi-dimensional measure of individual innovative behavior. *Journal of Intellectual Capital*, *2*(3), 284–296.

Koroglu, Ş., & Ozmen, O. (2022). The mediating effect of work engagement on innovative work behavior and the role of psychological well-being in the job demands–resources (JD-R) model. *Asia-Pacific Journal of Business Administration*, *14*(1), 124–144.

Krause, D. E. (2004). Influence-based leadership as a determinant of the inclination to innovate and of innovation-related behaviors: An empirical investigation. *The Leadership Quarterly*, *15*(1), 79–102.

Lee, J. (2008). Effects of leadership and leader-member exchange on innovativeness. *Journal of Managerial Psychology*, *23*(6), 670–687. https://doi.org/10.1108/02683940810894747

Ludbrook, J., & Dudley, H. (1998). Why permutation tests are superior to t and F tests in biomedical research. *The American Statistician*, *52*(2), 127–132.

Lukes, M., & Stephan, U. (2017). Measuring employee innovation: A review of existing scales and the development of the innovative behavior and innovation support inventories across cultures. *International Journal of Entrepreneurial Behavior & Research*, *23*(1), 136–158. https://doi.org/10.1108/IJEBR-11-2015-0262

Macey, W. H., & Schneider, B. (2008). The Meaning of Employee Engagement. *Industrial and Organizational Psychology*, *1*(1), 3–30.

Macey, W. H., Schneider, B., Barbera, K. M., & Young, S. A. (2009). *Employee Engagement: Tools for Analysis, Practice, and Competitive Advantage*.

Magadley, W., & Birdi, K. (2012). Two sides of the innovation coin? An emprical investigation of the relative correlates of idea generation and idea implementation. *International Journal of Innovation Management (Ijim)*, *16*(1). http://econpapers.repec.org/article/wsiijimxx/v_3a16_3ay_3a2012_3ai_3a01_3ap_3a1250002-1-1250002-28.htm

Mäkelä, L., Viitala, R., Tanskanen, J., Säntti, R., Uotila, T.-P., yliopisto, V., & Vaasa, U. of. (2013). LÄIKE : lähijohtamisen kehittämisellä parempaa hyvinvointia ja tuloksellisuutta. In *Vaasan yliopiston julkaisuja. Selvityksiä ja raportteja*. Vaasan yliopisto. http://osuva.uwasa.fi/handle/10024/7673,

http://www.urn.fi/URN:ISBN:978-952-476-505-3,
https://tritonia.finna.fi/uva/Record/osuva_pub.10024_7673

Martin, R., Epitropaki, O., Thomas, G., & Topakas, A. (2010). *A review of leader-member exchange research: Future prospects and directions.*

Martin, R., Guillaume, Y., Thomas, G., Lee, A., & Epitropaki, O. (2016). Leader-Member Exchange (LMX) and Performance: A Meta-Analytic Review: ROBIN MARTIN ET AL. *Personnel Psychology*, *69*(1), 67–121. https://doi.org/10.1111/peps.12100

May, D. R., Gilson, R. L., & Harter, L. M. (2004). The psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work. *Journal of Occupational and Organizational Psychology*, *77*(1), 11–37.

McLean, G. N., Yang, B., Kuo, M.-H. C., Tolbert, A. S., & Larkin, C. (2005). Development and initial validation of an instrument measuring managerial coaching skill. *Human Resource Development Quarterly*, *16*(2), 157–178.

Meijman, T. F., & Mulder, G. (2013). Psychological aspects of workload. In *A handbook of work and organizational psychology* (pp. 15–44). Psychology Press.

Milner, J., & McCarthy, G. (2016). *Managerial coaching: A practical way to apply leadership theory?*

Miron, E., Erez, M., & Naveh, E. (2004). Do personal characteristics and cultural values that promote innovation, quality, and efficiency compete or complement each other? *Journal of Organizational Behavior*, *25*(2), 175–199. https://doi.org/10.1002/job.237

Mulgan, G., & Albury, D. (2003). Innovation in the public sector. *Strategy Unit, Cabinet Office*, *1*(1), 40.

Mumford, M. D., & Gustafson, S. B. (1988). Creativity syndrome: Integration, application, and innovation. *Psychological Bulletin*, *103*(1), 27–43. https://doi.org/10.1037/0033-2909.103.1.27

Mumford, M. D., Scott, G. M., Gaddis, B., & Strange, J. M. (2002). Leading creative people: Orchestrating expertise and relationships. *The Leadership Quarterly*, *13*(6), 705–750.

Odoardi, C., Montani, F., Boudrias, J.-S., & Battistelli, A. (2015). Linking managerial practices and leadership style to innovative work behavior: The role of group and psychological processes. *Leadership & Organization Development Journal*, *36*(5), 545–569.

Ohly, S., Sonnentag, S., & Pluntke, F. (2006). Routinization, work characteristics and their relationships with creative and proactive behaviors. *Journal of Organizational Behavior*, *27*(3), 257–279.

Osayawe Ehigie, B., & Clement Akpan, R. (2004). Roles of perceived leadership styles and rewards in the practice of total quality management. *Leadership & Organization Development Journal*, *25*(1), 24–40. https://doi.org/10.1108/01437730410512750

Pajuoja, M. (2022). From mechanistic measuring to up-to-date understanding: Problematising the study of innovative work behaviour [University of Vaasa]. In *Acta Wasaensia, ISSN 0355-2667*. https://urn.fi/URN:ISBN:978-952-395-029-0, https://tritonia.finna.fi/uva/Record/tria.381965

Pajuoja, M., & Viitala, R. (2020). Managerial coaching and innovative work behaviour: Different needs in different dimensions. *ISPIM Conference Proceedings*, 1–20.

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. *Journal of Applied Psychology*, *88*(5), 879–903.

Privitera. (2018). *Research Methods for the Behavioral Sciences*. Sage Publications. https://sfx.finna.fi/nelli07?url_ver=Z39.88-2004&ctx_ver=Z39.88-2004&ctx_enc=info:ofi/enc:UTF-8&rfr_id=info:sid/sfxit.com:opac_856&url_ctx_fmt=info:ofi/fmt:kev:mtx:ctx&sfx.ignore_date_threshold=1&rft.object_id=4900000001420338&svc_val_fmt=info:ofi/fmt:kev:mtx:sch_svc&, https://tritonia.finna.fi/uva/Record/nelli07.4900000001420338

Ramamoorthy, N., Flood, P. C., Slattery, T., & Sardessai, R. (2005). Determinants of Innovative Work Behaviour: Development and Test of an Integrated Model. *Creativity and Innovation Management*, *14*(2), 142–150.

Redmond, M. R., Mumford, M. D., & Teach, R. (1993). Putting Creativity to Work: Effects of Leader Behavior on Subordinate Creativity. *Organizational Behavior and Human Decision Processes*, *55*(1), 120–151. https://doi.org/10.1006/obhd.1993.1027

Rich, B. L., Lepine, J. A., & Crawford, E. R. (2010). JOB ENGAGEMENT: ANTECEDENTS AND EFFECTS ON JOB PERFORMANCE. *Academy of Management Journal*, *53*(3), 617–635.

Rich, M. (1999). Reviews. *Management Learning*, *30*(3), 377–378. https://doi.org/10.1177/1350507699303012

Rosing, K., Frese, M., & Bausch, A. (2011). Explaining the heterogeneity of the leadership-innovation relationship: Ambidextrous leadership. *The Leadership Quarterly*, *22*(5), 956–974. https://doi.org/10.1016/j.leaqua.2011.07.014

Rousseau, D. M. (2000). *Psychological contract inventory*. Technical report.

Rousseau, D. M., & Greller, M. M. (1994). Human resource practices: Administrative contract makers. *Human Resource Management*, *33*(3), 385–401.

Runco, M. A., & Chand, I. (1995). Cognition and Creativity. *Educational Psychology Review*, *7*(3), 243–267.

Saks, A. M. (2006a). Antecedents and consequences of employee engagement. *Journal of Managerial Psychology*, *21*(7), 600–619.

Saks, A. M. (2006b). Antecedents and consequences of employee engagement. *Journal of Managerial Psychology*, *21*(7), 600–619.

Salanova, M., Agut, S., & Peiró, J. M. (2005). Linking Organizational Resources and Work Engagement to Employee Performance and Customer Loyalty: The Mediation of Service Climate. *Journal of Applied Psychology*, *90*(6), 1217–1227.

Salanova, M., & Schaufeli, W. B. (2008). A cross-national study of work engagement as a mediator between job resources and proactive behaviour. *International Journal of Human Resource Management*, *19*(1), 116–131.

Sanders, K., Moorkamp, M., Torka, N., Groeneveld, C. M., & Groeneveld, S. (2010). How to support innovative behaviour? The role of LMX and satisfaction with HR practices. *Ji Shu Yu Tou Zi*, *1*(1), 59–68.

Saray, H., Patache, L., & Ceran, M. B. (2017). *EFFECTS OF EMPLOYEE EMPOWERMENT AS A PART OF INNOVATION MANAGEMENT*.

Scandura, T. A., & Schriesheim, C. A. (1994). Leader-Member Exchange and Supervisor Career Mentoring as Complementary Constructs in Leadership Research. *Academy of Management Journal*, *37*(6), 1588–1602.

Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, *25*(3), 293–315.

Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement*, *66*(4), 701–716.

Schaufeli, W. B., Bakker, A. B., & Van Rhenen, W. (2009). How changes in job demands and resources predict burnout, work engagement, and sickness absenteeism. *Journal of Organizational Behavior*, *30*(7), 893–917.

Schaufeli, W. B., Taris, T. W., & van Rhenen, W. (2008). Workaholism, Burnout, and Work Engagement: Three of a Kind or Three Different Kinds of Employee Well-being? *Applied Psychology*, *57*(2), 173–203.

Schriesheim, C. A., Neider, L. L., & Scandura, T. A. (1998). Delegation and Leader-Member Exchange: Main Effects, Moderators, and Measurement Issues. *Academy of Management Journal*, *41*(3), 298–318.

Schumpeter, J. A., & Opie, R. (1934). The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle. In *Harvard economic studies*. https://finna.fi/Record/ekk.991205864006250

Scott, S. G., & Bruce, R. A. (1994). DETERMINANTS OF INNOVATIVE BEHAVIOR: A PATH MODEL OF INDIVIDUAL INNOVATION IN THE WORKPLACE. *Academy of Management Journal*, *37*(3), 580–607. https://doi.org/10.2307/256701

Seppälä, P., Mauno, S., Feldt, T., Hakanen, J., Kinnunen, U., Tolvanen, A., & Schaufeli, W. (2009). The construct validity of the Utrecht Work Engagement Scale: Multisample and longitudinal evidence. *Journal of Happiness Studies*, *10*, 459–481.

Shalley, C. E., Zhou, J., & Oldham, G. R. (2004). The Effects of Personal and Contextual Characteristics on Creativity: Where Should We Go from Here? *Journal of Management*, *30*(6), 933–958. https://doi.org/10.1016/j.jm.2004.06.007

Shuck, B., & Wollard, K. (2010). Employee Engagement and HRD: A Seminal Review of the Foundations. *Human Resource Development Review*, *9*(1), 89–110.

Shunlong, X., & Weiming, Z. (2012). *The Relationships between Transformational Leadership, LMX, and Employee Innovative Behavior*. *13*(5), 11.

Siguaw, J. A., Simpson, P. M., & Enz, C. A. (2006). Conceptualizing Innovation Orientation: A Framework for Study and Integration of Innovation Research. *Journal of Product Innovation Management*, *23*(6), 556–574. https://doi.org/10.1111/j.1540-5885.2006.00224.x

Soken, N. H., & Barnes, B. K. (2014). What kills innovation? Your role as a leader in supporting an innovative culture. *Industrial and Commercial Training*, *46*(1), 7–15. https://doi.org/10.1108/ICT-09-2013-0057

Sonnentag, S. (2003). Recovery, Work Engagement, and Proactive Behavior: A New Look at the Interface Between Nonwork and Work. *Journal of Applied Psychology*, *88*(3), 518–528.

Spreitzer, G. M. (1995). Psychological Empowerment in the Workplace: Dimensions, Measurement, and Validation. *Academy of Management Journal*, *38*(5), 1442–1465.

Suhaimi, I. W., & Panatik, S. A. (2016). A literature review on relationship between leader-member exchange and innovative work behaviour. *Journal of Global Business and Social Entrepreneurship*, *1*(2), 32–41.

Teece, D. J. (1986). Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy. *Research Policy*, *15*(6), 285–305. https://doi.org/10.1016/0048-7333(86)90027-2

Tewari, R. (2011). *Individual Innovation and Organizational Success: Theoretical Perspective*. *1*(2).

Tims, M., Bakker, A. B., & Xanthopoulou, D. (2011). Do transformational leaders enhance their followers' daily work engagement? *The Leadership Quarterly*, *22*(1), 121–131. https://doi.org/10.1016/j.leaqua.2010.12.011

Tymon, W. G., Stumpf, S. A., & Smith, R. R. (2011). Manager support predicts turnover of professionals in India. *Career Development International*, *16*(3), 293–312.

Van de Ven, A. H. (1986). Central Problems in the Management of Innovation. *Management Science*, *32*(5), 590–607. JSTOR.

Van de Ven, A. H., Polley, D. E., Garud, R., & Venkataraman, S. (Eds.). (2008). *The innovation journey* (1. issued as an Oxford Univ. Press paperback). Oxford Univ. Press.

Viitala, R., Kultalahti, S., & Kantola (TOIM), J. (2016). *Henkilöstöjohtamisen tila, tarpeet ja tulosvaikutukset pk-yrityksissä. Työsuojelurahaston hankkeen nro 114136 loppuraportti.*

Vilkka, H. (2005). *Tutki ja kehitä*. Tammi. https://tritonia.finna.fi/uva/Record/tria.177701

Vinarski-Peretz, H., & Carmeli, A. (2011). Linking care felt to engagement in innovative behaviors in the workplace: The mediating role of psychological conditions. *Psychology of Aesthetics, Creativity, and the Arts*, *5*(1), 43–53. https://doi.org/10.1037/a0018241

Wang, A.-C., & Cheng, B.-S. (2010). When does benevolent leadership lead to creativity? The moderating role of creative role identity and job autonomy. *Journal of Organizational Behavior*, *31*(1), 106–121.

Wang, C. L., & Ahmed, P. K. (2004). The development and validation of the organisational innovativeness construct using confirmatory factor analysis. *European Journal of Innovation Management*, *7*(4), 303–313. https://doi.org/10.1108/14601060410565056

Wang, G., Oh, I.-S., Courtright, S. H., & Colbert, A. E. (2011). Transformational Leadership and Performance Across Criteria and Levels: A Meta-Analytic Review of 25 Years of Research. *Group & Organization Management*, *36*(2), 223–270.

Wefald, A. J., & Downey, R. G. (2009). Construct Dimensionality of Engagement and its Relation With Satisfaction. *The Journal of Psychology*, *143*(1), 91–112.

West, M. A. (2002). Sparkling Fountains or Stagnant Ponds: An Integrative Model of Creativity and Innovation Implementation in Work Groups: Creativity and Innovation Implementation. *Applied Psychology*, *51*(3), 355–387. https://doi.org/10.1111/1464-0597.00951

West, M. A., & Farr, J. L. (1989). INNOVATION AT WORK - PSYCHOLOGICAL PERSPECTIVES. *SOCIAL BEHAVIOUR*, *4*(1), 15–30.

West, M. A., & Farr, J. L. (Eds.). (1990). *Innovation and creativity at work: Psychological and organizational strategies* (Repr). Wiley.

Whitener, E. M. (2001). Do “high commitment” human resource practices affect employee commitment?: A cross-level analysis using hierarchical linear modeling. *Journal of Management*, *27*(5), 515–535.

Winkler, A. M., Ridgway, G. R., Webster, M. A., Smith, S. M., & Nichols, T. E. (2014). Permutation inference for the general linear model. *Neuroimage*, *92*, 381–397.

Woodman, R. W., Sawyer, J. E., & Griffin, R. W. (1993). Toward a theory of organizational creativity. *Academy of Management Review*, *18*(2), 293–321.

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2009). Work engagement and financial returns: A diary study on the role of job and personal resources. *Journal of Occupational and Organizational Psychology*, *82*(1), 183–200.

Xerri, M. (2013). Workplace relationships and the innovative behaviour of nursing employees: A social exchange perspective. *Asia Pacific Journal of Human Resources*, *51*(1), 103–123.

Yidong, T., & Xinxin, L. (2013). How ethical leadership influence employees' innovative work behavior: A perspective of intrinsic motivation. *Journal of Business Ethics*, *116*(2), 441–455.

Yuan, F., & Woodman, R. W. (2010). Innovative Behavior in the Workplace: The Role of Performance and Image Outcome Expectations. *Academy of Management Journal*, *53*(2), 323–342. https://doi.org/10.5465/amj.2010.49388995

Zacher, H., & Wilden, R. G. (2014). A daily diary study on ambidextrous leadership and self-reported employee innovation. *Journal of Occupational and Organizational Psychology*, *87*(4), 813–820.

Zaltman, G., Duncan, R., & Holbek, J. (1973). *Innovations and organizations*. Wiley.

Zhang, X., & Bartol, K. M. (2010). Linking Empowering Leadership and Employee Creativity: The Influence of Psychological Empowerment, Intrinsic Motivation, and Creative Process Engagement. *Academy of Management Journal*, *53*(1), 107–128. https://doi.org/10.5465/amj.2010.48037118

Zhou, J., & George, J. M. (2003). Awakening employee creativity: The role of leader emotional intelligence. *The Leadership Quarterly*, *14*(4), 545–568.

Zhou, J., Ma, Y., Cheng, W., & Xia, B. (2014). Mediating Role of Employee Emotions in the Relationship Between Authentic Leadership and Employee Innovation. *Social Behavior and Personality*, *42*(8), 1267–1278.

Zigarmi, D., Nimon, K., Houson, D., Witt, D., & Diehl, J. (2012). The work intention inventory: Initial evidence of construct validity. *Journal of Business Administration Research*, *1*(1), 24.

# Appendices

## Appendix 1. HERMES Questionnaire

Vaasan yliopisto
UNIVERSITY OF VAASA

### Workplace survey

Your workplace is participating in a research project which is conducted by the University of Vaasa and Lappeenranta University of Technology and deals with human resource management in small and medium size companies. The results will help companies to improve their human resource management.

Completing the survey takes ca. 10 minutes.

Information you provide is fully confidential. The survey data is stored directly to the University of Vaasa database and accessible only by the researchers. The results will be reported in averages for each company. If you would like to have more information about the research, please contact professor Riitta Viitala (riitta.viitala@uva.fi).

*There will be a prize drawing of a Jopo bicycle (value ca. 500€) among all respondents. If you wish to participate, please fill in your contact information at the end of the questionnaire.* Your name and responses cannot be combined.

**1. Name of your employer** (If you work as agency-hired labor, the name of the company where your conduct your work)

_____

**2. Name of your nearest manager/supervisor**

_____

**3. Your work title**

_____

**4. I am**

◯ Female ◯ Male

**5. My year of birth**

◯ - 1950
◯ 1951-1960
◯ 1961-1970
◯ 1971-1980
◯ 1981-1990
◯ 1991-2000
◯ 2001-

**6. I have worked for my current employer for**

◯ less than 1 year
◯ 1-3 years
◯ 4 - 10 years
◯ 11- 20 years
◯ 21 - 30 years
◯ over 30 years

**7. My work contract is** ◯ permanent ◯ temporary ◯ (agency) hired worker

**8. My job position**

◯ Blue-collar worker
◯ White-collar (lower level)
◯ White-collar (upper level)
◯
Top management

**9. I work in a managerial position**

◯ Yes ◯ No

**10.** If you work as a manager, how many subordinates do you have?

_____ subordinates

The following questions are related to your workplace.

**12. Information flow in our organization is sufficient**

1 = I fully disagree … 7 = I fully agree

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| within my work unit | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| between different units | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| between the top management and personnel | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**11. Knowledge about targets**

1 = I fully disagree … 7 = I fully agree

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| I am very familiar with my work targets | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I know what the targets of my unit are | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**13. To what extent do the following characteristics match with the atmosphere at your workplace?**

(1 = I fully disagree … 7 = I fully agree)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| tense and competitive, everyone looks after his/her own best interest | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| encouraging and supportive of new ideas | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| prejudiced and clinging to old ways | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| relaxed and friendly | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| strained and quarrelsome | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**14. Possibilities to influence** (1 = Not at all.... 7 = Very much)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| How much can you influence the variation of your work tasks? | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| How much can you influence the variation of your work time or the scheduling of your work? | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| How much can you influence the pace of your work? | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**15. Work excitement**

| | never | few times per year | once a month | couple times a month | once a week | couple times a week | daily |
|---|---|---|---|---|---|---|---|
| At my work, I feel bursting with energy | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| At my job, I feel strong and vigorous | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I am enthusiastic about my job | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| My job inspires me | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| When I get up in the morning, I feel like going to work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I feel happy when I am working intensely | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I am proud of the work that I do | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I am immersed in my work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I get carried away when I am working | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**16. Functionality and flexibility of the workplace** (1 = I fully disagree … 7 = I fully agree)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| There are enough employees compared to the work tasks | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| (At the workplace ,) the work is well organized | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| It is common that employees' ideas and development initiatives are implemented at the workplace | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| My employer enables flexible working times when necessary | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| My employer enables flexibility with working location when necessary (e.g., distance work) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| My employer enables flexible ways of completing the work when necessary | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**17. Employer image** (1 = I fully disagree … 7 = I fully agree)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| My employer has a good reputation | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Think of the following questions from the perspective of your unit. The unit may be your department, team, or other group consisting of the subordinates of your nearest supervisor.

**18. Know-how** (1 = I fully disagree … 7 = I fully agree)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| The competence level at our unit is at high level | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| There is a clear common agreement in our unit about the direction of development of competence | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**19. Performance** (1 = I fully disagree … 7 = I fully agree)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Operation of our unit is high quality | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Our unit always reaches its quantitative goals | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Our unit has performed much better than average in our organization | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

In the following questions, think about your supervisor and your relationship with him/her.

**20. My nearest manager/supervisor has** ○ 1-5 ○ 6-14 ○ 15-30 ○ over 30 subordinates

**21. Nearest manager's/Supervisor's activity** (1 = I fully disagree … 7 = I fully agree)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| My manager facilitates mutual cooperation in a group | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| My manager encourages the work community to deal with problems and mistakes constructively | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| My manager seeks to improve the operation of our unit | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| My manager promotes and supports innovative ideas, trial, and creative processes | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| My manager understands the problems and needs of my work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I receive encouraging feedback for my work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| My manager discusses our performance with us sufficiently | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| My manager ensures that everyone knows their task | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I know what my manager thinks about my work performance | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**22. Relationship with the nearest manager/supervisor** (1 = I fully disagree … 7 = I fully agree)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| We get along well with my supervisor | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| My supervisor helps me in solving problems | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Our cooperation advances both of us in performing at work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| We can openly handle even challenging issues with each other | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| We trust each other | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| We respect each other's work performance/ knowledge at work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| We can honestly listen to each other's opinions | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Usually we are willing to understand each other | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| We respect each other's opinions, even when we don't agree on the matters | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| We are able to support each other in developing in our work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| If needed, we are ready to support each other's viewpoints to work issues | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| It is easy for us to arise a discussion concerning different work related issues | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Think about the following considering yourself.

**23. Know-how** (1 = I fully disagree … 7 = I fully agree)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| My competence level is sufficient for accomplishing my current tasks | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| My know-how would be enough for clearly more challenging tasks | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I know very well to which direction my know-how should be developed in the future | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I have good opportunities to develop the know-how needed in my work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I receive enough support for developing the know-how I need at work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I am very active in developing the know-how I need at work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**24. Performance** (1 = I fully disagree … 7 = I fully agree)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| I always reach the goals at my job | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I am very pleased for the quality of my work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I perform better than average in my unit | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**25. Coping with work** (1 = I fully disagree … 7 = I fully agree)

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| I get easily overwhelmed by time pressures at work | ○ | ○ | ○ | ○ |
| As soon as I get up in the morning I start thinking about work problems | ○ | ○ | ○ | ○ |
| When I get home, I can easily relax and 'switch off' wor | ○ | ○ | ○ | ○ |
| People close to me say I sacrifice too much for my job | ○ | ○ | ○ | ○ |
| Work rarely lets me go, it is still on my mind when I go to bed | ○ | ○ | ○ | ○ |
| If I postpone something that I was supposed to do today I'll have trouble sleeping at night | ○ | ○ | ○ | ○ |

**26. Haste** (1 = hardly ever.... 7 = very often)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| How often do you have to hurry at your work? | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| How often do you have too little time to complete your work? | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**27. In my current job, I am motivated by the**

1 = I fully disagree … 7 = I fully agree

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| salary | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Interesting job | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| variability of the work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| challenges at work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| opportunity to fulfill myself | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| flexibility of the work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| location of the workplace | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| easiness of the work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| possibility to learn and develop | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| good atmosphere at the workplace | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| friendships at the workplace | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| good supervisor | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| fringe benefits offered by the employer | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| possibility for career advancement | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| appreciation I receive at workplace | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| security of employment | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| possibility to combine work and family life in the way I want | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| greater meaning of my work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| positive feedback I receive from work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**28. At your workplace, how often do you** (1 = never... 7= very often)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| ...pay attention to that things run smoothly that are not part of your daily work | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...ponder how things could be done better | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...look for new work methods, techniques or tools | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...sketch new solutions to problems | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...invent new ways of doing things | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...try to make the key people in the organization enthusiastic about new ideas | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...try to make people support a new idea | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...apply new ideas in practice | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...participate in putting new ideas into practice | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...participate in implementing new ideas together with others | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...get involved in developing new work methods and practices | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ...devote your time and resources to develop things | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**29. You may give free and any kind of feedback here. We would be glad to learn of experiences and thoughts about completing this survey.**

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**30. If you wish to participate in the drawing of a Jopo bicycle, please write your name and contact information below. Your name and responses will not be combined.**

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Thank you for your response!