

# Supporting Independent Thinking

An empirical study of mediating and moderating effects on the relationship between servant leadership and the innovative climate

Magnus Furuseth  
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SNF



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# **SNF Report No. 05/23**

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on the relationship between servant leadership  
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**Magnus Furuseth  
Hillevi Leknes**

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## Abstract

In this study, our goal was to examine the relationship between servant leadership and the innovative climate of an organization at team level. A mediating moderation model on the innovative climate is proposed, in which job autonomy mediates the relationship between servant leadership and the innovative climate, and intrinsic motivation moderates the indirect effect. The study was conducted on a Norwegian medical equipment production company, using a survey that was distributed to leaders and employees. Our final sample consisted of 778 respondents from 23 countries divided into 172 teams.

Our analysis has revealed that servant leadership has a positive impact on the innovative climate of the team. We argue that this effect is largely due to the fulfillment of psychological needs as described in Self-Determination Theory (SDT). This leads to the development of a strong relationships between leader and follower, which facilitates the innovative climate. Additionally, we found job autonomy to have a direct positive effect on the innovative climate. Our results also indicated that job autonomy, one of the three needs outlined in SDT, partially mediates the relationship between servant leadership and the innovative climate. Furthermore, we discovered that intrinsic motivation moderates the relationship between servant leadership and job autonomy. Moreover, autonomous work is found to be more dependent on intrinsic motivation when servant leadership is low. Therefore, it is beneficial for leaders to act as servants and supply support when intrinsic motivation is low, as to encourage job autonomy. In conclusion, our findings suggest that servant leadership has a positive effect on the innovative climate of an organization, which is partially mediated by job autonomy. Moreover, the relationship between servant leadership and job autonomy is moderated by intrinsic motivation.

## Preface

This master's thesis is written as part of the master's degree in economics and Business Administration at the Norwegian School of Economics, NHH. The thesis was completed as part of the major Business Analysis and Performance Management (BUS) and the research project Radical Technology-Driver Change in Established Firms (RaCE).

We set out to explore how innovation is encouraged and facilitated in established firms through different contextual factors in a mission-driven firm. We are grateful for the opportunity to research our topic within the RACE-project, which has made our journey a true pleasure through social and educational support.

We want to express our deepest gratitude to our supporters, whose generous contributions have been invaluable to our work and for which we are deeply grateful. First and foremost, we want to thank our supervisor, Alexander Madsen Sandvik, who has made the completion possible through invaluable advice, feedback, and productive discussions. We also want to thank our friends and family, who have given us unlimited support and input, no matter the urgency and time of day.

Lastly, we want to thank each other for the inspiring collaboration. We have had ups and downs throughout the semester, but we can now look back at an invaluable and educational experience. We also want to thank each other for managing to stay friends throughout the entire semester.

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## 1 Introduction

As work is becoming increasingly more dynamic and knowledge-based, organizations depend on their employees' creative ideas and innovative impulses (Fischer et al., 2019; Mumford & Hunter, 2005). Teams have increasingly been regarded as a means of bringing together the diverse skills needed to tackle complex and dynamic organizational problems (Bell et al., 2012; Zhang et al., 2017). Organizations must therefore understand how to best foster innovation in their teams, as innovation is one of the most important sources of sustainable competitive advantage and growth (Atalay & Sarvan, 2013; Newman et al., 2020). The innovative climate of the organization has received much attention in recent years in the literature on innovation. Improving an environment to foster employees' creativity and ability to innovate can improve innovative behaviors in an organization, fostering and propagating creative mechanisms to achieve the goals of the organization (Bibi et al., 2020; de Jong & den Hartog, 2010).

We are interested in understanding how servant leadership can facilitate and create the conditions of an innovative climate. To help employees thrive in increasingly more flexible working environments, every organization needs to plan processes and guidelines that drive a people-first agenda (Jabra, 2021). Servant leadership is a leadership theory that proposes that leaders should act like servants to their employees (Eva et al., 2019; Greenleaf, 1970). Servant leadership is a belief that organizational goals will be achieved on a long-term basis only by first facilitating the growth, development, and general well-being of the individuals who comprise the organization (Bass, 2000; Stone et al., 2004). Other leadership theories tend to be centered around organizational objectives, whereas servant leadership centers around the followers' need (Stone et al., 2004)

The Self Determination Theory (SDT) will be used as the foundational argument to determine if job autonomy mediates the relationship between servant leadership and the innovative climate. SDT provides the concepts that guide the creation of policies, practices, and environments that promote both wellness and high quality (Forner et al., 2020), making it of interest in the context of the innovative climate. SDT takes into consideration the impact of contextual and environmental factors such as managerial style, mediated by a small set of basic psychological needs, one being job autonomy. SDT is therefore determined as a suitable theory to understand the effects of servant leadership and the role of autonomy.

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Motivation has been determined by extensive research as a driver for creativity and organizational innovation (Coelho & Augusto, 2010; Collins & Amabile, 1999; Fischer et al., 2019). Despite this, the moderating effect of intrinsic motivation on contextual factors such as leadership styles and job characteristics has received little attention from researchers, testing instead its mediating effect on work outcomes and the need for autonomy (Gagné & Deci, 2005). We propose that existing levels of intrinsic motivation can moderate the relationship between perceived job autonomy and servant leadership in teams and further affect the innovative climate.

The servant leadership style has previously not been used in the context of innovative climate, as far as we are aware. In addition to the aforementioned presumed mediating and moderating relationships, we would like to investigate if the degree of intrinsic motivation strengthens the relationship between servant leadership and job autonomy. Moreover, we want to see if this in turn has a positive effect on innovative climates in teams. With this in mind, we present the following research question for this thesis:

*«How does servant leadership affect the innovative climate in a team, and how does job autonomy affect this relationship, where the indirect effect is moderated by intrinsic motivation? »*

## 1.1 Purpose of the Study

The research of this thesis contributes both theoretically and practically. The findings might be utilized in future research to explore the role of managerial practices or how other contextual factors may play a role in an employee's behavior regarding the innovative climate. There are primarily three contributions we would like to bring forward.

The first contribution concerns the relatively new research domain of servant leadership. We wanted to understand how servant leaders could potentially support the build and facilitate the foundation of an innovative climate. Previous research has found a significant relationship between servant leadership and innovative behavior (Yoshida et al., 2014; Zeng & Xu, 2020). As far as we are aware, none have looked directly at the innovative climate. Moreover, we

found the research on servant leadership to be heavily set in a Chinese context. As this data is set in more than 20 countries, this study also contributes with more generalizable findings to other cultures. Moreover, not many studies have been carried out to examine the impact of servant leadership in business organizational settings, instead investigating the impact in schools and universities.

The second contribution concerns the development of the relationship between servant leadership and the innovative climate. Using SDT, we believe job autonomy could mediate the relationship between servant leadership and the innovative climate. In turn, this also contributes to the literature on SDT. As far as we know, a similar mediation model of servant leadership-job autonomy-innovative climate has not previously been investigated.

It is widely acknowledged that the job environment affects and is affected by employees' needs, personalities, and values. Still, far more research has been conducted on the former than the latter. Dysvik et al. (2011) are among researchers who have called for more research on this relationship. We propose that intrinsic motivation moderates the relationship between job autonomy and servant leadership, and that this relationship affects the innovative climate. Addressing this gap in literature, this thesis aims to aid managers in creating job design and managerial styles that encourages the innovative climate. If a certain level of intrinsic motivation represents a condition for a positive relationship between job autonomy and servant leadership, autonomy-supportive work design may be less universally effective than is usually assumed.

We found the perspective of teams to be especially interesting for the study of servant leadership. Collectivism is rooted in conformity values, which can encourage employees to suppress creative thoughts and unique ideas (Goncalo & Staw, 2006; Grant & Berry, 2011). On the other hand, servant leadership emphasize the importance of benefiting the followers, which can encourage employees to think creatively about others' perspectives and identify new strategies for assistance (Parker et al., 2001; Zeng & Xu, 2020). We therefore wanted to see how servant leadership affect the innovative climate in teams.

Lastly, we also aim to contribute by looking at the moderated mediation model, where the indirect effect from intrinsic motivation affects innovative climate.

## 1.2 Research Structure

Here we will present the paper's structure. First, we will develop the frameworks and hypotheses using relevant literature to answer the research question. The relationships between our constructs – innovative climate, servant leadership, job autonomy, and intrinsic motivation – will be explored and presented. Then, the methodology used will be argued, presenting both the data collection and analysis. In chapter four, the findings of the analysis will be presented. The discussion will be done in chapter five, where the result's theoretical and managerial implications will be presented. Future research directions will also be discussed in this chapter. The sixth chapter concludes the findings of the paper.

## 2 Literature Review

In this chapter, we will present and critically review the literature on the research domains, which we will use to answer the research question. The academic articles were found through a computerized search of EBSCO database and were chosen to define the main research areas and to gain insights on current knowledge reached so far. Articles were selected from the leading management and psychological journals such as Academy of Management Journal, Personnel Psychology, Journal of Applied Psychology, Academy of Management Review, Journal of Organizational Behavior, Human Resource Management Review. The key search criteria used were innovation, innovative climate, job autonomy, servant leadership, intrinsic motivation, and SDT. We also used Research Rabbit to find interlinked papers from relevant literature. The following theories were chosen as they gave us important and thorough insight into the topic we wish to research.

During the first phase of researching the research domain of innovative climate, we searched mainly for papers that explained the facilitation of innovation. In the literature, job characteristics, motivation, and managerial behavior stood out as crucial factors and indicators for creativity and implementation of ideas in an organization. In our search for answers, we quickly discovered that the renowned theory of SDT was much used in the literature of innovation. However, we found the literature on the moderating effects of intrinsic motivation lacking, and we set out to discover how levels of intrinsic motivation interact with managerial styles and job characteristics. We used some key elements from SDT to understand the effects of servant leadership through fulfilling psychological needs, and

how job autonomy can result in positive work outcomes such as an innovative climate.

## 2.1 Innovative Climate

An innovative climate is a firm atmosphere that fosters and propagates creative mechanisms to achieve its goals (Bibi et al., 2020). Research on firm climate focuses on the employees' perception of the work climate, which influences their attitudes and behaviors at work (Bibi et al., 2020). West and Sacramento (2012) also argue that innovative climate is closely related to creative climate, following the same logic that creativity can be seen as the development of new ideas, while innovation is the application of new ideas in practice. Another construct with conceptual overlap is innovation culture (Ahmed, 1998; Khazanchi et al., 2007), where climate previously has been distinguished from culture as the behavioral evidence for the culture within an organization (Schein, 2010).

Newman et al. (2020) emphasize that definitions of innovative climate differ whether it is at a team or organizational level or if it is conceptualized through an employee's individual or shared perceptions. For the purpose of this study, we will focus on the individual perception at the team level, adopting the most utilized understanding of innovative climate as to what degree team or organizational processes encourages and enables innovation (Anderson & West, 1996, 1998; Newman et al., 2020).

Innovation in an organization is crucial to stay competitive and growing in today's global, competitive market (Newman et al., 2020). Most literature recognizes West and Farr's (1990) two-step definition of innovation "the intentional introduction and application, within a role, group, or organization of ideas, processes, products, or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, organization, or wider society" (West & Farr, 1990, p. 9). The two-step process, which Scott and Bruce (1994) later evolved with a third and initial step, generation of ideas. Thus, generation and introduction of ideas without applications are not innovations but have by many been seen as creativity, making creativity a sub-process of innovation (Somech & Drach-Zahavy, 2013). Furthermore, when employees work in an intrapreneurial culture, they are likely to be more involved and motivated to champion ideas (Burcharth et al., 2017; Kuratko et al., 1990).

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Innovative climates have empirically been linked to team performance and innovative outcomes, indicating a positive relationship between project performance, decision-making teams, R&D teams, team production, and customer satisfaction, thus should be seen as crucial in any organization.

## 2.2 Servant Leadership

Leaders are considered an integral part of followers' organizational context and play a central role in the construction of a team's work experiences and performances. Robert Greenleaf coined the term *servant leadership* in an essay in 1970. Servant leadership is characterized by a focus on followers' growth and empowerment (Greenleaf, 1998; Liden et al., 2008). The philosophy of moral-based leadership is that leaders prioritize the fulfillment of the needs of followers, namely employees, customers, and other stakeholders, rather than satisfying their own personal needs (Canavesi & Minelli, 2022). Spears (2010) identified 10 characteristics of servant leaders. They tend to be good listeners, emphatic, committed to the growth of others and are concerned with building a community. Other key points Spears found in his study were concerned with healing, awareness, persuasion, conceptualization, foresight, and stewardship. Servant leadership posits that by first facilitating the development and well-being of followers, long-term organizational goals will be achieved. Therefore, both serving and leading become almost exchangeable (Yoshida et al., 2014).

SDT offers a theoretical framework for enhancing team motivation and stimulating positive outcomes such as commitment, well-being, and engagement in organizations (Ryan & Deci, 1985; Forner et al., 2020), and can be utilized to understand how servant leaders fulfill their followers' basic psychological needs (Chiniara & Bentein, 2016). Social contexts that are supportive, congruent with, and validate an individual's true self are particularly likely to facilitate need fulfillment (Greguras & Diefendorff, 2009; Ryan & Deci, 2000). As servant leaders strive to facilitate an environment where the teams can succeed, we believe followers experience a high fit with their work environment. A servant leader's attentive focus on employees' development helps fulfill employees' needs for relatedness, competence, and autonomy, which leads to greater psychological well-being (Park & Jang, 2015). In chapter 2.3.2, we will argue in depth how servant leadership fulfills and facilitates settings for the most salient of these needs, job autonomy.

Servant leaders help fulfill followers' need for relatedness, as they facilitate the feeling of connection to others, as well as having a sense of belongingness in the organization (Chiniara & Bentein, 2016). Servant leaders build meaningful trustworthy relationships with followers and, in turn, cultivate a psychologically safe climate (Edmondson, 1999; Schaubroeck et al., 2011; Yoshida et al., 2014). They directly influence affect-based trust through their focus on nurturing team members' well-being and cultivating a sense of community within the team (Jaiswal & Dhar, 2017). Furthermore, servant leaders influence innovation by fostering positive team environments such as a knowledge-sharing climate (Newman et al., 2018; Song et al., 2015). We therefore argue that servant leadership has an implicit importance on team environments.

Servant leaders also help fulfill followers' need for competence. According to Greenleaf, (1998) servant leaders invest a great deal of time and energy in understanding followers' interests, capabilities, and career goals, as they consider subordinates' growth a priority. Moreover, Liden et al. (2008) argue that servant leaders want to precisely know the followers' career goals, provide followers with opportunities to enhance their skills or develop new ones, and assist them in achieving their goals.

Researchers have found that the impact of leadership behavior on subordinates' behaviors varies depending on subordinates' organizational tenure (Wright & Bonett, 2002). Short-tenure subordinates' performances and attitudes are more likely to be influenced by their leader, as they desire to extend their career and self-development to meet their expectations at work (Ashforth & Saks, 2000; Bauer & Green, 1998). This is the "honeymoon effect", which explains how short-tenure subordinates are more satisfied with their job if they are allowed to follow their leader (Chan & Mak, 2014; Huang et al., 2006). Moreover, the positive effect of servant leadership on subordinates' trust in the leader and job satisfaction is also stronger for short-tenure subordinates than for long-tenure subordinates (Chan & Mak, 2014).

### 2.2.1 Servant Leadership and the Innovative Climate

The relationship between employees and their leaders is one of the most important determinants of employee innovation (Ikeda & Marshall, 2016). Greenleaf (1998) postulates that servant leaders provide the environmental conditions necessary to liberate individuals' potential and creativity by recognition, acknowledgment, and respect for each follower's

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feelings, interests, views, and opinions. Moreover, when employees receive encouragement for their creative efforts and are exempt from high time pressure, they are reportedly more likely to persist in their idea-generation endeavors (Baer & Oldham, 2006).

Subordinates who are empowered by their organizations demonstrate creative behaviors at work, by aligning their desired outcomes with organizational goals (Chow, 2018). The servant leaders create conditions that enhance followers' well-being and functioning and can thereby facilitate the realization of a shared vision of the innovative climate (Stone et al., 2004). Leaders who transfer their services to their workers are more likely to develop talented, knowledgeable, and motivated individuals, who in turn are prone to promote and exhibit innovative work behavior (Krishnan, 2012; Yidong & Xinxin, 2013). We therefore understand that there is a natural occurrence of altruism in the team, when the followers align with their servant leader, and in turn becomes servants themselves. By developing a culture where one helps one another, and of knowledge-sharing, it is natural to assume that creativity may blossom more easily, as the followers co-operate to find solutions.

Servant leaders' goals may not always be related to innovation and could, for example, put greater emphasis on performance outcomes such as efficiency and reliability (Hirst et al., 2009). This may be of great commercial value for the organization but have lesser creative returns. However, if followers see themselves as a reflection of the leader–follower relationship, we argue that it is still likely that they will be more willing to experiment as there is a strong sense of psychological safety. This is arguably fostered by servant leaders, who are deeply committed to the team. Research suggests that a psychologically safe team is better placed to succeed in their creative endeavors (Baer & Frese, 2003). Followers perceive that it is safe to take risks and develop novel ideas that are contrary to agreed-upon ways of doing things, hence providing a basis for creativity (Edmondson, 1999; Oldham & Cummings, 1996). Moreover, positive emotions enlarge the scope of attention and cognition, which lead to greater variation in problem solving, hence increasing the probability of creativity (Amabile & Gryzkiewicz, 1989; Fredrickson, 1998). As such, we argue that the positive effect emerging out of the followers' relationship with the servant leader will foster an innovative climate in the team.



Several empirical studies support the notion that servant leadership encourages the innovative climate of teams. Yoshida et al. (2014) found on the basis of a two-nation Asian samples of 154 teams that servant leadership promotes individual relational identification and collective prototypicality with the leader, demonstrating increased levels of team-level creativity and innovation. In a study of 51 work teams in a manufacturing company, professional employees who reported high-quality relationships with their supervisors were described by their supervisors as more likely to generate creative ideas (Edmondson, 1999). Moreover, learning behavior was shown to be associated with team psychological safety. As we previously found that psychological safety is an antecedent of servant leadership, we argue that these findings are transferrable to our study. Lastly, Amabile and Grysiewicz (1989) found a significant relationship between employee ratings of supervisory encouragement and of creativity. We conclude that servant leadership enhances the innovative climate, and argue the following hypothesis:

**H1: Servant leadership has a direct a positive effect on the innovative climate**

### 2.3 Job Autonomy

Job autonomy first appeared as a term in Hackman and Oldham's job characteristic model (1975), which defined it as "the degree to which the job provides substantial freedom, independence, and discretion to the individual in scheduling the work and in determining the procedures to be used in carrying it out." This definition has been criticized for blurring the line between autonomy and independence and focusing instead on overall job autonomy (Breugh, 1999; Zhou, 2020). Breugh (1985) defines job autonomy more specifically as "the degree to which employees can control and decide on their own methods, work arrangements, and work standards." What is noticeable with these definitions is the focus on the design of work assignments and how autonomy affects them. We are currently seeing a surge of research which entails a different view of job autonomy. Kubicek et al. (2017) describes job autonomy as the discretion employees have in determining when, where, and how to complete tasks. As these aspects are perhaps especially relevant with the surge of remote work and hybrid offices, we will adopt Kubicek's definition of job autonomy, as this gives us the most current understanding of the term.

According to SDT, the most salient of the psychological needs is the need for autonomy (Deci

et al., 2017). The satisfaction of the need for autonomy refers to the experience of having choices and of initiating action oneself (Ryan & Deci, 2002). Autonomy makes employees feel self-determined and free from external pressures and constraints (Deci et al., 1989; Liang et al., 2015), and the outcomes are likely to be perceived as the result of their own inherent ability. When autonomous, individuals experience their behavior as an expression of the self, such that, even when actions are influenced by external sources, the actors concur with those influences, feeling both initiative and value (Ryan & Deci, 2002).

Research suggests that not all employees who have high levels of job autonomy necessarily report more positive job attitudes, experience greater well-being, or exhibit positive work behaviors to the same degree (Ng & Feldman, 2014). In addition, Langfred (2005) found that the relationship between autonomy and performance can vary depending on the level of task interdependence. Specifically, when tasks require high levels of interaction and coordination among team members, high levels of autonomy may be negatively related to performance. This may be due to the importance of close coordination and timing in tasks with high levels of interdependence within the team (van Knippenberg, 2017; Wageman, 1995).

### 2.3.1 Job Autonomy and Innovative Climate

Extensive research has shown that those with a high degree of job autonomy, compared to their peers with lower autonomy, are willing to take more risks, think alternatively, and problem-solve – all of which tend to foster creativity (Burcharth et al., 2017; Liang et al., 2015; Oldham & Cummings, 1996; Tierney & Farmer, 2002). Deci and Ryan's (1985) Self-Determination Theory suggests that individuals' sense of autonomy at work yields a sustained motivation to find and implement creative solutions. Allowing employees to undertake activities and explore new combinations among multiple dimensions of a task make employees more likely to try and learn unfamiliar system features (Liang et al., 2015). Thus, autonomy provides employees with the resources to experiment and encourages them to be creative.

Ample research on the individual level has found how a wide latitude of choices can efficiently enable employees to try innovative solutions (de Jong & den Hartog, 2010; Orth & Volmer, 2017; Scott & Bruce, 1994). Autonomy fosters hands-on learning as employees interact with the environment and become more involved in and more knowledgeable about

the wider work process. Moreover, employees can produce more innovative work when they have more control over the methods and scheduling of their work (Liang et al., 2015). This experience likely leads to broader ownership of problems, which can spur employees to find external markets for ideas and technologies that cannot be implemented within the company-

The empirical study conducted by van Knippenberg (2017) supports our claim that autonomy can lead to innovation in teams as well. He found that autonomy allows team members to take ownership of their work, leading to increased motivation and commitment, which enables them to use their expertise and creativity to generate new ideas and solve problems. To conclude, the evidence suggests that job autonomy has a direct and positive effect on the Innovative Climate. We suggest the following hypothesis:

**H2: Job autonomy has a direct and positive effect on Innovative Climate**

### 2.3.2 Servant Leadership and Job Autonomy

Leaders are considered an integral part of followers' organizational context and play a central role in the construction of an individual's work experiences. They are pivotal in providing the necessary conditions to support satisfaction of the basic psychological need for job autonomy and the other psychological needs (Baard et al., 2004; Chiniara & Bentein, 2016). The need for autonomy can be fulfilled when employees perceive that they can make personal choices or when fully endorsing an externally induced request (Gagné & Deci, 2005).

Liden et al. (2008) explicitly capture this notion of promoting followers' choice to initiate and regulate actions within the empowerment dimension of their servant leadership model. Specifically, servant leaders empower their followers by giving them important responsibilities and the freedom to handle situations as they feel best, and by actively encouraging them to make important decisions on their own. Research has found that empowering leaders – which shares some similarities with servant leaders through the empowerment dimension – enhance the job autonomy of their subordinates (Kim & Beehr, 2017). Conversely, low-empowering leaders restrict granting autonomy to their followers (Y. Chen et al., 2021). Moreover, when one feels cared for and connected to others, one feels obligated to reciprocate in the form of putting more effort into one's own task responsibilities, contributing indirectly to the common overall organizational objectives (Jada et al., 2019).

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Hence, we posit that servant leaders grant and encourage subordinates' autonomy in their job.

There are also some empirical studies that suggests servant leadership's positive impact on job autonomy. Andrews and Farris (1967) demonstrated that teams of scientists produced the most creative outcomes when their supervisors provided substantial freedom at work and many opportunities to influence important decisions. Moreover, a study of various faculty members showed how servant leadership stimulates work engagement (Rahal & Farmanesh, 2022). Hence, the following hypothesis can be proposed:

**H3: Servant leadership has a direct and positive effect on job autonomy**

### 2.3.3 The Relationship Between Servant Leadership and Innovative Climate Mediated by Job Autonomy

We have so far argued that servant leadership and job autonomy in teams both have an independent, direct effect on the innovative climate. We have also argued that there is a direct positive effect of servant leadership on job autonomy. We furthermore argue that both servant leadership and job autonomy are necessary for the innovative climate, as the result of servant leadership is trust in the employees, but job autonomy makes it possible for the employees to explore. Trust between employees and supervisors motivates discretionary effort because it empowers employees to take ownership of their work, and provide creative solutions (Johannsen & Zak, 2020). We therefore argue that job autonomy mediates the aforementioned relationship between servant leadership and the innovative climate. When a high level of job autonomy broadens employees' choices and renders them more responsible for their work, it can motivate greater innovative behavior in the workplace, based on a meaningful response to the benefits of servant leadership (Ho & Nesbit, 2014).

To our knowledge, job autonomy has not been used as a mediator for servant leadership and innovative climate. A similar model has been conducted on Moroccan SME, where job autonomy mediated the relationship between empowering leadership and innovative work behavior (Hassi et al., 2021). The findings revealed that subordinates, who are empowered by their leaders, demonstrate innovative behavior. Although the independent and dependent

variables measure slightly different things, we postulate that the findings are somewhat transferrable to our concepts:

**H4: Job autonomy mediates the relationship between servant leadership and the innovative climate.**

## 2.4 Intrinsic Motivation

Work motivation is a set of energetic forces that originate both within as well as beyond the team. It initiates work-related behavior and determines its form, direction, intensity and duration (Latham & Pinder, 2005). According to Ryan and Deci (1985), motivation can be categorized into two categories, intrinsic and extrinsic – respectively, also referred to as autonomous and controlled motivation in newer literature. Individuals who are intrinsically motivated participate in an activity because they find it inherently interesting or enjoyable (Deci et al., 2017; Oldham & Cummings, 1996). Its counterpart, extrinsic motivation, refers to participating because it leads to a separable outcome (Ryan & Deci, 2000). Intrinsic and extrinsic motivations influence an individual's intention to participate and their participatory behavior to varying degrees (Suen et al., 2022).

Under intrinsic motivation, individuals act for the pleasure of the task or because they are aware that the task is relevant and valuable (Suen et al., 2022). Intrinsic motivation – also known as autonomous motivation – depends on forces within the individual, making it difficult to directly control. Intrinsically motivated employees are more involved in their jobs and demonstrate greater goal attainment than those less intrinsically motivated (Gagné & Deci, 2005). Studies showed that optimally challenging activities were highly intrinsically motivating, and that positive feedback facilitated intrinsic motivation by promoting a sense of competence when people felt responsible for their successful performance (Deci, 1971; Ryan, 1982). Intrinsic motivation has also been proven to deteriorate over time (Gottfried et al., 2001; Vansteenkiste et. Al, 2009).

Although intrinsic motivation is clearly important, most activities are not necessarily intrinsically motivating. Extrinsic motivation involves acting with a sense of pressure to gain a reward or by being influenced by a power relationship (Gagné & Deci, 2005). Also called controlled motivation, this type of motivation aims to guide, or control, the follower into

making desired decisions. As a result, the team may make less efforts and may expect to achieve specific short-term outcomes (Deci et al., 2017). The use of extrinsic rewards, such as team bonuses or provisions, has been found to induce extrinsic motivation (Deci, 1971). Moreover, research on intrinsic and extrinsic motivation indicates that extrinsic rewards undermine intrinsic motivation and can lower self-determination (Deci et al., 1999).

Intrinsic and extrinsic motivation exists on a spectrum; Meaning, extrinsically motivated behavior is not necessarily invariantly nonautonomous. SDT suggests that extrinsic motivation can vary greatly in the degree to which it is autonomous (Ryan & Deci, 2000). For example, a team member may only conduct their tasks because they fear sanctions from their boss. In this case, they are extrinsically motivated because they are working for a separable outcome only to avoid sanctions. Similarly, a team member who performs tasks because they personally believe it is valuable to further advance their career is also extrinsically motivated because they too are doing it for its instrumental value rather than because they find inherent pleasure in the activity. Both examples involve instrumentalities, yet the latter case entails personal endorsement and a feeling of choice, whereas the former involves mere compliance with an external control (Ryan & Deci, 2000). Both represent intentional behavior, but the two types of extrinsic motivation vary in their relative autonomy. Similarly, this also illustrates how those with inherently extrinsic roles, such as sales teams, still might be intrinsically motivated.

Vansteenkiste (2009) found in his study that it is possible to categorize motivational profiles of students and pupils in four distinct groups: a good quality motivation group (i.e., high autonomous, low controlled); a poor quality motivation group (i.e., low autonomous, high controlled); a low quantity motivation group (i.e., low autonomous, low controlled); and a high quantity motivation group (i.e., high autonomous, high controlled). The qualitative perspective was found to be favorable. Moreover, the good quality motivation group displayed the most optimal learning pattern and scored highest on perceived need-supportive teaching. Previous research on SDT has proven that an autonomous, compared to a controlled, regulation of study activities is associated with various positive learning outcomes for students in particular (Reeve et al., 2004; Vansteenkiste et al., 2009). It has thereby provided evidence that the quality of motivation is of importance, and that depending on the level of intrinsic motivation, the leaders should adjust the level of control.

Several studies suggest that teams who find work motivational will engage in effective process behaviors (Janz et al., 1997; Sundstrom et al., 1990; Tuckman, 1965). There are several reasons to expect perceptual convergence for team job motivation (Hackman, 1992; Janz et al., 1997). Tasks are team-based, which means there is less within-team variance in the team members' work. Moreover, members' frequent interaction allows the discretionary group processes to influence members. This may prompt members to adopt the views of the collective, thereby creating a shared norm that guides the team (Hackman, 1992).

## 2.5 The Moderation of Intrinsic motivation on the Relationship Between Servant Leadership and Job Autonomy

We have argued that job autonomy and servant leadership separately have a positive effect on the innovative climate. Furthermore, we suggest that intrinsic motivation moderates the relationship between servant leadership and job autonomy. A servant leader's take on providing direction is to make work dynamic based on the team's needs, abilities, and input. Servant leaders' distinctive focus on meeting followers' needs will naturally lead them to recognize SDT's three distinct basic psychological needs and contribute to their fulfillment (Chiniara & Bentein, 2016). SDT asserts that it is the extent to which psychological needs are satisfied, rather than their strength, that determines and influences growth, integrity, and well-being (Gagné & Deci, 2005). If the means provided to satisfy a specific value do not match their actual value, employees will not appreciate their supervisor providing those means.

When valued resources such as job autonomy is granted to employees with strong intrinsic work values, the employees will perceive that their values are being met (Hackman & Lawler, 1971) and will, as a result, perceive a higher degree of supervisor support (Kalleberg et al., 2009; Rhoades & Eisenberger, 2002). Employees with a high degree of intrinsic motivation respond positively to occupations that give them more autonomy, since they value the kinds of opportunities and intrinsic rewards offered by such jobs (Hackman & Oldham, 1976; Park & Jang, 2015). Furthermore, job autonomy's relationship with work performance is more dependent on employees' self-regulated behavior and discretionary effort (Dysvik & Kuvaas, 2011). Thus, teams with strong intrinsic work values are likely more autonomous than their less intrinsic counterparts and are less dependent on supervisor support to take the initiative.

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Employees with lower levels of intrinsic motivation may need higher levels of controlling factors such as structure, assistance by supervisors, and external regulation in order to perform well (Dysvik & Kuvaas, 2011). Employees with low levels of intrinsic motivation may not have the drive and engagement to work more independently because they lack purpose in their jobs, have less persistence, and are less self-driven. Therefore, perceived job autonomy may be less positively related to work performance among employees with lower levels of intrinsic motivation (Dysvik & Kuvaas, 2011). Thus, we believe those with low intrinsic values depend more on leadership support to act autonomously.

On the other hand, the servant leader's effect on their employees who are not open to the experience of engaging in meaningful work may be limited (Wang & Cheng, 2009). This could mean that a higher degree of intrinsic motivation would result in a greater impact of servant leadership on job autonomy. Moreover, the employees may also not have the ability to utilize the available resources provided by the servant leaders that can make their work more meaningful (Cai et al., 2018).

Empirical studies support the claim that those with *low* intrinsic values have more to gain from servant leadership in terms of acting autonomously. Black and Deci (2000) showed that the autonomy supportiveness of instructors in a university course predicted not only increases in autonomous motivation over the semester, but also course grades. The finding was especially strong for students with initially low levels of intrinsic motivation. Moreover, students who are overly controlled not only lose initiative but also learn less well, especially when learning is complex or requires conceptual, creative processing (Benware & Deci, 1984; Grolnick & Ryan, 1987). The studies indicate that servant leadership facilitates initiative and an innovative climate in teams, but that the effects are stronger when there are low intrinsic values:

**H5: Intrinsic Motivation moderates the relationship between servant leadership and job autonomy**



## 2.6 Moderated Mediation – how intrinsic motivation through servant leadership affects the innovative climate

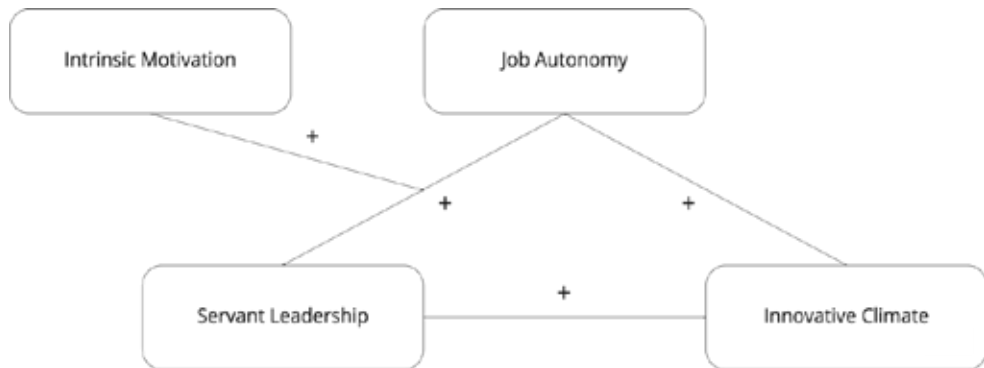
We have so far argued that servant leadership has a direct and positive effect on the innovative climate in teams. Furthermore, we argue that job autonomy mediates the relationship between servant leadership and the innovative climate. We suspect that servant leadership must be accompanied by job autonomy to result in an increased innovative climate, as lack of autonomy may constrain the ability to act upon the trust given by leaders. Moreover, job autonomy provides an opportunity for employees to experiment, but the extent to which they do depends on their level of intrinsic motivation and reaction to leadership style. Moreover, intrinsic motivation results in high-quality learning and creativity (Ryan & Deci, 2002), which under a certain amount of job autonomy and support from leadership, may result in innovative behavior (Slåtten et al., 2020), and by extent, boost the innovative climate. Thus, intrinsic motivation may moderate not only the relationship between servant leadership and job autonomy but also indirectly affect the relationship between servant leadership and innovative climate through job autonomy.

This proposition is supported in the literature. Inventors often develop solutions to issues they find personally rewarding and work harder when they perceive that their ideas are not shelved within the company's boundaries (Cassiman & Valentini, 2016). This indicates that intrinsic motivation propels the employees to transcend the expected initiative, when trust and job autonomy is high. When intrinsically motivated, employees perform tasks out of interest and enjoyment for their own sake (Ryan & Deci, 2000), which has been found to encourage innovative thinking (Sawang et al., 2019). Intrinsic motivation also stems from having a high degree of enjoyment when conducting a task, which has been described as crucial by most creative individuals (Fischer et al., 2019). As a result, highly involved and motivated employees are more likely to work outside the existing knowledge, market, and technological domains of the company (Burcharth et al., 2017). This research indicates that greater values of intrinsic values would result in a more innovative climate in teams. As far as we are aware, this moderating mediation model has not been previously studied. With a basis in theory and empirical studies, we argue the following hypothesis:

**H6: Servant leadership has an indirect positive relationship with the innovative climate, mediated through job autonomy. The strength of this mediation is moderated through intrinsic motivation.**

This relationship could be depicted in the following research model:

*Figure 1 Conceptual research model*



### 3 Methods

In this chapter, we will describe our methods to answer the thesis' hypotheses and, by extension, the research question. First, we describe the company where the survey was conducted in 3.1, with emphasis its sustained innovative behavior. Then we discuss the purpose, method, approach, and strategy in chapter 3.2. Chapter 3.3 presents our data collection techniques, while 3.4 discusses the measures. We elaborate on the data analysis in 3.5. Lastly, 3.6 concerns validity and reliability, as well as ethical and practical issues.

#### 3.1 Organizational Context

The following chapter presents the company's story, its prosocial mission, and how their innovative behavior has shaped their path. Their story effectively demonstrates a willingness and ability to change during the last 80 years of the company's existence.

The research object is a Norwegian-owned production company of medical equipment. They

started in 1940 as producers of toys and books for children. Throughout the 1950s, they became the leading producers of soft plastic used in play dolls and toy cars. As a result of their soft plastic expertise, they were contacted by the Norwegian military, who requested the production of plastic imitations of wounds that could be used in training. The request gave the company important insight into the medical industry, where they found a white space. Inspired by the newly developed mouth-to-mouth method, they developed practice dolls that would be used in training. The first prototype was introduced in 1960, revolutionizing how the world would learn the life-saving method. Later, when the method included heart compressions, the doll was advanced so that this also could be practiced. They also developed a more inexpensive doll that would make the training more available outside the realms of the health sector. The company became central for developing a manual for CPR, which was translated into 12 languages.

As the doll became successful, the company parted ways with the toy industry and committed to producing equipment for emergency treatment and resuscitation training. Today, 300 million people have received training in CPR, of which most have used the company's doll. It is estimated that the company's doll alone has helped save two million lives so far. The company currently has more than 1400 employees in 24 countries. By 2030, the company's mission is to help save one million lives annually. On their path to reaching this goal, they also started a non-profit sister company whose goal is to reach Sustainable Development Goals for maternal and newborn health. Over the last ten years, this program has developed 25 products and programs that have reached more than 750 000 birth attendants through the education of regular people, aid- and health workers.

Our chosen company has been influential in furthering research and implementing practices that support their core research principles, including the Utstein Formula for Survival, the Chain of Survival, and the Circle of Learning. The company describes their innovation as «focused on impact» and site that they use evidence-based knowledge to develop and continuously refine their product and service solutions, believing they can make the most significant impact through their efforts to improve educational efficiency and local implementation.

The company's continuous innovative success and continuous focus on innovation make it an interesting and a relevant object in our pursuit of predictors for an innovative climate. We

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believe, for this reason, that the company can provide valuable insight into innovative climates.

### 3.2 Research Design

Our research was conducted by collecting quantitative data through a survey. We used a questionnaire, an economical and popular form of survey, to collect large datasets that are standardized and easy to compare among the participating individuals (Saunders et al., 2019). Moreover, if the sample is representative, one can generalize the conclusions for the population in total. Surveys are primarily preferred for deductive purposes, with a unique ability to capture isolated insights into a phenomenon in a cross-sectional study or changes over time in a longitudinal study (Saunders et al., 2019). However, we are limited by the range of our study as we must avoid an excessive number of questions to maintain the interest and quality of our respondents (Saunders et al., 2019).

This study aims to investigate the relationship between servant leadership and innovative climate, mediated by job autonomy, where the relationship between servant leadership and job autonomy is moderated by intrinsic motivation, and where intrinsic motivation indirectly affects the innovative climate. The study is descriptive in nature, as it aims to describe the characteristics of a particular group or phenomenon. Descriptive research is useful when you want to identify patterns and relationships within a population and can provide a detailed understanding of a specific topic or issue (Saunders et al., 2019).

The thesis employs a deductive approach to theory creation, which involves evaluating theories with facts (Saunders et al., 2019). The innovative climate, job autonomy, intrinsic motivation, and servant leadership make up the theoretical foundation for the research, making the research approach deductive. Before testing the hypothesis with data analysis, a research model was developed based on the current theoretical assumptions retrieved from a literature review (Saunders et al., 2019).

### 3.3 Data Collection

#### 3.3.1 Preparation of the Survey

In order to ensure high quality in our survey and data, we used established scales and concepts. To accomplish this, we reviewed the literature associated with our research question and the methodology used in previous research. All constructs we used had established validated scales, which we adopted to better compare across different studies (Saunders et al., 2019). Questions were kept as is, including those that were reversed, so as not to interfere with the established validity of the constructs (Saunders et al., 2019).

All questions in our questionnaire were positively phrased, making the measures for each included construct meaningful to compare. Opposed to constructs containing a mix of negatively phrased questions, thus reversed measures. This is due to different perceptions' of differently loaded questions (Suárez-Alvarez et al., 2018).

Due to the company's international nature, professionals translated the final questionnaire into nine languages spoken across the 24 countries in our population. We further back-translated all items, comparing them to the original source to avoid altering their original substance (Brislin, 1970).

#### 3.3.2 Procedure

The survey was distributed through individual emails with an informative cover letter and a personal link to the questionnaire. To ensure that all participants answered correctly, instructions on how to respond were added to each questionnaire, as well as information about withdrawal to stress that participation was voluntary. Disclaimers were also added to the instruction in accordance with the Norwegian Center for Research Data, to achieve consciousness from participants.

To provide the participants with a broader understanding of the survey, the cover letter gave information on different aspects such as purpose, data collection method, and how anonymity would be maintained throughout the process. The purpose of ensuring anonymity was to increase participant honesty, perception, and overall response rate (Saunders et al., 2019).

However, manufacturing employees in China did not have their own work email. An

alternative solution was created to reach these employees by providing a computer at their workplace.

### 3.3.3 Samling Process

Due to the size of the organization and the character of our study, no initial sampling was needed, and we were able to reach out and aim for the census of our population (Saunders et al., 2019). 967 out of 1400 employees completed the survey, gaining a 69% response rate. As not all returned questionnaires were complete, we removed any respondents that had not answered all questions to avoid non-response bias (Saunders et al., 2019). Finally, we removed any respondents reporting a group of one to ensure that we only analyzed the effect on teams (Franz, 2004), resulting in a final response rate of 56%. It should be noted that we ran a regression before and after to be sure the removal had a meaningful impact on our data.

Our final sample then contained 172 teams, ranging from 2 to 39 members averaging 9 members. A total of 23 countries are represented in the data, with most employees residing in Norway (26%), the US (24%), and China (16%). Respondents' ages range from 20 to 70, with a mean of 44 and a population of 51,4% male and 48,6% female. The tenure of the employees ranges from 1 month to 41 years, with an average of 9,5 years.

## 3.4 Measures

In the following chapter, each of the four variables proposed by the research question will be presented: Job Autonomy, Innovative Climate, Intrinsic Motivation, and Servant Leadership. Each variable was evaluated for internal consistency using Cronbach's Alpha as the most used evaluation method for variables (Saunders et al., 2019). Cronbach's alpha is further described in chapter Chronbach's Alpha. Items in the survey questionnaire were evaluated using a seven-point Likert scale (from 1 = Strongly Disagree to 7 = Strongly Agree). A seven-point Likert scale is considered a useful tool for collecting and analyzing data in survey research, particularly when the goal is to measure attitudes or opinions on a topic that may be nuanced or complex (Allen & Seaman, 2007)

### 3.4.1 Job Autonomy

To measure job autonomy, we adapted items from Morgeson and Humphrey's (2006) Work Design Questionnaire (WDQ), which is based on work method autonomy, work schedule

autonomy, and anatomy in decision-making. It is important to ensure that the questionnaire is within a reasonable length for the respondents to have the time to respond (Saunders et al., 2019). Thus, we only included two out of three items from each autonomy category. Sample items are ‘My job allows me to make a lot of decisions on my own’ and ‘My job allows me to plan how I do my work.’ Cronbach’s was measured at ,93, reflecting a strong internal consistency.

### 3.4.2 Intrinsic Motivation

Intrinsic motivation is measured by a 4-item scale, presented by Grant (2008). The four items used for the moderator are “Because I enjoy the work itself,” “Because it’s fun,” “Because I find the work engaging,” and “Because I enjoy it.” The construct had a strong Cronbach’s alpha of ,93.

### 3.4.3 Servant Leadership

Servant leadership was measured by using Liden et al. (2015) 7-item measure of global servant leadership (SL-7), based on a validated short form of the 28-item servant leadership measure (SL-28) from Liden et al. (2008). Items focus on questions concerning the manager, such as “My manager puts my best interests ahead of his/her own.” Servant leadership had a Cronbach’s alpha of ,92.

### 3.4.4 Innovative Climate

The dependent variable, innovation climate, was measured using the scale developed by van der Vegt et al., (2005). The scale contains four indicators, which the employees had to assess the four indicators of the scale, among other things, the statement, “People at my location are encouraged to come up with innovative solutions to work-related problems.” Cronbach’s alpha for this variable was ,86.

### 3.4.5 Control Variables

To mitigate the risk of other variables polluting our results, we will also introduce age and team size as control variables. Parsons (2015) found that age is positively associated with the implementation of ideas, making it natural to include when assessing the innovative climate. We further included team size, as this can have an influence on team performance (Brewer & Kramer, 1986; Hoegl, 2005). Larger teams also tend to be less homogeneous (Brewer & Kramer, 1986), making it important to control.

### 3.5 Data Analysis

This part will elaborate on how we analyzed our data to test our hypotheses. Data preparation and analysis were conducted in the statistical software IBM SPSS v.28.0, using model 7 in PROCESS Macro, developed by Hayes (2021).

We prepared our data, searched for outliers before aggregating and mean-centering our predictor variables, and examined descriptive statistics and correlation. Furthermore, we conducted a factor analysis along with Cronbach alfa to investigate if our variables were internally consistent and unidimensional. After testing the variables, we used regression to test our hypotheses. To analyze the moderated mediation model, we performed a hierarchical regression, supplemented with Hayes' Process Macro (2020) in SPSS.

#### 3.5.1 Data Preparation

Initially, we examined our dataset for potential outliers. More specifically, extreme values could skew our mean or affect the assumption of linearity (Saunders et al., 2019). Because our dataset is based on a limited scale from 1-7, respondents will use the whole scale, and we expected few relevant outliers. However, we could find respondents who deliberately or mistakenly gave random or wrong answers (Saunders et al., 2019). We used the Mahalanobi's distance and boxplots to identify potential extreme values.

We also looked for unwanted or suspicious patterns of missing data occurring in our population to be sure our data were representative (Saunders et al., 2019). Furthermore, we removed missing data that occurred at random, to avoid variations of variables' mean and standard deviation when regressed. This is usually done automatically when regressing and running PROCESS macro in SPSS. Removing missing values was also essential to test the validity of our aggregated data, which was done by using the Biemann et al. (2012) macro in Excel.

Furthermore, researchers argue that one should use either mean-center or standardized predictors to avoid multicollinearity when using a moderator in models(Hayes, 2022). However, the true purpose and effect of mean-centering or standardizing variables regarding multicollinearity are debated. Hayes (2005) argues that there is no real effect for hypotheses



testing as t-statistics and p-values are the same. Although, if you standardize your variable, you change the way you read the coefficient, where one unit is one standard deviation. Yet, Lacobucci et al. (2016) argue that there is indeed an effect when looking at correlation and regression coefficients individually, but not for the models' correlation and fit as a whole. With all taken into consideration, we found mean centering more comparable for interpretation, as the predictors now are centered on zero (Lacobucci et al., 2016), thus mean centering our predictors.

### 3.5.2 Aggregation

Conclusions from individual-level data cannot be generalized to teams without committing a fallacy of the wrong level (Rousseau, 1985). As a result, individual team members' perceptions were aggregated by taking the average team member's response and expressing that as the team value. We used SPSS to mean aggregate our constructs and tested the validity and reliability of our aggregation by investigating the multi-item Within-Group Agreement (rWG(j)) and Intra-Class Correlation Coefficients (ICC) 1 and 2. RWG(j) and ICC (1) and (2) demonstrate agreement and consistency among lower-level units, which justifies the aggregation if the given criteria are met (Chan, 1998). Establishing the internal group agreement is important, as we do not know how homogenous the team's opinions are by inspecting the average score.

As the ICCs are based on a one-way ANOVA, we had to assure that the underlying assumptions for ANOVA were met before we calculated the coefficients (Biemann et al., 2012). Biemann et al. (2012) describe these as "approximate equal-interval measurement, normally distributed group scores, independent between-group observations, and homogeneity of variances within groups" These assumptions were met and are further described under regression analysis in chapter 3.5.5.1. Moreover, as the rWG(j) index is calculated by comparing the within-group variance to an expected variance, the ambiguity of choosing the best null distribution is seen as a limitation of rWG(j) and debated by scholars (Biemann et al., 2012; Cohen et al., 2007). We chose a rectangular distribution because we didn't have any specific knowledge of response bias in our data. However, the value given from a rectangular distribution is known to give an inflated value and should, therefore, be seen as an upper bound value of the rWG(J) (Biemann et al., 2012; Cohen et al., 2007).

To evaluate our calculated  $rWG(j)$ , which emphasizes the interchangeability between our ratings, we used LeBreton and Senter's (2008) suggested scale rather than the traditional hard cut-off for values below ,70. LeBreton and Senter (2008) argue that one should consider the  $rWG$  as a lack of agreement between ,00 to ,30; weak agreement between ,31 to ,50; moderate agreement between ,51 to ,70; strong agreement between ,71 to ,90, and; very strong agreement between ,91 to 1.00. When considering ICC (1) and (2), emphasizing the relative consistency among multiple raters, Chen et al. (2004) argue that if ICC (1) is significantly different from zero, one can justify the aggregation of the team. LeBreton & Senter (2008) further recommend Murphy and Mayors (2003) scale to interpret the values for ICC (1). Specifically, a value above ,01 might be considered a 'small effect, while a value above ,10 might be considered a 'medium effect, and a value above ,25 might be considered a large effect. ICC(2) also has a traditional cut-off at ,70 (LeBreton & Senter, 2008), but Koo and Li (2016) have more recently argued for a more nuanced scale where "values less than 0.5, between 0.5 and 0.75, between 0.75 and 0.9, and greater than 0.90 are indicative of poor, moderate, good, and excellent reliability, respectively"(Koo & Li, 2016).

*Table 1 Aggregation of constructs*

Variable	Rwg(j)	ICC(1)	ICC(2)
Servant Leadership	,71	,17	,48
Job Autonomy	,69	,25	,60
Intrinsic Motivation	,79	,06	,22
Innovative Climate	,61	,13	,41

From table 1 we see that the  $Rwg(j)$  scores suggest a moderate agreement within our teams for job autonomy (.69) and an innovative climate (.61), and a strong agreement for servant leadership (.71) and intrinsic motivation (.79). Furthermore, all ICC (1) values show a medium to large effect except intrinsic motivation (.06), which show a small to medium effect. Moreover, job autonomy (.60) also shows a moderate ICC (2) reliability score. In total, all constructs, except intrinsic motivation, have  $rWG(j)$  and ICC (1) values within moderate to strong levels, justifying an aggregation. However, LeBreton & Senter (2008) does argue that even values of ICC (1) as small as ,05 may provide prime facie evidence of a group effect. As intrinsic motivation has a strong  $rWG(j)$  (.79), we find support for a justified aggregated intrinsic motivation, ultimately keeping all aggregated constructs.

### 3.5.3 Chronbach's Alpha

When testing the internal constancy of our variables, we used Cronbach's Alpha, the most commonly used index for quantifying the internal reliability of the items that comprise a construct (Saunders et al., 2019). The coefficient measures the consistency between the questions within each construct by looking at the correlation between the answers to the different questions. The higher the Cronbach's alpha value, the greater the measures' internal consistency. The value is between 0 and 1, where a value above ,70 is considered adequate to determine the questions as consistent (Nunnally, 1978). When we measured the internal consistency, we got a value above ,7 on all four variables innovative climate, servant leadership, job autonomy, and intrinsic motivation. Values are presented under chapter 3.4.

### 3.5.4 Factor Analysis

To evaluate the one-dimensionality of our variables, we conducted an exploratory factor analysis. A factor analysis aims to understand if observable variables can be reduced to fewer latent variables which are unobservable and have common variance (Yong & Pearce, 2013). This also reveals if questions in the questionnaire explain more than one of our constructs.

To determine if our data were suitable for factor analysis, we performed the Kaiser-Meyer-Olkin-test (KMO) and the Bartlett's test, recommended by Yong and Pearce (2013). Bartlett's test determines if there is a pattern between the questions and should not have a p-value higher than ,05. KMO tests the proportion of shared variance between the variables, where lower variance is better, aiming for a KMO value above ,50 (Yong & Pearce, 2013).

In the subsequent analysis, we analyzed the number of components in our dataset and only included factors with an Eigenvalue greater than 1 (Yong & Pearce, 2013). These values should ideally explain 80% of the cumulative variance in our model (Yong & Pearce, 2013).

Lastly, a factor analysis of the identified factors was performed through the Principal Component Analysis (PCA) utilizing the VARIMAX rotation on SPSS. The VARIMAX rotation shows how many factors the questions are loaded on, and to what degree every question is related to each respective factor. We consider the relation as strong if the item had a factor loading above ,50 (Yong & Pearce, 2013).

### 3.5.5 Regression Analysis

Regression analysis was our primary tool to test our hypotheses. This is an established procedure to test relations between dependent and independent variables (Hayes, 2022). We used a 95% confidential interval to test our hypotheses, rejecting hypotheses with a p-value above 5% (Saunders et al., 2019). This minimizes the risk that our conclusions happen by chance.

We further investigated how well our independent variables explained the variance in the dependent variable by interpreting the R squared in our regression. High R squared indicates that our model variables have a good fit. An F-test was also conducted to determine if the independent variables collectively explained the variance in our dependent variable (Saunders et al., 2019).

In addition, we analyzed our model's fit using hierarchical regression, adding our variables step by step to see if they improved our model (Hayes, 2022). This allowed us to determine if adding variables such as a moderator improved the model by explaining more variance over a singular relationship between our independent and dependent variables. The hierarchal regression also provided an efficient and tidy way of presenting and analyzing different hypotheses that are prior to the full model (Hayes, 2022).

#### 3.5.5.1 Assumptions for multiple regression analysis

To ensure we have a valid regression analysis, we have four main assumptions that should be in place: Linearity, homoscedasticity, absence of multicollinearity, and normal distribution (Saunders et al., 2019).

To test the linearity, we conducted a residual plot to see if our variables aligned (Saunders et al., 2019). Second, to test for homoscedasticity, we wanted to see if the error term was constant with different values of independent variables. This was examined with a scatter plot. If values are distributed around zero, the assumption hold. However, Hayes (2022) state that the assumption also holds with minor deviations. To test the third assumption, the absence of multicollinearity, we looked at the Variance Inflation factor (VIF) among our variables. We followed Hair et al.'s (2014) suggestion, underscored by Sanders (2019), that we have a multicollinearity problem if VIF levels are above 10. The last assumption,

normality in the data, is regarded as the least important (Hayes, 2022). Hayes (2022) argue that only extreme deviation in normality will have statistical inference but should be checked to ensure the strength of our hypotheses testing. Normality can be tested by plotting the residuals in a histogram and seeing if they diverge from a normal distribution curve (Saunders et al., 2019). We also avoided the potential problem by using Bootstrapped confidence interval for inference generated in PROCESS (Hayes, 2022).

#### 3.5.5.2 *Moderated mediation*

Our research model contains both a mediator and a moderator. We started by looking at the mediation, where the goal is to examine our dependent variable through our mediator (Hayes, 2022). To test the effect of the mediation, we utilized Barons' (1986) four criteria for mediation: First, our independent variable had to be significant with the dependent variable, and second the mediator. Third, we investigated if there was a significant relationship between our mediator and dependent variable. As all were significant, we examined the last criteria, requiring that the correlation partly or wholly diminishes between our independent variable and dependent variable when our mediator was introduced. To ascertain a full mediation, the relationship between our independent variable and dependent variable must be insignificant. If this is not the case, we must argue a partial mediation.

The moderator is a variable that influences the strength and direction between an independent and dependent variable. The independent variable interacts with the moderator in order to predict the dependent variable (Hayes, 2022). To find support for moderation, we looked for significant interaction in the regression (Baron & Kenny, 1986).

To investigate our full model using a moderated mediation, we used two common methods from Hayes (2015) and Edwards & Lambert (2007), which can be done using the PROCESS-macro. We used the Hayes index (2015) as our primary tool to formally test our hypothesis. A single interference test that, over the recent years, has become more recognized than methods separately testing moderation and mediation and then jointly interpreting the result – such as Edward and Lambert's (2007) general analytic framework (Edwards & Konold, 2020). To determine if Hayes index (2015) was significant, we looked at a 95% bootstrap confidence interval with 5000 replications, rejecting any interval that included 0, thus not significant (Hayes, 2022).

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However, a statistically significant index does not provide evidence that the moderator is statistically different from zero at all levels (Edwards & Konold, 2020). Because our intervals were close to excluding zero, we also used Edward and Lambert's (2007) combined approach, showing the nature of our moderated mediation at different points. We investigated the mean level of our moderator along with a standard deviation above and below, a commonly used convention by researchers for continuous variables (Edwards & Konold, 2020; Hayes, 2015). To conclude the results, we excluded the presented effect at the same bootstrap confidence interval presented with the Hayes (2015) index.

#### *3.5.5.3 Interpreting interaction effects*

There are some limitations when using multiple regression when analyzing moderation. We are only able to establish the presence of moderation, not probe at what levels and with what effect the moderation is significant in relation to our independent and dependent variables (Hayes, 2022). To be able to examine the distribution of our moderator further, we used Dawson's (2014; 2006) simple slope test and Johnson-Neyman's technique.

First, we used the simple slope test to get a visual impression of our moderation, to see how dependent our mediator is on the moderator with different levels of the independent variable. We based the visualization on the mean and one standard deviation above and below, thus only providing guidance of direction and effect.

Therefore, to further validate observations from our slope visualization and comment on the distribution and significance of our moderator, we used Johnson-Neyman's technique. This technique assesses all values of the moderator and determines at which points the moderator is significant in the relationship between our independent and dependent variables (Hayes, 2022). With this information, the Johnson-Neyman technique also provides us with a valid range of the measurement of the moderator.

We recognize that many researchers use the pick-a-point approach for this purpose, but as we have a continuous variable with no specific aim, picking points for our moderator would potentially provide an arbitrary and incomplete picture (Hayes, 2022). Furthermore, the pick-a-point approach can be seen as the Johnson-Neyman technique approach conducted in

reverse (Hayes, 2022). It is therefore considered redundant in our case.

## 3.6 Reliability and Validity

### 3.6.1 Validity

Validity is to what extent we use suitable measures, how accurately we perform our analysis, and the generalizability of our thesis (Saunders et al., 2019). To establish the validity of our data, we will discuss both internal and external validity.

#### 3.6.1.1 *Internal validity*

Internal validity refers to the measurement's ability to measure in accordance with design and intent (Saunders et al., 2019). To ensure the validity of each construct, we conducted a confirmatory factor analysis in SPSS. The factor analysis indicates how well the questions in the questionnaire are grouped under the intended construct and reveal potential multicollinearity between our chosen constructs. All questions were distributed accordingly to each intended construct and above the recommended threshold of ,50 (Yong & Pearce, 2013) , suggesting a solid convergent validity.

Our constructs are well-established and empirically validated through existing literature, suggesting high construct and content validity (Saunders et al., 2019). Another extraneous factor on internal validity is confounding variables. Variables that are hard to measure and observe, potentially weakening the interference between our independent and dependent variables (Saunders et al., 2019). The relationships in our conceptual model have been established in previous studies. Still, to further reduce the potential risk of confounding variables, we have included control variables such as team size and age.

Furthermore, we also chose to keep the referent from the established scales, using a direct consensus model. These models aggregate survey items that begin with an individual perception (e.g., "I believe..."), as opposed to referent-shift consensus models, which aggregate survey items that reflect an individual's perception of some higher-level structure (e.g., "My team believes...") (Wallace et al., 2016). Researchers have argued that using the appropriate referent at a given level of analysis can lead to better predictions of same-level outcomes (Wallace et al., 2016). However, no standard has emerged in the work climate

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literature on which type of composition model is most appropriate, and it is not clear which method is superior in this domain. A meta-analysis by Wallace et al. (2016) compared referent-shift consensus and direct consensus composition models for organizational climate and found that direct consensus models tended to produce larger effect sizes than referent-shift consensus models. Based on this evidence, it can be argued that direct consensus models may be more valid for operationalizing group-level constructs in the work climate literature. However, it is important to note that the appropriate composition model may depend on the research question and context studied.

#### *3.6.1.2 External validity*

External validity refers to how generalizable our findings are to other groups or settings (Saunders et al., 2019). This study is based on data gathered from employees in a single organization, thus making it more difficult to generalize the research findings to other types of organizations. The study is, however, conducted in 24 countries, making the findings more generalizable internationally within the same company context. Our survey also has a significant response rate of around 70%, making our total sample statistically significant within the context of a similar company (Saunders et al., 2019).

### 3.6.2 Reliability

Reliability refers to how consistent and replicable a study is (Saunders et al., 2019). To evaluate the reliability of this study, we will distinguish between internal and external reliability.

#### *3.6.2.1 Internal Reliability*

Internal reliability gauges how consistently a study measures what it wants to measure (Saunders et al., 2019). In our case, how well our constructs are congruent across the chosen items and aggregated teams. First, we used Cronbach's Alpha to measure consistency for each construct, only retaining constructs close to or above the recommended value of .70 (Nunnally, 1978) and removing items that lowered the total value. Before we used ICC and rWG to determine the consistency and representativeness of our teams to ensure reliability in our aggregated analysis (LeBreton & Senter, 2008).



### 3.6.2.2 *External Reliability*

If the procedures and techniques applied to data collection and analysis are replicable and yield consistent findings from other researchers, it suggests external reliability (Saunders et al., 2019). Our survey is built on well-known literature, with standardized, extensive tested measurements, thus easy to replicate, implying high external reliability.

Participant and researcher bias or errors may afflict some limitations to our study. Participants may alter their responses in order to please supervisors or peers if they are afraid of being overheard (Saunders et al., 2019). This was mitigated by securing anonymity and reassuring participants that their response was anonymous and only available to researchers. Supervisors were also advised to be absent when employees gave their answers to reduce participant bias further. We also searched for and removed any outliers to avoid potentially biased noise. Moreover, there is also a risk of participant error, created by any factors that influence the way in which a participant performs (Saunders et al., 2019). All participants received the same information and could answer at the time most convenient for them within a given time frame. This mitigates the risk of rushing the task or performing under undesired conditions. We did not find any clear researcher bias or error but eliminating such risk from either participants or researchers will always be difficult.

## 3.7 Research Ethics

In this chapter, we will present how this thesis was formed to maintain a high ethical standard designing the study, collecting data, and conducting the analysis. Ethics can be defined as the standards that guide your behavior regarding the rights of those who become the subject of or are affected by your research (Saunders et al., 2019, pp. 252–253). To ensure our work is credible and processed in a responsible matter for the affected parties, both in the company and the RaCE-program, it is therefore important to have a conscious relationship with ethics.

The ethical frames for this paper began already before we started our research. As this study is part of the RaCE-program, we signed a confidentiality agreement before we were given access to the company. The research project has also been registered with NSD. We have also carefully stored the data to prevent unauthorized people from gaining access.

It was important to ensure the anonymity and confidentiality of the respondents during the

data collection. Furthermore, several measures were taken when designing the questionnaires to ensure an ethical approach. The questions were standardized, meaning there was little risk of the answers being misinterpreted or falsified, making the collection more predictable and transparent (Saunders et al., 2019). In the questionnaires, it was specified that the answer could be withdrawn at any time if desired. It was also possible to skip questions if the respondent did not want to answer them. This helps reduce pressure to answer and further safeguard ethical principles (Saunders et al., 2019).

The anonymity of the respondents was also ensured in the data analysis. We have been careful never to refer to a specific team or individual by avoiding details that could reveal their identity. Furthermore, we have only used aggregated data, making the answers less traceable to the respondents. When analyzing the data, we have strived to be objective, precise, and accurate in our presentation.

## 4 Results

Here the results from the statistical analysis will be presented. First, we introduce descriptive statistics and a correlation matrix for the variables in the research model. Furthermore, a factor analysis will be presented before we undertake the multiple regression analysis. We will also examine the regression assumptions and a visualization of the moderating effect. Lastly, a summary of the finds will be given.

### 4.1 Descriptive Statistics

*Table 2 Descriptive statistics, correlation matrix*

	Mean	Std. Deviation	1.	2.	3.	4.	5.	6.
1. Age	43,6	6,0	1					
2. Team Size	9,3	8,3	-,26***	1				
3. Servant Leadership	4,7	0,8	-,09*	,11**	1			
4. Job Autonomy	5,0	1,0	,35**	-,42**	,36**	1		
5. Intrinsic Motivation	5,5	0,7	,08*	-,02	,46**	,36**	1	
6. Innovative Climate	4,2	0,8	-,15**	,23**	,56**	,14**	,42**	1

\*\*. Correlation is significant at the ,01 level (2-tailed).

\*. Correlation is significant at the ,05 level (2-tailed).

Listwise N=172

Table 2 showcases the correlation coefficients between each variable in our research model, the associated mean, and the standard deviation. All correlation coefficients are significant at a ,05 level, except for the correlation between team size and intrinsic motivation. This means that an increase in one of these variables will lead to an increase in the other and vice versa.

It can further be noticed that team size is negatively correlated with age and job autonomy, along with age on team size, servant leadership, and innovative climate. The remaining variables are positively correlated.

Intrinsic motivation has the highest mean of 5,5, indicating that most of our teams perceive a relatively high intrinsic motivation. Job autonomy (4,9), servant leadership (4,7), and innovative climate are also above the 7-scale median, with innovative climate representing the lowest mean of 4,2. With questions such as “Our location has established a climate where employees can challenge our traditional way of doing things”, respondents seem to evaluate their climate as neither very innovative nor not innovative. Furthermore, no construct has a standard deviation above 1, indicating that most teams are not too far off the presented mean.

## 4.2 Factor Analysis

After testing the internal consistency of our variables, we conducted a factor analysis to investigate the dimensionality of the scale for job autonomy, intrinsic motivation, and servant leadership.

*Table 3 KMO and Bartlett's test*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,91
Bartlett's Test of Sphericity	Approx. Chi-Square	12571,36
	df	210
	Sig.	,00

To test whether our data were applicable for factor analysis, we conducted the KMO (Table 3) to measure the sample adequacy, which in this case was ,91, above the recommended limit of ,60. Bartlett's test of Sphericity further strengthens the appropriate use of factor analysis with a significance of less than ,005 (Table 3).

We only found four components show Eigenvalues greater than 1, collectively explaining

73,3% of the total variance, see table 4. As it is close to the recommended 80%, we argue that we have four unidimensional scale items, which equals our four intended constructs.

However, looking at the VARIMAX rotated component matrix in table 4, we see that the question Job Autonomy 6, load on both job autonomy and servant leadership. The question is, however, mostly loaded on job autonomy, which coincides with the established construct from Morgeson and Humphrey (2006). Since the item is well established through literature and above the recommended threshold ( $.50 < .68$ ) (Yong & Pearce, 2013), we decided to keep the item in further analysis.

*Table 4 Rotated Component Matrix*

	Component			
	Servant Leadership	Job Autonomy	Intrinsic Motivation	Innovative Climate
Servant Leadership 1	,78			
Servant Leadership 2	,82			
Servant Leadership 3	,87			
Servant Leadership 4	,84			
Servant Leadership 5	,84			
Servant Leadership 6	,86			
Job Autonomy 1		,77		
Job Autonomy 2		,78		
Job Autonomy 3		,77		
Job Autonomy 4		,78		
Job Autonomy 5		,81		
Job Autonomy 6	,41	,68		
Job Autonomy 7		,73		
Intrinsic Motivation 1			,88	
Intrinsic Motivation 2			,81	
Intrinsic Motivation 3			,86	
Intrinsic Motivation 4			,88	
Innovative Climate 1				,71
Innovative Climate 2				,78
Innovative Climate 3				,85
Innovative Climate 4				,80
Eigenvalue	8,41	3,37	2,02	1,60
% of total variance <sup>a</sup>	40 %	16 %	10 %	8 %

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotated Component Matrix: Rotation converged in 5 iterations

a: Total cumulative variance 73 %

### 4.3 Regression Results

#### 4.3.1 Assumption for Multiple Regression

This chapter summarizes our findings from testing the four presented assumptions for multiple regression. All tests and plots can be found in the appendix. We found a linear relationship between our independent and dependent variables from the residual plot (figure 4), thus supporting linearity. We further found all variables aligned well with 0 in our scatter plot (figure 3), indicating that we fulfill the homoscedasticity assumption. Further, to test for multicollinearity, we investigated the VIF values. All values were close to 1, hence there is no indication of any multicollinearity problems in our model. Lastly, we compared our residuals to a normal distribution in a histogram (figure 5). We were unable to detect any severely skewed plots; Therefore, we assume our data is normally distributed.

#### 4.3.2 Regression Analysis

To answer our hypotheses, we first conducted a three-step hierarchical linear regression analysis in SPSS. This analysis investigates the relationship between servant leadership and innovative climate with the mediating effect of job autonomy. The results are presented in table 5 below, with all predictors mean centered.

Table 5 Three-step hierarchical linear regression

	Innovative Climate		
	1	2	3
(Constant)	4,55***(.23)	4,40***(.19)	4,17***(.22)
<i>Control Variables</i>			
Age	-,01**(.01)	-,01(,00)	-,01**(.04)
Team Size	,02***(.00)	,02***(.00)	,02**(.00)
<i>Independent Variable</i>			
Servant Leadership		,51***(.03)	,48***(.03)
<i>Mediator</i>			
Job Autonomy			,07*(.03)
R Square	,06	,33	,34
R Square Change	,06	,27	,00
F Change	25,38***	309,59***	4,40*

N=172, \*\*\*≤,001, \*\*≤,01, \*≤,05

Note. Unstandardized regression coefficients are shown (Standard error). N = 172.

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We notice that all variables, except for Age in model 2, are significant ( $p \leq ,01$ ) in our hierarchical regression. Moreover, an increase in age impacts innovative climate negatively, while an increase in team size contributes positively.

Our first hypothesis suggests that servant leadership directly and positively affects an innovative climate. From table 5, model 2, we see that servant leadership has a positive ( $\beta = ,51$ ) and significant coefficient ( $p \leq ,001$ ), supporting our hypothesis.

We further found evidence for hypothesis two in table 5 model three, that job autonomy has a positive ( $\beta = ,07$ ;  $p. \leq ,05$ ) and direct effect on innovative climate. The R square values and the change in F ( $\Delta F=4,398$   $p. \leq ,001$ ) also significantly increase from model two to three, indicating that the model fit is 4% better when we include our mediator intrinsic motivation. Ultimately, the independent variables in model three explain 33,5% of the dependent variable innovative climate's variance.

To help investigate our remaining hypotheses, we analyzed the relationship between servant leadership and job autonomy moderated by intrinsic motivation. The relationship was scrutinized by a four-step hierarchal regression analysis presented in table 6, as well as an analysis of moderated mediation done in PROCESS in SPSS.

Table 6 Four-step hierarchal regression analysis

	Job Autonomy			
	1	2	3	4
(Constant)	3,59***(.24)	3,45***(.21)	3,58***(.21)	3,66***(.21)
<i>Controll variables</i>				
Age	,04***(.01)	,04(.01)	,04***(.05)	,04***(.01)
Team Size	-,04***(.00)	-,046***(.00)	-,05***(.03)	,05***(.00)
<i>Independent Variable</i>				
Servant leadership (SL)		0,460***(.032)	,36***(.00)	,37***(.04)
<i>Moderator</i>				
Intrinsic Motivation (IM)			,27***(.05)	,24***(.05)
<i>Interaction</i>				
SL*IM				-,11**(.04)
R Square	,24	,40	,43	,43
R Square Change	,24	,16	,02	,01
F Change	122,04***	205,49***	32,67***	7,77**

N=172, \*\*\* $\leq$ ,001, \*\* $\leq$ ,01, \* $\leq$ ,05

Note. Unstandardized regression coefficients are shown (Standard error). N = 172.

Hypothesis three states that servant leadership directly and positively affects job autonomy. Table six model two, indicates that servant leadership on job autonomy has a positive ( $\beta = ,460$ ) and significant coefficient ( $p \leq ,001$ ). This supports our third hypothesis.

Furthermore, to find support for our fourth hypothesis, an indirect and positive effect on innovative climate mediated by job autonomy, we looked at Baron and Kenny's (1986) four criteria for mediation. Our regression analysis has previously established support for the first three criteria. Table 6 shows that the independent variable, servant leadership, is correlated with the dependent variable innovative climate (first), and in table 6 with the mediator, job autonomy (second). We further found support in table 5 for a correlation between job autonomy and innovative climate when controlling for servant leadership on innovative climate (third). To explore the final causal step (fourth), we had to examine whether the correlation between our independent and dependent variables entirely or partly diminishes when our mediator is introduced. When comparing models two and three in table 5, we see that the correlation between our independent variable servant leadership and innovative climate is reduced ( $\beta ,507 > \beta ,476$ ) when the mediator intrinsic motivation is introduced. As both still are significant, we argue support for a partial mediation in hypothesis four.

We were further able to find full support for our fifth hypothesis, indicating that intrinsic motivation moderates the relationship between servant leadership and job autonomy. The interaction is included in model four in table 6 as a negative ( $\beta = -.024$ ) and significant coefficient. Moreover, model four shows an increase in R squared ( $.004$ ) and a significant change in F from model three, implying that the interaction strengthens our model.

Table 7 Hayes (2015) indirect effect index

Innovative climate				
Moderator	Index	Boot SE	BootLLCI	BootULCI
Servant leadership	-,01	,01	-,02	,00

Note: 95% bootstrap confidence interval, results are based on 5000 bootstrap samples

Table 8 Indirect effect with different levels of intrinsic motivation

Innovative climate					
	Servant leadership	Effect	BootSE	BootLLCI	BootULCI
Intrinsic motivation	Low	,03	-,02	-,01	,06
Intrinsic motivation	Average	,02	-,02	-,01	,05
Intrinsic motivation	High	,02	-,01	-,01	,04

Note: Moderated mediation of servant leadership on innovative climate

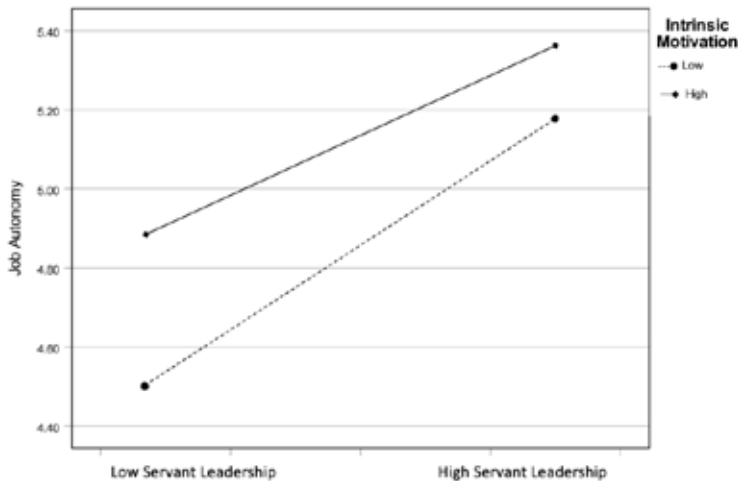
Lastly, we investigated hypothesis six, suggesting that servant leadership has an indirect positive relationship with innovative climate, mediated through job autonomy. We further believe that the strength of this mediation is moderated by intrinsic motivation. First, we looked at Hayes (2015) index for moderated mediation in table 7. From table 7 we can see that the index is insignificant as our bootstrap confidence intervals contain zero (BootLLCI  $-.02$ ; BootULCI  $.002$ ), hence not supporting our hypothesis. Second, as the BootULCI of Hayes index was close to 0, and we found evidence both for moderation and mediation, we also investigated Edwards & Lambert's (2007) combined method with different points of the mediator. Presented in table 8, we see that the effect of our moderator is not significant at neither the mean nor one standard deviation above and below, as they contain 0 in their bootstrap confidence interval. This further support our rejection of hypothesis six, the presence of moderated mediation in our model.



#### 4.4 Interpretation of the Interaction Effect

To better understand the general magnitude of our moderator, we looked at Dawson's (2014) to-way interaction plot presented in table 9, extracted from the results in Hayes PROCESS model 7. The illustration shows servant leadership and intrinsic motivation as standardized with +/- one standard deviation, read as high or low value. The illustration shows how the relationship between servant leadership and job autonomy is moderated with high and low levels of intrinsic motivation. We observe that job autonomy, in general, seems to be stronger when there is high intrinsic motivation. Still, intrinsic motivation has less impact when servant leadership is high. On the other hand, job autonomy is more dependent on intrinsic motivation when servant leadership is perceived as low.

Figure 2 Dawson (2014) visualization of moderation.



Note: Job Autonomy is measured on a 7-point scale, so we do not show the full scale.

Moreover, to investigate the range of significance for our moderator, we used the Johnson-Neyman technique from PROCESS, in which results are presented in table 10. We could not find any insignificant values of the moderator, which indicates that the moderator is significant within the full range of the moderator (Hayes, 2015). Table 10 also confirms our observation from table 8, that job autonomy seems more dependent on intrinsic motivation when servant leadership is low.

Table 9 Johnson-Neyman technique

Job Autonomy						
IM	Effect	se	t	p	LLCI	ULCI
-3,01	,53	,12	5,69	,00	,45	,92
-2,80	,65	,11	5,88	,00	,44	,88
-2,53	,64	,10	6,10	,00	,43	,84
-2,36	,62	,10	6,34	,00	,42	,81
-2,15	,59	,04	6,62	,00	,42	,77
-1,94	,57	,03	6,94	,00	,41	,73
-1,73	,55	,07	7,31	,00	,40	,69
-1,51	,52	,07	7,73	,00	,39	,66
-1,30	,50	,06	8,22	,00	,33	,62
-1,08	,48	,05	8,76	,00	,37	,59
-,87	,46	,05	9,35	,00	,36	,55
-,65	,43	,04	9,94	,00	,35	,52
-,44	,41	,04	10,42	,00	,33	,48
-,23	,39	,04	10,50	,00	,32	,46
-,01	,37	,04	10,31	,00	,30	,44
,20	,34	,04	9,50	,00	,27	,42
,42	,32	,04	8,33	,00	,25	,40
,63	,30	,04	7,05	,00	,22	,38
,85	,28	,05	5,84	,00	,18	,36
1,06	,25	,05	4,79	,00	,15	,36
1,27	,23	,06	3,90	,00	,12	,35
1,49	,21	,07	3,17	,00	,08	,34

Conditional effect of servant leadership at values of intrinsic motivation (IM)

#### 4.5 Summary of Analysis

We found support for all hypotheses except the sixth hypothesis, which suggested a moderated mediation in our model. However, the mediation is only partial, as the relationship between servant leadership and innovative climate is still significant. We have also gained a better understanding of our moderator, intrinsic motivation, which seems to have a stronger effect on job autonomy when servant leadership is low.

## 5 Discussion

Here we will discuss the findings from the previous chapter in light of the introduced literature. Furthermore, we will present the implications of these findings, both theoretical and practical. We will then present the limitations of the paper. Lastly, we will give recommendations for future research.

### 5.1 Summary of Findings

The purpose of this research was to analyze how servant leadership affects the innovative climate through job autonomy, and by considering different levels of the moderator intrinsic motivation. This was formulated in the research question:

*«How does servant leadership affect the innovative climate in a team, and how does job autonomy affect this relationship, where the indirect effect is moderated by intrinsic motivation? »*

Our paper investigates servant leadership's effects, contributing to a relatively new research domain. We determined a direct effect of servant leadership on the innovative climate. Job autonomy was also found to partially mediate the relationship between servant leadership and innovative climate. We argued that this is likely because support from leadership is less helpful when you lack the autonomy to act upon your ideas. This finding is important in that it clarifies and confirms servant leadership's theoretical central premise; Servant leaders influence performance outcomes through followers' need satisfaction. The leadership style can lead to positive work outcomes by fulfilling all three psychological needs, not just job autonomy, which could be one explanation why the mediation of job autonomy is only partial.

We found research and empirical studies of intrinsic motivation heavily one-sided and focused on how the organizational environment can be mediated by intrinsic motivation on organizational outcomes. Therefore, we set out to understand the effect of intrinsic motivation on the relationship between servant leadership and job autonomy. Intrinsic motivation was found to moderate the relationship between servant leadership and job autonomy.

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Another interesting insight we found when visualizing the moderation, was that intrinsic motivation had the most significant effect on job autonomy when there were low levels of servant leadership. The relationship seems to depend on how intrinsically motivated the employees are. Meaning, the more intrinsically motivated the employee is, the less effect does servant leadership have on job autonomy. This may be interpreted in a way that intrinsically motivated employees are less dependent on servant leadership to act autonomously.

We also investigated if servant leadership has an indirect positive relationship with the innovative climate, mediated through job autonomy, and that the strength of this mediation is moderated through intrinsic motivation. We did however not find support for this hypothesis in this data. The extensive literature suggested that there could be a significant relationship. However, this exact relationship has previously not been researched, and there could still be reason to believe that the level or type of motivation also has an indirect effect on the innovative climate.

The study illustrates how initial levels of intrinsic motivation are important when utilizing servant leadership. The team leader needs to consider the level of intrinsic motivation in terms of the degree of servant leadership in order to maximize the employees' initiative.

## 5.2 Contributions

In the following chapter, we will present contributions to the literature, both theoretical and practical.

### 5.2.1 Theoretical Implications

Our research paper contributes to several theoretical domains. In general, our paper makes some important contributions that could help future research on the field of work psychology and contextual factors. We will structure this part by the paper's hypotheses.

Servant leaders integrate the organization's vision into the individual, by fulfilling SDTs three psychological needs. They thereby create a perceived safe environment for exploration and sharing ideas (Chiniara & Bentein, 2016; Eva et al., 2019). We proposed that servant leaders encourage the innovative climate of teams, which we found support for. This can be explained by the fact that autonomy-supportive leaders catalyze greater intrinsic motivation, curiosity,

and the desire for a challenge in their followers (Deci et al., 1991). Moreover, employees who characterize their relationships with their leaders by support, trust, and autonomy are described by supervisors as more likely to generate creative ideas (Oldham & Cummings, 1996; Scott & Bruce, 1994).

We also confirmed the second hypothesis, which proposed that job autonomy has a direct and positive effect on the innovative climate. Autonomy provides a sense of freedom, responsibility, and control for work outcomes (Oldham & Cummings, 1996) which is essential for exploring solutions and opportunities outside their immediate area of responsibility (Burcharth et al., 2017). Inventors often work harder when they perceive that their ideas are not constrained by the company's boundaries (Cassiman & Valentini, 2016). Therefore, job autonomy can induce a feeling of personal responsibility for performance outcomes, motivating employees to develop skills and capabilities necessary for the innovative climate.

The third hypothesis suggested that servant leadership positively impacts job autonomy, which was also confirmed. Liden et al. (2008). proposed that servant leadership promotes followers' choice to initiate and regulate actions within the empowerment dimension. Specifically, servant leaders empower their followers by giving them important responsibilities and the freedom to handle situations as they feel best and by actively encouraging them to make important decisions on their own.

We also found support for job autonomy mediating the relationship of servant leadership and innovative climate. As far as we know, servant leadership has not been studied in such a way. Previous research on empowering leadership, a style of leadership that shares some similarities to servant leadership, previously found this relationship significant (Hassi et al., 2021). Similar studies on these relationships have also mainly been done in Asian countries, whereas this study includes 23 countries. The findings in this study are, therefore, more generalizable, although there are perhaps some cultural aspects central to Norway, which we will discuss in limitations. Servant leadership aims to fulfill all three psychological needs proposed in SDT, but autonomy is the most salient.

Lastly, we found that intrinsic motivation moderates the relationship between servant leadership and job autonomy, and that the effect was stronger when the levels of intrinsic

motivation were low. The existing theory and literature were not conclusive on how intrinsic values would affect this relationship. Some pointed out how less intrinsically motivated employees might not find meaning in their work, thus making servant leadership less impactful (Wang & Cheng, 2009). On the other end of the spectrum, empirical studies and literature indicated that those less intrinsically motivated benefit more from structure and support from supervisors (Black & Deci, 2000). Here we have found support for the latter argumentation, making this a significant contribution to the literature.

We also investigated if servant leadership has an indirect positive relationship with the innovative climate, mediated through job autonomy, and if the strength of this mediation is moderated through intrinsic motivation. In line with theory, we suggested that intrinsic motivation results in high-quality learning and creativity (Ryan & Deci, 2002). Moreover, inventors often develop solutions to issues they find personally rewarding and work harder when they perceive that their ideas are not shelved within the company's boundaries (Cassiman & Valentini, 2016). We did, however, not find support for this hypothesis.

### 5.2.2 Practical Implications

The significance of this research could influence how leaders direct responsibilities and resources in a firm. Our findings suggest that a pivotal factor for the innovative climate is the interplay between managerial style and job design, more specifically, the role of job autonomy and trust granted through servant leadership.

This research has demonstrated that firms and leaders seeking to build an innovative organizational climate could adopt servant leadership practices. Therefore, organizations could benefit from training their leaders responsible for teams and working with leader behavior to encourage servant leadership in cases where intrinsic motivation is low.

The innovative climate could also benefit from granting job autonomy to teams. Leaders can do this by allowing employees to make their own decisions and methods or giving them autonomy over how they manage their time. However, as shown by Morgeson and Humphrey (2006), increasing autonomy can increase compensation and training requirements, whereas increasing social support does not have these negative tradeoffs.

Servant leaders should act more supportive, interacting with roles characterized by naturally lower amounts of intrinsic motivation. This can, for example, be sales teams that are rewarded with extrinsic values such as provision or team bonuses. As noted previously, those in sales teams may still be intrinsically motivated, and still be rewarded with extrinsic rewards – therefore, leaders should strive to get an understanding of the salespeople’s intrinsic motivation as well. Those with intrinsic values will be drawn to roles where they can make an impact, and the need for servant leadership in these roles will be less, in terms of encouraging autonomous behavior.

Moreover, this suggests that servant leadership has diminishing returns on intrinsic motivation, as resources are needed to facilitate the needs of the employees. Therefore, servant leadership could be an ineffective way of allocating the leader's resources in those cases where employees are intrinsically motivated.

To some extent, the results can arguably be applied to the hotly debated topic of remote work, a test of trust and autonomy in employees. Kubicek et al. (2017) describes job autonomy as the discretion of employees to complete tasks when, where, in what order and in what way. It is important to note that the data collected in this study was done before the COVID-19 pandemic, but some implications may still apply. In line with previous research on remote work, an individual's behavior when working remotely or from home is often influenced by individual differences (Wheatley, 2021). If one applies the findings in this paper, one can argue that intrinsically motivated employees are not as dependent on servant leadership to work from home. This relationship may need further exploration, as other variables likely play in regarding place of work.

### 5.3 Limitations

The findings need to be discussed in light of the limitations of this thesis, which will be presented in this chapter.

First, it is necessary to point out how the research design affected the thesis, both the choice of methodological approach and research strategy. The quantitative method of collecting numerical data using a questionnaire made it easy to gather answers from many respondents, and the standardized questions made it possible to compare. However, a drawback of using

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this method is that it does not allow the participants to express their opinion and meaning in greater detail, as they could have done in an interview setting. In order to gain a deeper insight into what lies behind the answers in the questionnaires, it could have been advantageous to use "mixed" or "multiple methods" by complementing the questionnaires with in-depth interviews (M. Saunders et al., 2019). It has also been recommended utilizing several methods to strengthen the survey design when studying servant leadership (Eva et al., 2019). For example, an experiment could be used, which aims to discover causal relationships between variables (Behi & Nolan, 1996).

Moreover, the deductive, descriptive approach to answering the research problem allowed us to find and describe connections between the researched variables. However, the method means that we cannot demonstrate causal connections as one could with an explanatory research approach (Saunders et al., 2019). In this study, we can thus find and describe the relationship between the variables, but we have no prerequisites for explaining the background and reasoning behind these relationships.

Our research object can also make this study subject to some weaknesses. The study was conducted among employees and leaders of one singular company, which can induce the risk of homogeneity. It is likely that the employees will be influenced by the company-specific context of the research object, thus sharing some of the same qualities. However, we believe that the findings can be applied to similar companies, preferably in contexts where creativity and innovation are central. It is, moreover, conceivable that the company-specific context of a strong focus on innovation has contributed to the findings being more potent than they would have been in a company where innovation is not considered central. Furthermore, innovation is likely more included in the job description and formal work tasks than in other companies where innovation is not as valued. This could have diluted our results in terms of how we have concerned job autonomy as going above and beyond the employees' immediate area of responsibility. Moreover, the company was first established in Norway, and the Norwegian context and culture might influence the conclusions. For instance, Scandinavian culture has a high degree of job autonomy compared to other countries (Aspøy, 2020), which could also skew our results.

Another point to consider is that our aggregated constructs were based on an average of individual subjective scores, which makes it difficult to accurately determine whether the



teams' responses reflect the views of the whole team or are influenced by some members. As shown in chapter 3.5.2, only one of our variables (job autonomy) had a moderate ICC (2) level indicating that our remaining constructs had low reliability in terms of the mean rating across group members (LeBreton & Senter, 2008). This means that, for example, a team's intrinsic motivation could come from the team as whole or specific individuals within the team. Future research should aim to use more objective measures of these variables to understand the dynamics of teams better.

There may also be other variables than those accounted for in this study that influence the relationship between servant leadership and the innovative climate. For example, several personal or contextual factors could influence the relationship, such as the type of work tasks, personality traits of employees and managers, and the resources the employees have at their disposal. Another possible influence on our data is that our data consists mainly of teams with high tenure, with an average of 9,5 years. Literature indicates that high tenure can negatively affect intrinsic motivation and servant leadership (Chan & Mak, 2014; Wright & Bonett, 2002). The effects of intrinsic motivation and servant leadership may therefore have been less than in a model where the teams were characterized by lower tenure. We did not get a significant result for the indirect effect of intrinsic motivation on the innovative climate, and the high tenure could potentially have been a contributing factor.

Lastly, it is also important to be aware that some of the studies that have been used to back up several of our arguments, have some differing contexts that may have influenced this study. This is especially the case for the literature of servant leadership. There are for example a significant difference between the Chinese and Scandinavian culture. Moreover, the power-relationship in a student-professor relationship and an employee-boss relationship are also likely different and may thus have affected our reasonings.

## 5.4 Future Research

This chapter will present recommendations for further research in examined domains of literature.

Firstly, although the research object is a large multinational company, it is still a singular company. It would be interesting to see if the findings can be replicated in other companies, to

investigate whether the findings are universal for similar companies and across industries. The strong focus on innovation in our research object may have influenced other contextual factors in the study. For example, the managers in the company could have greater expectations of employees' degree of innovation, which is reflected in the formal tasks. It may therefore be interesting to investigate whether our findings are also transferable to companies where innovation is not as central.

It is conceivable that other variables will influence the relationship between servant leadership and the innovative climate, which has not been accounted for in our analysis. It would be interesting to investigate the extent to which the effects of different job characteristics are affected by personal characteristics. Moreover, although we did not find support for intrinsic motivation's indirect effect on an innovative climate, it could be interesting to understand how other types of motivation act as moderators in the presented research model. For example, prosocial motivation has previously been researched in light of servant leadership (Bao et al., 2018). We, therefore, recommend that studies be carried out that test other mediators and moderators.

In this thesis, we have in large focused on the positive aspects of job autonomy. However, we have seen how job autonomy may induce less effectiveness in teams, depending on the degree of interdependence. Future research could therefore investigate further how the interplay between job autonomy, interdependence and intrinsic motivation may affect effectiveness in teams. Some also argue that job autonomy reduces external monitoring, and that unethical behavior is more present when job autonomy is high. Therefore, as job autonomy increases, so does the chance of misleading work behavior (Zhou, 2020). Therefore, it would also be interesting to see how job autonomy mediates the relationship between servant leadership and negative outcomes, and moreover if intrinsic motivation moderates this relationship.

It could be beneficial in future studies to consider the fact that the relationship between the servant leader and the follower likely matures over time. Therefore, the relationship could be assessed at several time periods, for example, in longitudinal studies. Eva et al. (2019) note that the servant leader focuses less on the professional elements of the relationship and focuses more on the personal capacity-building elements of the relationship. One can also conduct a latent change analysis to capture reciprocal spiraling effects and to test for reverse causation, which has yet to be established in servant leadership (Eva et al., 2019).

In limitations, we mentioned how a contributing factor of our non-significant result may have been due to the generally long tenure in our teams. Due to the “honeymoon effect,” new teams tend to be more affected by their leaders than those with a longer tenure. New teams also have more intrinsic motivation. Future research could therefore be done on a sample where the teams have shorter tenure, to investigate if this could make this model significant.

## 6 Conclusion

The objective of this master's thesis was to research how job autonomy and levels of intrinsic motivation affect the relationship between servant leadership and the innovative climate. The research model accumulated in six hypotheses, summarized in the following research question:

*«How does servant leadership affect the innovative climate in a team, and how does job autonomy affect this relationship, where the indirect effect is moderated by intrinsic motivation? »*

To answer this research question, we gathered data from the employees and leaders of a Norwegian production company of medical equipment. The findings in this thesis contribute to the literature on job autonomy, innovative climate, intrinsic motivation, and servant leadership. We first established the direct and positive effect between servant leadership and the innovative climate. This indicates that a higher degree of servant leadership results in an organizational climate characterized by psychological safety, where innovation is encouraged. The Self-Determination Theory also supported this. The relationship between job autonomy and innovative climate was confirmed, as well as the positive influence servant leadership has on job autonomy. Moreover, job autonomy was also found to partially mediate the relationship between servant leadership and innovative climate, as suggested by the Self-Determination Theory.

We then introduced intrinsic motivation as a moderator. We argued how, in addition to the heavily documented positive impact job autonomy has on intrinsic motivation, it is necessary to study the moderating effects of intrinsic motivation. We pointed out how workers have different levels of intrinsic motivation. An interesting finding was that the moderation effect decreases with higher degrees of intrinsic motivation, and those with low intrinsic values could be more open to the influence of servant leadership to act autonomously. The last hypothesis, that servant leadership has an indirect positive relationship with the innovative climate, mediated through job autonomy, and that the strength of this mediation is moderated through intrinsic motivation, was not supported by our findings.

Leaders should consider workers' motivational profiles when facilitating job characteristics and utilizing servant leadership. In the case of low intrinsic values, leaders should act more as servants to encourage autonomous behavior. Some indications that the worker is less

intrinsically motivated are tenure and what kind of job the worker is drawn to. Here we used the sales team as an example of workers that could have lower levels of intrinsic motivation, as their jobs are dependent on extrinsic rewards such as team bonuses. Moreover, intrinsically motivated teams need less servant leadership to act autonomously, and it could be more effective for the leader to focus their efforts and resources on their less intrinsically motivated employees.

To summarize, this thesis has argued that servant leaders strive to fulfill the three psychological needs presented by SDT and, consequently, build an organizational environment characterized by trust and strong relationships between leader and follower. The most salient of the psychological needs, job autonomy, has been proven to partially mediate servant leadership and the innovative climate in this thesis. We also found that intrinsic motivation moderates the link between servant leadership and job autonomy and that those with high intrinsic motivation will be less affected by servant leadership. Lastly, we found that those with low levels of intrinsic motivation will act more autonomously when subject to servant leadership compared to their more intrinsically motivated peers.

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## 8 Appendix

Figure 3 Scatterplot

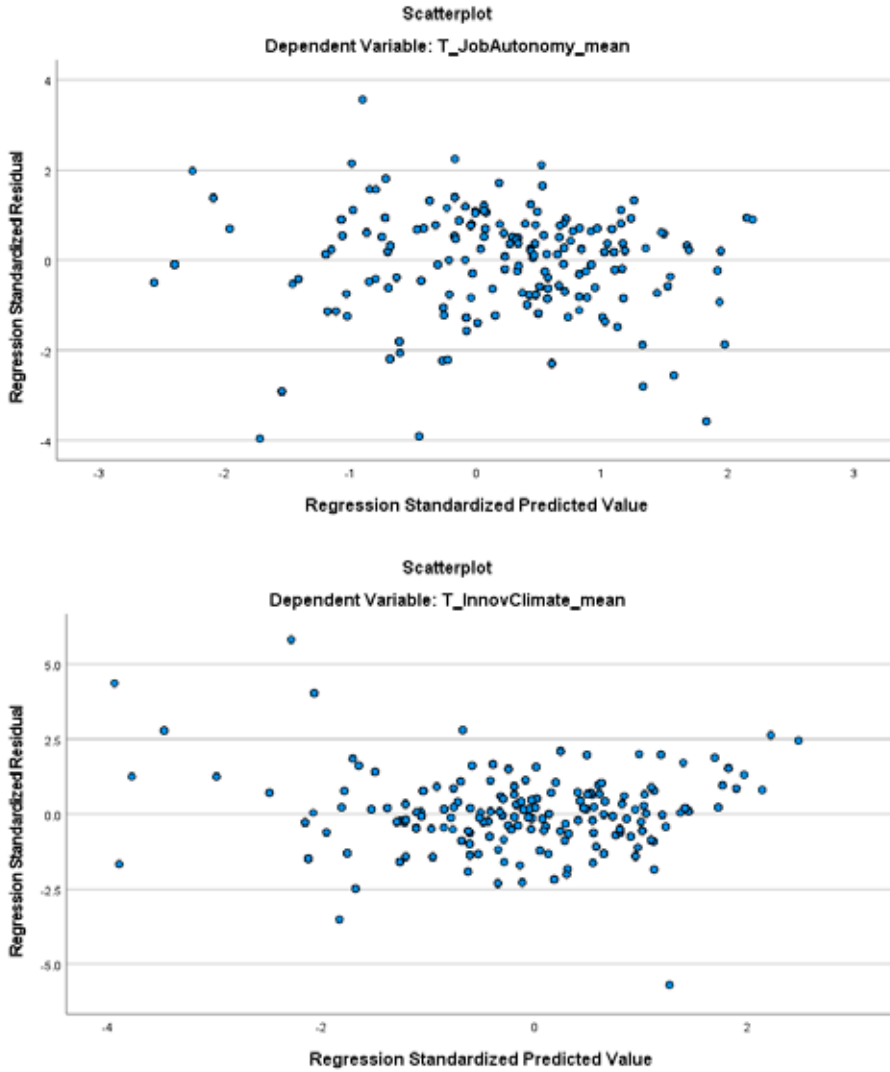


Figure 4 P-P Plot

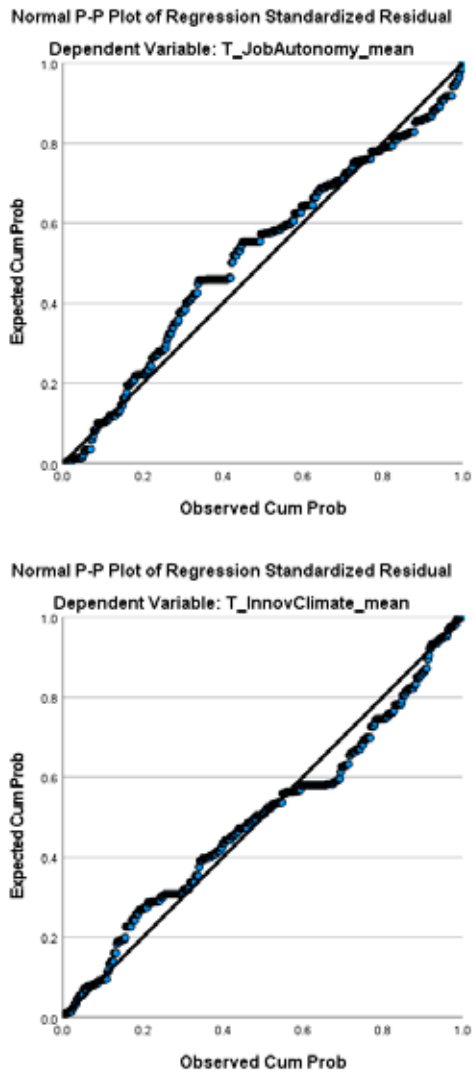
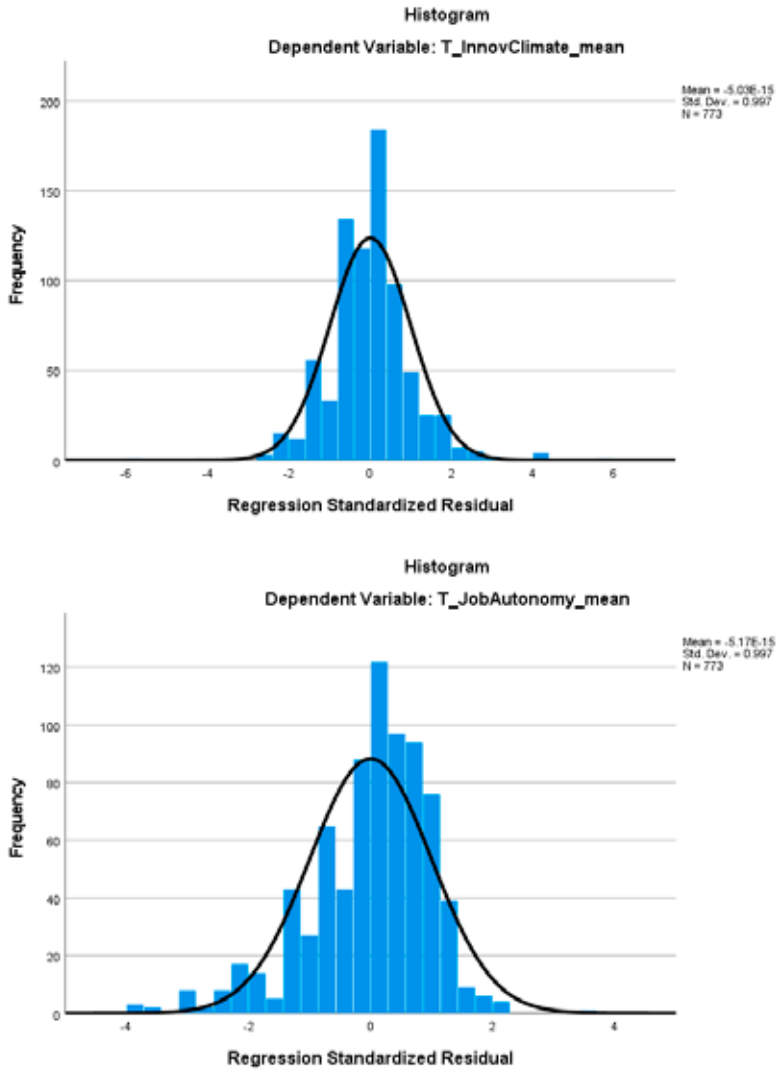


Figure 5 Normality distribution



In this study, our goal was to examine the relationship between servant leadership and the innovative climate of an organization at team level. A mediating moderation model on the innovative climate is proposed, in which job autonomy mediates the relationship between servant leadership and the innovative climate, and intrinsic motivation moderates the indirect effect. The study was conducted on a Norwegian medical equipment production company, using a survey that was distributed to leaders and employees. Our final sample consisted of 778 respondents from 23 countries divided into 172 teams. Our analysis has revealed that servant leadership has a positive impact on the innovative climate of the team. We argue that this effect is largely due to the fulfillment of psychological needs as described in Self-Determination Theory (SDT). This leads to the development of a strong relationship between leader and follower, which facilitates the innovative climate. Additionally, we found job autonomy to have a direct positive effect on the innovative climate. Our results also indicated that job autonomy, one of the three needs outlined in SDT, partially mediates the relationship between servant leadership and the innovative climate. Furthermore, we discovered that intrinsic motivation moderates the relationship between servant leadership and job autonomy. Moreover, autonomous work is found to be more dependent on intrinsic motivation when servant leadership is low. Therefore, it is beneficial for leaders to act as servants and supply support when intrinsic motivation is low, as to encourage job autonomy. In conclusion, our findings suggest that servant leadership has a positive effect on the innovative climate of an organization, which is partially mediated by job autonomy. Moreover, the relationship between servant leadership and job autonomy is moderated by intrinsic motivation.

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