UNIVERSITY OF LJUBLJANA
FACULTY OF ECONOMICS

MASTER'S THESIS
THE ROLE OF LEARNING NETWORK CENTRALITY, JOB CHARACTERISTICS AND PERSONALITY TRAITS IN EMPLOYEE WORK ENGAGEMENT

Ljubljana, September 2012   LEA PFAJFAR

AUTHORSHIP STATEMENT

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INTRODUCTION

Employee engagement is a relatively new concept in organizational science (Macey & Schneider, 2008b). It has become more evident in the last decade, particularly in popular press and among consulting firms (Gruman & Saks, 2011; Saks 2006). There are many definitions of the concept, but they all agree that employee engagement is a "desirable condition, has an organizational purpose and connotes involvement, commitment, passion, enthusiasm, focused effort and energy, therefore having both attitudinal and behavioral components" (Macey & Schneider, 2008b).

Important for organizations, employee engagement is perceived as a driver of increased productivity and job performance. It has often been seen as one of the most important factors of an organization's success and competitiveness (Gruman & Saks, 2011). Since "engaged workers are able and willing to 'go the extra mile'" (Bakker & Demerouti, 2007, p. 4) it is very important for the organization to understand what drives the employee engagement. The key drivers of employee work engagement are psychological meaningfulness, psychological safety, psychological availability (Kahn, 1990), job characteristics, perceived organizational support, perceived supervisor support, rewards and recognition, procedural justice, and distributive justice (Saks, 2006).

In my master thesis, I discuss the impact of social learning and advice networks among employees on employee centrality. In other words, I investigate whether there is a new antecedent of employee engagement, that is, employee centrality in learning and advice networks. Cowardin-Lee and Soyalp (2011) did not find a linear relationship between employee centrality and employee engagement. In my work, I build on their research and re-test their findings. Further on, following the model developed by Wood and Bandura (1989), I stress the importance of the context in which employee centrality and employee work engagement is observed. Therefore, I discuss the impact of job characteristics on employee work engagement and include personality traits as control variables in all models. In addition, I investigate the curvilinear relationship between employee centrality and employee work engagement.

Employee centrality is discussed by social network analysis. Publications referencing social networks have been increasing in all of the social sciences, physics, epidemiology, and biology (Borgatti & Halgin, 2011). Scholarly, popular, organizational sociology and management books are filled with information and advice on network issues (Borgatti & Foster, 2003; Monge & Contractor, 2003). In other words, the study of the networks phenomena has come of age in the last decade, particularly in the areas of communication and organization. Due to fast changes in global environment, the twenty-first century "should be the most interesting and challenging time to study communication networks and flows within and among organizations" (Monge & Contractor, 2003, p. 7).

Most broadly, employee centrality is defined by number of direct ties (e.g., learning and advice relationships) between nodes (e.g., employees) (Freeman, 1979). It explains the extent to which an actor is central to a network (Monge & Contractor, 2003). There are various measures (degree, closeness, and betweenness) used as indicators of centrality. While measuring directional ties, there are in-degree and out-degree centrality. While in-degree centrality refers to the number of directional link to the actor by other actors (in-coming links or the number of relationships pointing towards an individual), the out-degree centrality refers to the number of directional links by the actor to other actors (out-going

links or the number of relationships pointing outwards an individual) (Brass, 1995; Hoppe & Reinelt, 2010; Monge & Contractor, 2003).

Due to fast changes in global environment, employees continuously have to gain specific knowledge and skills. In other words, they have to learn and seek advice. Although people could look for advice, knowledge and information in databases or on Internet, it has been found that no technology is as important as other people giving information and teaching how to get work done. While seeking for advice, information, or knowledge, people still mostly rely on coworkers they know and trust (Cross & Parker, 2004).

Since both employee engagement and social network analysis are currently very popular, I decided to investigate whether there is a link between both research areas. Interactions among employees can influence employee work engagement importantly (positively or negatively). I followed the Barsade's et al. (2012) call for paper where the need for research on organizational networks, its emergence, structuralism, and consequences, is introduced. More precisely, I research whether employee centrality could be understood as an antecedent of employee work engagement.

Another important fact for organizations is that the employer may hire people who are more likely to be engaged. However, after hiring such people, the employer has to create the work environment (e.g., (re)design jobs) to ensure that the employee's energy can be manifested and sustained (Macey & Schneider, 2008a). People choose to engage themselves in numerous roles and it would therefore be meaningless to refer to engagement without being specific about the role they have (Saks, 2008, p. 42). Hence, it is not surprising that there are many studies showing job characteristics as an important antecedent of employee work engagement. In my master thesis, I build on previous research and set the research question whether a) job characteristics or b) employee centrality influence employee work engagement more importantly.

The purpose of the master thesis is a) to determine whether there is a curvilinear relationship between employee centrality in learning and/or advice networks and employee work engagement; (b) to re-test whether job characteristics (autonomy, feedback, skill variety, task identity and task significance) are correlated to employee work engagement; c) to determine whether employee centrality (in-degree and out-degree centrality in learning and advice networks) is correlated to employee work engagement; and d) whether job characteristics or employee centrality have a more important impact on employee work engagement. Most broadly, the purpose of the master thesis is to contribute to the management literature by studying employee learning and advice networks, as well as work engagement by combining organizational science and social network analysis and to determine whether there is a cross-section between these two areas of research.

The goal of the master thesis is to test three main hypotheses. Firstly, I predict a positive impact of (in-degree and out-degree) centrality in (learning and advice) networks on employee work engagement. Secondly, I predict a curvilinear relationship between employee centrality (in learning and advice networks) and employee work engagement. Finally, I predict a positive relationship between job characteristics (feedback, autonomy, skill variety, task significance) and employee work engagement. In addition, I compare the impacts of employee centrality and job characteristics on employee work engagement.

In order to reach the master thesis' goals, I use two methodological approaches, namely a systematic review of the literature on employee network centrality, employee work engagement and job characteristic (following Tranfield, Denyer, and Smart's (2003) three-stage procedure, including planning, execution, and reporting); and an empirical test of the hypotheses. In the empirical part of research I use a questionnaire (see Attachment 1 and 2), which includes Utrecht Work Engagement Scale (Schaufeli et al., 2002) for measuring employee work engagement. Items measuring information-sharing potential (Cross & Parker, 2004) and an item measuring network perspective on intra-organizational learning (Škerlavaj, 2007) measure advice and learning networks.

Job characteristics are measured by Idaszak and Drasgow's (1987) revised Job Diagnostic Survey. In the model, I finally include some control variables, such as personality traits (measured by Mini-IPIP scale) and demographic characteristics (age, gender, education). In order to be able to analyze the results, I use the statistical software SPSS (for measuring the validity and reliability of the model, regression analysis) and the software for network analysis NodeXL (for determining in-degree and out-degree employee centrality in learning and advice networks within the organization). Statistical software SPSS (regression analysis) helps find answers on relationships between job characteristics and employee work engagement, as well as employee centrality and employee work engagement.

The master thesis is divided in four main parts. First, I introduce and discuss all important concepts, such as employee work engagement, employee centrality in learning and advice networks, job characteristics and other contextual variables (personality traits). Second, I introduce conceptual model and hypotheses. Third, I present the methodology (sample, measures and results) and continue by discussing research findings (relationship between employee centrality and employee work engagement, relationship between job characteristics and employee work engagement). Moreover, I also discuss limitations and give a few suggestions for future research. I conclude with a summary of theoretical and practical parts of the master thesis.

1 THEORY ON EMPLOYEE WORK ENGAGEMENT

1.1 Employee work engagement

In this section I shall define the concept of employee work engagement from different perspectives. There is no one common definition, but there are some common elements that are included within all definitions. In the second part, I shall discuss the antecedents of employee work engagement. Among others, the employee centrality is presented as one of the possible predictors of employee work engagement. In the third part, I shall discuss consequences of employee work engagement.

1.1.1 Definition of employee work engagement

Theoretical rationale for explaining employee engagement can be found in the social exchange theory. *Social exchange theory*, developed by Peter Blau (1946) states that people interact with each other because they need something from each other. Based on Blau's idea, people engage in interactions (advice and learning networks) with each other because they understand their relationships between each other as cost-benefit analysis

(time, effort versus social support, acceptance). In their centrality in learning and advice networks, employees see advantages of autonomy and potential power.

In addition, social exchange theory explains that through interactions between parties who are reciprocally interdependent, some obligations are generated. Moreover, the relationships between individuals over time evolve into mutual, trusting, and loyal commitments. In order to reach these commitments, the parties have to abide by certain rules of exchange, namely reciprocity or repayment rules. More precisely, actions of a party lead to actions of another party (Cropanzano & Mitchell, 2005). For instance, employees will engage themselves in response to the resources that they receive from their organization. In other words, employees usually exchange their degree of engagement for resources and benefits provided by organization they work for (Saks, 2006, p. 603).

The concept of engagement has developed quite a lot through the last decades (for the review see Simpson, 2009). First, Kahn (1990, pp. 694, 700) defined *personal engagement* as "harnessing of organization members' selves to their work roles" or "simultaneous employment and expression of a person's 'preferred self' in task behaviors that promote connections to work and to others, personal presence (physical, cognitive and emotional), and active, full role performances." To put it differently, when engaged, an employee is physically involved, cognitively vigilant, and emotionally connected. People have dimensions of themselves that (at given appropriate conditions) they prefer to use and express in the course of role performance. In Kahn's perspective (1990, p. 719) the three psychological conditions, namely meaningfulness, safety and availability explain the variance in people's selves bringing to and leaving out of their work role performances. On the other hand, Kahn (1990, p. 694) defines personal disengagement as "the uncoupling of selves from work roles." While engaged employees employ and express themselves physically, cognitively and emotionally during role performances, disengaged employees withdraw and defend themselves physically, cognitively or emotionally during role performances.

Further on, Maslach and Leiter (in Cho, Laschinger & Wong, 2006, p. 1018) consider *work engagement as the opposite site of burnout*. They define burnout as a "psychological syndrome characterized by exhaustion, cynicism, and inefficacy, which is experienced in response to chronic job stressors." According to the authors, on the other side of the continuum, there is engagement as the opposite of burnout. While exhaustion (low energy), cynicism (low involvement), and inefficacy (low efficacy) are characteristics of burnout, there are high energy, high involvement and high efficacy as positive characteristics of engagement. The authors describe six areas of work life as organizational antecedents of employee engagement (or burnout): workload – relationship between work demands and resources; control – employee's decision-making and autonomy; reward – recognition for work contributions (monetary, personal, combination of both); community – quality of social interactions at workplace; fairness – extent that trust, openness and respect are present in organizations and in decision-making processes; and values – congruence of organizational priorities and values with those of its employees (Maslach & Leiter in Cho et al., 2006; Leiter & Maslach in Simpson, 2009, p. 47).

Engagement can sensibly be conceptualized as "positive and high arousal affective state characterized by energy and involvement" (Bakker, Albrecht & Leiter, 2011b, p. 74). *Work engagement* is different from job satisfaction since it combines high work pleasure (dedication) with high activation (vigor, absorption). Job satisfaction is typically a more

passive form of employee well-being. Moreover, work engagement differs from work-related flow. While flow typically refers to a peak experience that may last only one hour or less, work engagement refers to a longer performance episode. Finally, work engagement is different from motivation. While motivation involves dedication, engagement refers also to cognition (absorption) and affect (vigor). Therefore, work engagement is a better predictor of job performance than any earlier constructs (Bakker, 2011, p. 265).

Engagement is understood as a motivational construct by Schaufeli, Salanova, Gonzales-Roma, and Bakker (2002, p. 74), who define it as a "positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption." According to Schaufeli et al. (2002, p. 74) and Salanova, Agut and Peiro (2005, p. 1218), vigor refers to "high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties." While dedication is characterized by "a sense of significance, enthusiasm, inspiration, pride, and challenge at work," absorption consists of "being fully concentrated, happy, and deeply engrossed in one's work whereby time passes quickly, and one has difficulty detaching oneself from work."

According to Saks (2006, p. 602), engagement is not an attitude, but the "degree to which an individual is attentive and absorbed in the performance of their role." It explains how individuals employ themselves in the performance of their job and includes active use of cognition, behaviors and emotions (Saks, 2006, p. 602). Engagement is "a state of mind that is relatively enduring but may fluctuate over time" (Christian, Garza, & Slaughter, 2011, p. 94). Dvir, Eden, Avolio and Shamir (2002, p. 737) define *active engagement* as "the energy invested in the follower role as expressed by high levels of activity, initiative, and responsibility."

The concept of *employee engagement* is relatively new (Macey & Schneider, 2008b, p. 4). It has become more evident in the last six years, particularly in popular press and among consulting firms (Gruman & Saks, 2011, p. 124; Saks 2006, p. 600). There are many definitions of the concept, but they all agree that employee engagement is a "desirable condition, has an organizational purpose, and connotes involvement, commitment, passion, enthusiasm, focused effort, and energy, so it has both attitudinal and behavioral components" (Macey & Schneider, 2008b, p. 4). In other words, there is an agreement among researchers that engagement consists of cognitive, emotional and behavioral components, which are associated with individual role performance (Saks, 2006, p. 602). It has often been seen as one of the most important factors to an organization's success and competitiveness (Gruman & Saks, 2011, p. 124).

Harter, Schmidt, and Hayes (2002, p. 268) define employee engagement differently. They argue that employee engagement "refers to the individual's involvement and satisfaction, as well as enthusiasm for work." In other words, employee engagement is viewed as a high internal motivational state. Harter, Schmidt, and Keyes (in Simpson, 2009, p. 1020) argue that four antecedent elements are necessary for engagement to occur within the workplace. These are "clarity of expectations and basic materials and equipment being provided, feelings of contribution to the organization, feeling a sense of belonging to something beyond oneself, feeling as though there are opportunities to discuss progress and grow."

Consulting firms view employee engagement as a combination of affective commitment (pride in the organization, willingness to recommend the organization to other people), continuance commitment (intention to remain working for the organization), and discretionary effort (being willing to go above and beyond formal role requirements) (Masson, Royal, Agnew & Fine, 2008, p. 57). Employee engagement is also perceived as a driver of increased productivity and job performance (Gruman & Saks, 2011, p. 123).

Macey and Schneider (2008b, p. 6) distinguish between *psychological state engagement, behavioral engagement and trait engagement*. Trait engagement refers to positive views of life and work, proactive personality, autotelic personality, trait positive effect, and conscientiousness. It defines engagement as a disposition and explains that engagement can be "regarded as an inclination or orientation to experience the world from a particular vantage point (e.g., positive affectivity characterized by feelings of enthusiasm) (Macey & Schneider, 2008b, p. 5). Moreover, trait engagement is reflected in psychological state engagement. State engagement refers to feelings of energy and absorption, satisfaction, involvement, commitment and empowerment. It is an antecedent of behavioral engagement. Behavioral engagement refers to extra-role behavior, organizational citizenship behavior, proactive/personal initiative, role expansion and adaptation) (Macey & Schneider, 2008b, pp. 5-6). Behavioral engagement can be defined as "a directly observable behavior in the work context" (Macey and Schneider, 2008b, p. 14).

Macey and Schneider were criticized by many authors. For instance, Burke (2008, p. 70) criticized the central thesis of Macey and Schneider's statement that behavioral engagement follows from state engagement and that it is mainly defined as adaptive, extra-role behavior. Namely, he claimed that this framework fails to consider the prominent role of knowledge and skill as antecedents to behavior at work and ignores the importance of adaptive behavior (extra-role behavior) as ordinary, role-based behavior.

Secondly, Dalal, Brummel, Wee, and Thomas (2008, p. 55) claim that state engagement as defined by Macey and Schneider should be referred to simply as engagement, "with the recognition that engagement is likely to contain both trait-like and state-like components, and engagement is a cognitive-affective construct, not a dispositional or behavioral one." Furthermore, trait engagement should be referred to not as engagement at all, but rather as "putative dispositional antecedents and behavioral consequences of engagement."

Thirdly, Griffin, Parker, and Neal (2008, p. 50) argue that Macey and Schneider's propositions about behavioral engagement "can be extended by linking distinct facets of psychological engagement to the broad performance domain rather than an aggregate group behaviors and by considering the dynamics of the process."

Based on different definitions of employee work engagement, engaged employees could be defined as employees with positive attitude and activity levels. Therefore, they create their own positive feedback in terms of appreciation, recognition and success. Although they feel tired after working hard, they describe their tiredness as a pleasant state, that is, a state related to positive accomplishments (Bakker, Albrecht & Leiter, 2011a, p. 5). Moreover, engaged employees do not work hard because of a strong and irresistible inner drive (like workaholics), but because working provides fun (Gorgievski, Bakker & Schaufeli, 2010).

In this paper, I focus on the definition set by Schaufeli et al. (2002, p. 74), who define engagement as a "positive, fulfilling, work-related state of mind that is characterized by

vigor, dedication, and absorption." Since I want to discuss whether job characteristics or network centrality are a more important antecedent of employee work engagement, it is necessary to take into consideration the levels of energy, enthusiasm, significance, pride, challenge, and individual's persistence at work. In addition, since out-degree centrality is a measure of individual's activity, I also take into consideration the definition set by Dvir et al. (2002, p. 737), who define (active) engagement as "the energy invested in the follower role as expressed by high levels of activity, initiative, and responsibility."

Engaged employees have a sense of energetic and effective connections with work activities and exercise influence over events that affect their lives (are self-efficacious) (Gorgievski & Bakker, n.d.). "They work hard (vigor), are involved with a feeling of significance, enthusiasm, inspiration, pride and challenge (are dedicated), and feel happily engrossed (absorbed) in their work" (Gorgievski & Bakker, n.d., p. 265). In addition, engaged employees craft their own jobs (increase job challenges and job resources) in order to stay engaged (Bakker et al., 2011a, p. 17).

Engaged workers are more creative, more productive and more willing to do more at work (Bakker & Demerouti, 2008). They are characterized by proactive behavior (personal initiative and pursuit of learning (Sonnentag, 2003). As well, they are fully connected with their work roles. They are "bursting with energy, dedicated to their work, and immersed in their work activities" (Bakker, 2011, p. 265). Schaufeli, Salanova, Goznales-Roma, and Bakker (2002, p.73) claim that engaged employees are those who "have a sense of energetic and effective connection with their work activities and they see themselves as able to deal completely with the demands of their job." Since "engaged workers are able and willing to 'go the extra mile'" (Bakker & Demerouti, 2007, p. 4) it is very important for the organization to understand what drives their engagement. For that reason, the next section disuses antecedents of employee work engagement.

1.1.2 The antecedents of employee work engagement

The antecedents of employee engagement are mainly discussed by Kahn (1990), Maslach, Schaufeli and Leiter (2001), and Saks (2006). The authors claim that there are some factors that predict employee engagement, such as psychological meaningfulness, psychological safety, psychological availability (Kahn, 1990), job characteristics, perceived organizational support, perceived supervisor support, rewards and recognition, procedural justice, and distributive justice (Saks, 2006).

According to Kahn (1990, p. 705) there are three psychological conditions that serve as antecedents of personal engagement: psychological meaningfulness, psychological safety, and psychological availability. First, *psychological meaningfulness* refers to the "sense of return on investments of self in role performances." The employee feels worthwhile, valued, and valuable. Moreover, they feel able to give and receive from work and others; hence there have to be some work elements that create incentives for investments of self. For instance, jobs have to involve more or less challenge, variety, creativity, autonomy, and clear delineation of procedures and goals in order to foster the employees' investments of their self. In short, there are three factors that influence meaningfulness: task characteristics, role characteristics, and work interactions. May, Gilson, and Harter (2004) state that job enrichment increases meaningfulness. Moreover, they showed that relationship between job enrichment and engagement is mediated by meaningfulness. Some aspects of work are intrinsically motivating and therefore influence the extent to

which an employee is willing to self-invest his or her personal energy in the task (Kahn, 1990; Macey & Schneider, 2008b). From the social exchange theory perspective, it can be argued that employees with enriched and challenging jobs are more likely to feel obliged to respond with a higher level of engagement (Saks, 2006, p. 604).

Secondly, Kahn (1990, p. 705) interprets *psychological safety* as a "sense of being able to show and employ self without fear or negative consequences to self-image, status, or career." The employee feels that situations are trustworthy, secure, and predictable in terms of behavioral consequences. As such, elements of social systems are very important and create situations that are more or less predictable. For instance, ongoing relationships offering support, trust, openness, flexibility, informal relations, leader support, and shared organizational norms can importantly contribute to increased psychological safety. In short, there are four factors that influence psychological safety, e.g., interpersonal relationships, group and intergroup dynamics, management style and norms.

Thirdly, *psychological availability* refers to the "sense of possessing the physical, emotional, and psychological resources necessary for investing self in role performances" (Kahn, 1990, p. 705). The employee feels capable of driving physical, intellectual, and emotional energies into role performance. For instance, physical and emotional resources, levels of confidence in own abilities and status, self-consciousness, ambivalence about fitting within the social system and outside-life issues importantly influence the availability for investment into role performances. In short, there are four distractions that affect psychological availability: depletion of physical energy, depletion of emotional energy, insecurity, and outside lives (Kahn, 1990).

Furthermore, according to Job Demands-Resources model (Bakker & Demerouti, 2007) *job resources* gain their motivational potential when employees are confronted with high job demands. Job resources play an intrinsic motivational role, since they fulfill basic human needs such as autonomy (Van der Broeck, Vansteenkiste, De Witte, & Lens, 2008) and an extrinsic motivational role, as "resourceful work environments foster the willingness to dedicate one's efforts and abilities to the work task" (Meijman & Mulder in Bakker et al., 2011a).

Moreover, *job characteristics*, which provide challenging work and variety, allow for the use of different skills and knowledge, giving opportunity to make important contributions, which result in greater psychological meaningfulness (Kahn, 1990). Jobs that are high on the five core job characteristics (skill variety, task identity, task significance, autonomy and feedback) (Hackman & Oldham, 1976) stimulate and motivate employees to bring more of themselves into their work or to be more engaged (Kahn in Saks, 2006). Another example is the longitudinal study among a representative sample of Finnish dentists conducted by Hakanen, Schaufeli, and Ahola (2008). They found that job resources such as craftsmanship, professional contacts, and long-term and immediate results of work influence future work engagement. Further, in their study among managers and executives of Dutch Telecom Company, Schaufeli, Bakker, and Van Rhenen (2009) found that increased social support, autonomy, opportunities to learn and to develop, as well as performance feedback increases work engagement.

In addition, *personal resources* can also predict work engagement. Among personal resources the most important predictor is psychological capital (Luthans, Youssef & Avolio in Bakker et al., 2011a), involving self-efficacy, self-esteem and optimism

(Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007). In addition, personality traits such as high levels of mobility, low neuroticism, conscientiousness and high extraversion can also result in higher work engagement (Langelaan, Bakker, Van Doornen & Schaufeli, 2006; Mostert & Rothmann, 2006).

Further, *rewards and recognition* are another factor influencing employee engagement. Kahn (1990) found that employees vary in their engagement dependent on their perception of the benefits they receive from their role. Saks (2006) emphasizes that a sense of return on investments can come from external rewards and recognition and therefore, claims that it can be predicted that employees are more likely to be engaged if they perceive a greater amount of rewards and recognition for their performance. Maslach et al. (2001) reported that lack of rewards and recognition can result in burnout. Therefore, appropriate amount of rewards and recognition can positively influence employee engagement. According to social exchange theory, the employees who receive reward and recognition feel obliged to respond with higher levels of engagement (Saks, 2006).

Nonetheless, *higher perceived organizational* and *supervisor support* can increase employee engagement as well. Perceived organizational support should strengthen employees' beliefs that the organization recognizes and rewards increased performance, values their contribution and cares about their well-being (Rhoades & Eisenberger, 2002). If organizational support is perceived, the employees care about the organization's welfare and help it to reach its objectives. In addition, perceived organizational support results in affective commitment (Rhoades, Eisenberger & Armeli, 2001).

Beside perceived organizational support, perceived supervisor support can also be an important predictor of employee engagement. For instance, Maslach et al. (2001) found that lack of supervisor support could result in burnout. Similarly, Frank, Finnegan and Taylor (2004) stress that supervisors should put more attention on retaining talented employees and keeping them actively engaged in their work.

Kahn (1990) reported that supportive and trusting interpersonal relationship and supportive management positively influence psychological safety, which "involves a sense of being able to show and employ the self without negative consequences" (Kahn in Saks, 2006). May et al. (2004) tested Kahn's model and confirmed that supportive supervisor relations increase psychological safety. Before that, Maslach et al. (2001) found that a lack of social support can result in burnout.

In addition, engagement can be predicted by *distributive* (one's perception of the fairness of decision outcomes) *and procedural justice* (perceived fairness of the means and processes used to determine the amount and distribution of resources) (Colquitt, 2001; Rhoades et al., 2001; Saks, 2006). As described, Kahn's (1990) safety dimension involves predictable and consistent social situations. As Saks (2006) emphasizes, it is important for organizations to be predictable and consistent in terms of the distribution of the rewards and procedures used to allocate these rewards. In his study, Colquitt found that organizational justice is related to outcome satisfaction, leader evaluation, role compliance, collective esteem, instrumentality, helping behavior and group commitment. Further on, Maslach et al. (2001) discovered that lack of fairness can result in burnout, while positive perceptions of fairness can improve the level of employees' engagement. In short, while employees with high perceptions of justice in their organization are more likely to feel obliged to perform well and improve their level of engagement, employees with low

perceptions of fairness are more likely to disengage themselves from their job roles (Saks, 2006).

Finally, Cowardin-Lee and Soyalp (2011) add *employee centrality* within the organization as one of the employee engagement antecedents. In their study of a small, global software company, they did not find any significant (linear) correlation between employee centrality and employee engagement. Thus, I build on the current study and try to find a curvilinear correlation between employee centrality in learning and advice networks and employee work engagement.

1.1.3 The consequences of employee work engagement

Within engagement literature, the study of consequences of employee work engagement is the area that has seen the least attention (Halbesleben, 2010). However, employee work engagement can result in many important outcomes. Employee work engagement benefits organizations. In other words, there is a connection between employee work engagement and business results (Harter, Schmidt & Killham, 2002). However, employee work engagement is an individual-level constructs and influences the outcomes of individuals. It is related to individual's perceptions, behaviors, intentions and attitudes (Saks, 2006).

For instance, high level of engagement can result in higher organizational commitment, performance and health (Halbesleben, 2010). Sonnentag (2003) showed that experiencing engagement at work can be related to good health and positive work affect. Schaufeli and Bakker (2004) noted that engaged employees are more likely to have greater attachment to their organization (higher commitment) and as a consequence, they are less likely to leave their organization (lower turnover intention).

On the other side, lower employee work engagement can result in higher turnover intentions (Halbesleben, 2010; Saks, 2006). Maslach, Schaufeli, & Bakker (2001) claim that engagement is related to outcomes, such as increased withdrawal, lower performance, job satisfaction and commitment. To sum up, while higher employee work engagement may result in benefits for individuals, lower employee engagement may result in individual losses. In Table 1, I present the antecedents and consequences of employee work engagement. Since employees are key actors of each organization, I believe it is very important for organizations to encourage and maintain employee work engagement.

Table 1: Antecedents and consequences of employee work engagement

Antecedents	Consequences
• psychological meaningfulness • psychological safety • psychological availability • job characteristics • perceived organizational support • perceived supervisor support • rewards and recognition • procedural justice • distributive justice • employee centrality	• organizational commitment • turnover intention • withdrawal • performance • work affect • health • job satisfaction

Source: J. R. B. Halbesleben, A meta-analysis of work engagement: Relationships with burnout, demands, resources, and consequences, 2010; W. A. Kahn, Psychological conditions of personal engagement and disengagement at work, 1990; C. Maslach, W. B. Schaufeli & M. P. Leiter, Job burnout, 2001; A. M. Saks, Antecedents and consequences of employee engagement, 2006.

1.2 Employee centrality in learning and advice networks

In this section, I first introduce the concept of (employee) centrality as one of the possible antecedents of employee work engagement and later discuss different typologies of centralities. Degree (in-degree and out-degree) centrality is presented as the most appropriate measure for my research. The second part discusses learning networks and the third explains advice networks, in order to understand the type of employee centrality that is researched in my study.

1.2.1 Definition of employee centrality

The concept of centrality was first introduced by Bavelas (1948), who analyzed communication in small groups and predicted a relationship between structural centrality and influence in group processes. Centrality represents the position of an actor in a network (Wasserman & Faust in Reinholt, Pedersen & Foss, 2011). Most broadly, it is defined by number of direct ties (Freeman, 1979).

However, there are more definitions of centrality phenomena. Centrality can be understood as a *determinant of behavioral differences*, because it "reflects the extent to which one position is strategically located relative to other positions in the pattern" (Leavitt, 1951, p. 40). The central position explains one's closeness to other group members and thus a better access to information necessary for solving the problem. Availability of information affects behavior, in turn, by determining one's role in the group. An individual who can rapidly collect information is seen differently than someone to whom vital information is not accessible. Such roles should also be different in the extent to which they permit independence of action. Differences in independence affect speed, accuracy, aggressiveness and flexibility of behavior (Leavitt, 1951, p. 41).

Centrality can also be determined as the *extent to which an actor is central to a network*. While a highly central actor in the network is called a Star, an actor without links or relatively few links to others is called an Isolate (Monge & Contractor, 2003, p. 39). While analyzing centrality, we focus on a "family of node-level properties relating to the

structural importance or prominence of a node in the network" (Borgatti, Mehra, Brass, & Labianca, 2009, p. 894). In addition, centrality phenomenon explains that being connected to well-connected others implies greater centrality (Borgatti & Halgin, 2011, p. 6).

In addition, the position of an individual can have the maximum possible *degree*; it can fall on the geodesics between the largest possible number of other points; or it can be maximally close to other points, since it is located at the minimum distance from them. Therefore, we distinguish three main different types of centralities, namely degree, betweenness and closeness centrality (Freeman, 1979, p. 219):

(i) The number of nondirectional ties with other actors is called degree centrality. On the other hand, while measuring directional ties, we distinguish in-degree and out-degree centrality. While in-degree centrality refers to the number of directional links to the actor by other actors (in-coming links, or number of relationships pointing towards an individual), out-degree centrality refers to the number of directional links by the actor to other actors (out-going links, or number of relationships pointing outwards an individual) (Brass, 1995; Hoppe & Reinelt, 2010, p. 603). In other words, for any given node (that is, an employee), the number of directional ties emanating from it is called the node's out-degree, while similarly, the number of directional ties terminating to it is called the node's in-degree. (Monge & Contractor, 2003, p. 37).

Degree centrality provides a view of employees who are over- and under-extended in a network (Cross & Parker, 2004, p. 157). It measures the relative importance and influence of an individual within the network. It explains whom and with whom someone is connected in the network (Feeley & Barnett, 1997). In a directional communication network, a node's out-degree can be viewed as expansiveness, and a node's in-degree as popularity. Wasserman and Faust (in Chunke, 2012, p. 10) explain that a high degree centrality indicates direct and extensive communication with others on a frequent basis. Therefore, this person becomes a very active and central player in the network.

(ii) Betweenness measures the extent to which a node is directly linked to those nodes that are not directly connected to each other. In other words, it measures the extent to which a node serves as an intermediary between the nodes in the network. These nodes are called either liaisons or bridges (Monge & Contractor, 2003, p. 38). It measures whether an actor possesses strategic position in terms of shortest distance between two points in a network and is useful as an index of the potential point for control of communication (Freeman, 1979, p. 226; Freeman, 1977).

(iii) Closeness measures the extent to which nodes are directly connected to all other nodes in the network and enables assessing a node's ability to access information directly or indirectly (Monge & Contractor, 2003, p. 39). It measures the number of ties necessary to reach all other members in the network and is most useful when measures based upon independence or efficiency are desired (Freeman, 1979, p. 224; Freeman, 1977).

While analyzing communication (e.g., asking coworkers for advice, help and information, learning from them), the researchers usually define centrality in terms of degree**.** In the communication process within a social network, an individual who is in position allowing direct contact with many others is seen as a major channel of information. In other words, he or she is the focal point of communication or the mainstream of information flow in the network. The opposite extreme is an individual with a low degree. This individual is seen

as peripheral. He or she is isolated from direct involvement with most of the others in the network and is not actively participating in the ongoing communication process (Freeman, 1979, pp. 219-220).

All in all, the degree centrality (in-degree and out-degree) is viewed as an important index, useful when measuring communication activity (Freeman, 1979, p. 221). It is one of the most prominent measures of centrality and it measures the strength and quantity of direct communication ties that an individual has with other members within the network (Barnett, Danowski, Feeley & Stalker, 2010). In other words, in order to capture and individual's visibility in a network and his or her potential communication activity, the most appropriate measure is degree centrality (Freeman, 1979; Tsai, 2000).

1.2.2 Definition of employee learning networks

Theoretical rationale for learning networks can be found in many theories. *The learning network theory* (Van der Krogt, 1998, p. 157) explains that learning is "an activity of the person who learns in interaction with his or her environment." Daft and Marcic (2011, p. 367) define learning as "a change in behavior or performance that occurs as the result of experience." Due to fast changes in the global environment, employees continuously have to gain specific knowledge and skills. In other words, they have to learn. Although people could look for knowledge or information in databases or on Internet, it was found that no technology is as important as other people giving information and teaching how to get work done. While seeking advice, information or knowledge, people still mostly rely on coworkers they know and trust (Cross & Parker, 2004, p. 12).

According to the learning network theory (Van der Krogt, 1998, p. 167) there are four different types of learning networks. The first is *loosely coupled, individualistic* learning network, characterized by loosely connected activities and individual self-steering processes. These are an unstructured collection of learning programs. Their organizational structure is characterized by contractual relations and the core actors are obviously the individuals (Birkinshaw & Hagström, 2002 in Škerlavaj, 2007, p. 40). The second are *vertical, mechanical* learning networks, which include linear and planned processes, conducted by officials and specialists. They include job-oriented structured learning programs and are characterized by formalized relations. The third are *horizontal, organic* learning networks, which include organic and integrated processes, conducted by groups. They are characterized by problem-oriented open learning programs and horizontal relations (Birkinshaw & Hagström, 2002; Škerlavaj, 2007, p. 40). Finally, core actors in *external, innovative* learning networks are external actors, who perform their activities through externally initiated processes, profession-oriented thematic learning programs and professional relations.

Further, learning networks can be classified as *internal and external*. The latter consist of relationships a firm has with its customers, suppliers and other stakeholders. Internal learning networks consist of a set of internal relationships between individuals (Birkinshaw & Hagström in Škerlavaj, 2007, p. 40). In this paper, I shall focus on the latter.

The second, *social learning theory* explains that groups of individuals share, acquire and create their knowledge, which is related to a common professional discipline, skill or topic. Groups of professionals develop a shared repertoire and resources, which serve as a

foundation for learning. The newcomers can move from the periphery to the centre of the network by acquiring shared knowledge (Verburg & Andriessen, 2011, p. 36).

Third, *theories of cognitive social structures* examine cognitions of people regarding the "who knows who" and "who knows who knows who." That is, it explains the ability of an individual to directly contact those who have specific knowledge. The fourth, *cognitive knowledge structures* examine cognitions that people have of "who knows what" and "who knows who knows what." That is, it explains the ability of an individual to find others who can help them find people who have the necessary knowledge (Monge & Contractor, 2003, p. 300).

Fifth, the *theory of transactive memory systems* explains "how interdependent people within a knowledge network, each with their own set of skills and expertise, develop cognitive knowledge networks, which help them identify the skills and expertise of others in the network" (Monge & Contractor, 2003, p. 300). It views communication as valuable a tool for learning, encoding, storing and retrieving knowledge and information within a group (Gupta & Hollingshead, 2010; Hollingshead & Brandon, 2003).

The theory of transactive memory systems identifies four interrelated processes by which transactive memory systems are developed: (i) expertise recognition – a process by which people within the network identify others who possess expertise, skills and needed knowledge; (ii) retrieveal coordination – a process of coordination of the retrieval of information among the experts identified in the expertise recognition process, used by people in order to face a task for which they do not possess all the necessary knowledge; (iii) directory updating – a process used in order to update directories of "who knows what"; and (iv) information allocation – a process by which individuals who receive information outside their areas of expertise determine other people in the network who would potentially find information relevant to their respective areas of expertise (Monge & Contractor, 2003, pp. 300-301; Wegner in Chunke, 2012). In short, knowledge must be well differentiated within a network and people must be accurate in their recognition of expertise among various actors in the network (Monge & Contractor, 2003, p. 201).

Beside the theories, there are some *empirical studies* that explain the emergence and dynamics in learning networks. For instance, Pahor, Škerlavaj and Dimovski (2008) found that for the emergence of learning relations, the settings in which networks are formed are very important. Moreover, both organizational culture and structure determine patterns, structure and success of learning networks. In other words, both individuals and the context in which the learning network emerges are of crucial importance. First of all, social network analysis applied in a learning context could be a strong management tool for identifying and rewarding central employees in an organization (Krackhardt & Hanson, 1993, in Pahor et al., 2008). Secondly, in order to promote organizational learning, organizations should nurture different contexts and possibilities for individuals to interact and learn from each other (Pahor et al., 2008).

Learning networks emerge over time and are often the result of actions taken by individuals (van der Krogt, 1998, p. 164). They are asymmetric and a characterized by the structural property of transitivity (Škerlavaj, Dimovski & Desouza, 2010a, p. 199). Since people learn in every organization, also the learning network operates in every organization. A learning network consists of various learning activities organized by members of the organization (van der Krogt; Poell et al. in Škerlavaj, 2007, p. 41).

Learning often occurs in project settings and includes transfer of tacit knowledge. Members of the learning network form clusters in which learning is more intense. Therefore, if person A is at the same location or in the same department as his or her co-worker, person A is more likely to learn from this particular co-worker and vice versa, than to learn from person C, who is a member of another business unit/department (Pahor et al., 2008). Similarly, it is more likely that one person learns from the other if they are of the same gender, if they are similar in terms of tenure within the organization, if they occupy the same hierarchical level, and if they work at the same geographical location. In other words, people need opportunities in order to learn (Škerlavaj et al., 2010a, p. 199).

1.2.3 Definition of employee advice networks

Borgatti and Cross (2003, pp. 432-436) explain that while seeking information from another person, it is important to know what that person knows, value that person's knowledge and have the ability to gain timely access to that person's thinking. In fact, the decision to seek information from another person is affected by perception of another person's expertise. It is also important that the knowledge seeker positively evaluates another person's knowledge and skills in domains that are relevant in solving the seeker's problem. However, only knowing that someone has valuable knowledge is not enough if the seeker does not have access to that person. Therefore, the person with valuable knowledge has to be generally accessible to the seeker within a sufficient amount of time to help the seeker solve the problem.

Cross et al. (2001, p. 102) argue that there are four features distinguishing between effective and ineffective relationships in which people acquire information, solve problems, and/or learn. There are four features, which define advice networks:

Firstly, it is important that the person knows what another person knows and thus when to turn to them. We must have at least some perception of another actor's expertise in order to see him or her as an option. Only if we have some awareness of another person's expertise, this person can be useful to us in solving our problem (Cross et al., 2001, p. 105). So it is important to be aware of "who knows what", which enables an employee to tap the expertise of his or her colleagues. If awareness network is sparse, group members are unfamiliar with their coworkers' abilities and do not exploit the best expertise the team has to offer (Cross & Parker, 2004, p. 36). Moreover, if a person knows whom to ask for information or expertise relevant to his or her problem, the network can supplement a person's ability to respond well to new challenges. Therefore, individuals who are more aware of another person's expertise within the network are more likely to reach out to the right person at the right time, while facing unique challenges, opportunities or problems. In other words, "greater awareness of disparate expertise within a network improves one's ability to respond appropriately when new projects demand different knowledge" (Cross & Cummings, 2004, p. 929).

Secondly, a person has to be able to gain timely access to the person with valuable knowledge. It is important to understand who is able to reach whom in sufficient time. Access is influenced by the closeness of one's relationship, physical proximity, organizational design and collaborative technology (Cross et al., 2001, p. 108). When an employee needs help, he or she usually needs it right away. Therefore, it is important to understand who is accessible to whom and to what degree. Typically, there are some employees that are not accessible due to their power or work overload; some employees

who respond quickly and provide the bare minimum of information or pointers to other sources of information; and some employees who truly engage with information/knowledge seeker and are more ambiguous information searchers. These employees help the seekers by understanding their requests and responding with actionable insights (Cross & Parker, 2004, p. 38).

Thirdly, the person sought out for information has to be willing to cognitively engage with the information seeker. People who are helpful in learning interactions actively engage in problem solving and help seekers gain knowledge with sufficient understanding and clarity. Surely, those contacted by the seeker have to understand their problem and then have to actively shape their knowledge to the problem at hand (Cross et al., 2001, p. 112).

Finally, a degree of safety in the relationship that promoted learning and creativity has to be assured. Safe relationships are also the most effective for learning purposes. In other words, learning and creativity can occur if employees are able to admit a lack of knowledge or to diverge in a conversation. In order to reach safe relationships, employees have to be willing to take risks with their ideas. Therefore, it is important to which extent someone feels comfortable asking another person for information or advice on work-related topics (Cross et al., 2001, p. 114). Schulte, Cohen and Klein (2010, p. 1) argue that "the more psychologically safe team members perceive their team to be, the more likely they are to ask their teammates for advice and so see them as friends, and the less likely they are to report difficult relationships with them." Moreover, they argue that network ties predict psychological safety. Thus, despite the fact that network centrality offers many opportunities to engage in knowledge sharing, perceived costs may be the reason that an employee does not choose to exploit this opportunity (Reinholt et al., 2011, p. 1280).

1.3 Contextual variables

1.3.1 Job characteristics

In their triangular model, Wood and Bandura (1989) explained that behavior, cognitive, and other personal factors and environmental events operate as interacting determinants influencing each other bidirectionally. They show that learning processes (knowledge and skills acquirement) are not only a result of direct experiences. Employees can expand their knowledge and skills on the basis of information conveyed by modeling influences. In other words, while employees try to acquire knowledge and skills, the context matters. Arising from the model presented, I predict that the context matters also in terms of employee work engagement.

More precisely, I predict that job characteristics influence the employee's behavior (that is, engagement). In this section, I distinguish three views on job characteristics: Hackman and Oldham's (1975) job characteristics model, job demands-resources model, and job design theory. Furthermore, also personality traits (the Big Five) as part of the context are discussed. In this study, personality traits are analyzed as a control variable.

First, *Job Characteristics Model* developed by Hackman and Oldham (1975) is widely accepted as a conceptual tool for addressing problems related to employee demotivation, dissatisfaction and marginal performance (Boonzaier, Ficker & Rust, 2000, p. 11). It is a model considered as the most influential model guiding self-report research on job characteristics (Johns, Xie & Fang, 1992, p. 658). It proposes that positive personal and

work outcomes of an employee (that is, high internal motivation, high work satisfaction, high quality performance, low absenteeism and low turnover) are obtained when critical psychological states (namely, experienced meaningfulness of work, experienced responsibility for the work outcome and knowledge of work activities results) are present. For the realization of positive outcomes, all three psychological states must be present (Hackman and Oldham, 1975).

Hackman and Oldham (1975, p. 160) further propose that these three critical psychological states are created by the presence of five core job characteristics (skill variety, task identity, task significance, feedback and autonomy). More precisely, experienced meaningfulness of work is enhanced by skill variety, task identity and task significance. Experienced responsibility for work outcomes is increased by high job autonomy. Finally, knowledge of results is increased by high feedback. An individual experiences positive effect to the extent that he or she learns (knowledge of results), that he or she personally (experienced responsibility) performs a task well, and that he or she cares about it (experienced meaningfulness) (Hackman & Lawler, 1971; Hackman & Oldham, 1976). To sum up, it is predicted that certain job attributes increase probability that "individuals will find work meaningful, will experience responsibility for work outcomes, and will have trustworthy knowledge of the results of their work" (Oldham & Hackman, 2010, p. 465).

Johari, Mit and Yahya (2009, p. 58) showed "acceptable internal consistency reliability for the overall and the five specific subscales of the job characteristics factor." In other words, it has been proven that job characteristics can be measured by skill variety, task identity, task significance, autonomy and feedback (Johari et al., 2009, p. 58). In addition, "five core job dimensions are seen as prompting three psychological states which, in turn, lead to a number of beneficial personal an work outcomes" (Hackman & Oldham, 1976, p. 255).

The core five job characteristics are more precisely defined below:

(i) Skill variety refers to "the degree to which a job requires a variety of different activities in carrying out the work, which involve the use of a number of different skills and talents of the employee" (Hackman & Oldham, 1975, p. 161). The task is more likely to be experienced as meaningful when it requires an employee to engage in activities that challenge or stretch his or her skills and abilities. When a job draws upon several skills of an employee, the job is seen as one of enormous personal meaning (Hackman & Oldham, 1976, p. 257).

(ii) Task identity refers to "the degree to which the job requires completion of a 'whole' and identifiable piece of work – that is, doing a job from beginning to end with visible outcome" (Hackman & Oldham, 1975, p. 161). The work is found to be more meaningful if an employee assembles a complete product (provides a complete unit of service) (Hackman & Oldham, 1976, p. 257).

(iii) Task significance refers to "the degree to which the job has a substantial impact on the lives or work of other people – whether in the immediate organization or in the external environment" (Hackman & Oldham, 1975, p. 161). It is more likely to be enhanced when an employee understands that the results of his or her work may have a significant impact on the well-being of other people (Hackman & Oldham, 1976, p. 257).

(iv) Autonomy, which refers to "the degree to which the job provides substantial freedom, independence, and discretion to the employee in scheduling work and in determining procedures to be used in carrying it out" (Hackman & Oldham, 1975, p. 162). Job outcomes depend on the employee's own efforts, initiatives, and decisions. Therefore, an employee should feel a strong personal responsibility for the success and failures that may occur on the job (Hackman & Oldham, 1976, p. 258).

Job autonomy promotes work engagement. Low job autonomy predicts actual transfer of employees to another company. Social support of colleagues and supervisor support promote engagement for those employees who remain in the same work environment. Autonomy and departmental resources promote engagement for those employees who have obtained promotions, while social support of colleagues decreases engagement of those employees who were transferred to a different company (De Lange, De Witte & Notelaers, 2008, pp. 201, 214).

(v) Feedback from the job itself, which refers to "the degree to which carrying out the work activities required by the job results in the employee obtaining direct and clear information about the effectiveness of his or her performance" (Hackman & Oldham, 1975, p. 162). In short, knowledge of results is fostered by feedback (Hackman & Oldham, 1976, p. 258). It was found that positive feedback is likely to promote engagement (Gruman & Saks, 2011, p. 132).

Secondly, according to *Job Demands-Resources model*, job characteristics can be aggregated into two broad dimensions, that is, job demands (e.g., workload, emotional demands, physical demands, and work-home interference) and job resources (e.g., task autonomy, supervisory support, skill utilization, and positive feedback). While job demands result in burnout, job resources increase engagement (Van den Broeck, Vansteenkiste, Witte, & Lens, 2008, pp. 278, 283). Job demands refer to "those physical, social, or organizational aspects of the job that require sustained physical or mental effort and are therefore associated with certain psychological costs" (Demerouti, Nachreiner, Bakker, & Schaufeli, 2001, p. 501). For instance, job demands are workload, time pressure, shift work, and difficult physical environments. Job resources refer to those aspects of the job that are functional in achieving work goals, reduce job demands and their associated physiological and psychological costs, and stimulate personal growth and development. For instance, job resources are rewards, job control, opportunities for development and participation in decision-making, task variety, feedback, job security, supervising and social support at work (Demerouti et al., 2001, pp. 501-502).

The model predicts that job demands are primarily related to exhaustion/burnout, whereas lack of job resources lead to disengagement (Demerouti et al., 2001, p. 499). Job demands activate an energy depletion process, in which employee's sustained increases in effort to meet perceived job demands lead to an increase in compensatory psychological and physiological costs, draining employee's energy. On the other hand, job resources activate a motivational process in which employee's growth, learning and development are fostered. Further, job resources can satisfy needs for autonomy and competence and increase willingness to dedicate employee's efforts and abilities to the work task (Schaufeli & Bakker, 2004, pp. 297-298).

In accordance with Crawford, LePine and Rich (2010, p. 836) these perceptions and beliefs "increase the degree to which individuals are willing to invest their selves into their role

performances." In short, job resources increase engagement (Crawford et al., 2010, p. 834), while the relationship between job demands and engagement highly depends on the nature of the demand. Those demands, which employees experience as hindrances decrease engagement, whereas the demands perceived as challenges increase the degree of engagement (Crawford et al., 2010, p. 834).

Thirdly, according to *Grant and Parker* (2009, p. 320) work can be redesigned by organization or employees themselves, "to alter the structure and content of the work, with the goal of improving outcomes such as employee motivation, performance and well-being." The authors distinguish between two viewpoints on work design: relational perspectives and proactive perspective. Relational perspectives "focus on how jobs, roles, and tasks are more socially embedded than ever before, based on increases in interdependence and interactions with coworkers and service recipients" (p. 317). Indeed, the relational architecture of jobs refers to "the structural properties of work that shape employees' opportunities to connect and interact with other people" (Grant, 2007, p. 396). The relational architecture of jobs increases employee's motivation to make a pro-social difference, which results in their persistence, helping behavior and greater effort (Grant, 2007). With relational perspectives of work design, we can refer to the social context, that is, interpersonal interactions and relationships embedded in and influenced by jobs, roles and tasks. Social context can play a critical role in shaping employees' expectations and behaviors (Grant & Parker, 2009).

Proactive perspective focuses on the "growing importance of employees taking initiative to anticipate and create changes in how work is performed, based on increases in uncertainty and dynamism" (Grant & Parker, 2009, p. 317). Employees do not passively carry out static jobs and tasks assigned by managers. Technological advances and competitive pressures, advent of global work, virtual work, telework, and self-managing teams increased the frequency of changes at work. In addition, uncertain environments force employees to engage in proactive behaviors. Recognizing the importance of these behaviors, scholars introduced three dominant perspectives related to work design and proactivity: (i) work design to stimulate proactivity (organizations as actor who structures jobs and tasks in order to encourage employees to take initiative and actively shape work tasks and contexts); (ii) job crafting and role adjustment (employees with proactive behavior modify cognitive, physical and relational boundaries of their work); (iii) idiosyncratic deals and role negotiations (employees take initiatives to propose and discuss personalized employment arrangements with supervisors) (Grant & Parker, 2009).

1.3.2 Personality traits

"Since engaged workers also seem to be engaged outside work life, it makes sense to examine the relationship between personal characteristics and work engagement" (Bakker, 2009, p. 13). Differences among individuals moderate how they react to their work (Hackman & Oldham, 1976). Therefore, I believe personality traits should be taken into consideration while researching employee work engagement.

Traditionally, the Big Five factors have been listed as surgency (or extraversion; someone who is talkative, assertive, and energetic), agreeableness (someone who is good-natured, cooperative, and trustful), conscientiousness (or dependability; someone who is orderly, responsible, and dependable), emotional stability (versus neuroticism; someone who is calm, not neurotic, and not easily upset), and culture (someone who is intellectual,

polished, and independent-minded). Alternatively, the fifth factor has been interpreted as intellect (e.g., Norman, 1963; Goldberg, 1990; Peabody & Goldberg, 1989) or openness to experiences (e.g., McCrae & Costa, 1987). The Big Five structure does not imply that personality differences can be reduced to only five traits. On the contrary, the five dimensions represent personality at the broadest level of abstraction. Each dimension summarizes a large number of distinct, more specific personality characteristics (John & Srivastava, 1999, p. 7).

Extraversion involves energy and enthusiasm (John, Naumann & Soto, n.d., p. 120). It implies "an energetic approach toward the social and material world and includes traits such as sociability, activity, assertiveness, and positive emotionality" (John & Srivastava, 1999, p. 30). For instance, an extraverted individual would approach strangers at a party and introduce himself/herself or take the lead in organizing a project. He or she would not keep quiet when disagreeing with others (John & Naumann in John et al., n.d.). It could be predicted that someone highly extraverted has a good social status in groups and leadership positions. Further on, he or she has positive emotion expressiona and a greater number of friends and sex partners. Someone low in extraversion has poorer relationships with parents and often confronts rejection from peers (John et al., n.d., p. 120).

Extraverts attain more influence in a team-oriented organization (Anderson, Spataro, & Flynn, 2008, p. 702). In short, extraversion includes traits such as being active, adventurous, assertive, dominant, energetic, enthusiastic, outgoing, sociable, gregarious, talkative, a show-off and cheerful in outlook (John & Srivastava, 1999, p. 61; Klein, Beng-Chong, Saltz & Mayer, 2004; Barrick & Mount, 1991). In other words, extraversion factor includes distinguishable components such as their activity level (active, energetic), dominance (assertive, forceful, bossy), sociability (outgoing, sociable, talkative), expressiveness (adventurous, outspoken, noisy, show-off), and positive emotionality (enthusiastic, spunky) (John & Srivastava, 1999, p. 61).

Agreeableness involves altruism and affection (John et al., n.d., p. 120). It contrasts "a prosocial and communal orientation towards others with antagonism and includes traits such as altruism, tender-mindedness, trust, and modesty" (John & Srivastava, 1999, p. 30). For instance, someone who is agreeable would emphasize good qualities of others when talking about them. Further on, he or she would lend things to people he or she knows (e.g., class notes, books, milk). Moreover, they would console an upset friend (John & Naumann, 2007, in John et al., n.d.). It could be predicted that someone of high agreeableness has better performance in work groups. Someone of low agreeableness has a greater risk for cardiovascular disease, juvenile delinquency, and interpersonal problems (John et al., n.d., p. 120). In short, agreeableness covers themes such as tender-mindedness (sensitive, kind, soft-hearted, sympathetic), altruism (generous, helping, praising), and trust (trusting, forgiving) (John & Srivastava, 1999, p. 61). In addition, agreeableness refers to the tendency to be "cooperative, compliant, sincere, gentle, courteous, flexible, and tolerant" (Klein et al., 2004, p. 953; Barrick & Mount, 1991).

Conscientiousness involves constraints and control of impulse (John et al., n.d., p. 120). It describes "socially prescribed impulse control that facilitates task- and goal-directed behavior, such as thinking before acting, delaying gratification, following norms and rules, and planning, organizing and prioritizing tasks" (John & Srivastava, 1999, p. 30). For instance, someone who is conscientious would arrive for appointments on time or even early, study hard in order to get the highest grade in class, double-check a term paper for

typing and spelling errors, and would not let dirty dishes stack up for more than a day (John & Naumann in John et al., n.d.). It is highly predictable that someone of high conscientiousness level has a higher academic grade-point average, better job performance, adherence to his or her treatment regimens, and that he or she lives longer. Someone of low conscientiousness level is more likely to smoke and abuse substances. Moreover, he or she has poor diet and exercise habits and may face attention-deficits/hyperactivity disorder (John et al., n.d., p. 120). Since conscientious individuals are efficient, detail oriented and thorough in their work, they attain more influence in an organization where individual work on technical tasks in required (Anderson, Spataro, & Flynn, 2008, pp. 702-704). In short, conscientiousness characterizes someone who is dutiful, persistent, careful, prepared, detail-oriented, organized, thorough, efficient, responsible, reliable, dependable, precise, deliberate, practical, and painstaking (Klein et al., 2004, p. 953; John & Srivastava, 1999, p. 61; Barrick & Mount, 1991).

Neuroticism involves negative emotionality and nervousness (John et al., n.d., p. 120). It contrasts "emotional stability and even-temperedness with negative emotionality, such as feeling anxious, nervous, sad, and tense" (John & Srivastava, 1999, p. 30). For instance, someone who is neurotic would not accept the good and the bad in his or her life without bragging, would not take it easy and relax, and would get upset when somebody is angry with him or her (John & Naumann, in John et al., n.d.). It could be predicted that someone high in neuroticism is facing poorer coping and reactions to illness. In addition, he or she is more likely to experience burnout and job changes. Someone low in neuroticism is feeling committed to work organizations and has greater relationship satisfaction (John et al., n.d., p. 120). In short, neuroticism involves traits such as being tense, anxious, nervous, moody, worrying, touchy, fearful, high-strung, self-pitying, temperamental, unstable, self-punishing, despondent, emotional, depressed, insecure, hostile, angry, embarrassed, and/or irritable (John & Srivastava, 1999, p. 61; Klein et al., 2004, p. 953; Barrick & Mount, 1991).

Openness involves originality and open-mindedness (John et al., n.d., p. 120). It describes "the breadth, depth, originality, and complexity of an individual's mental and experiential life" (John & Srivastava, 1999, p. 30). For instance, some who is open for new experiences would take time to learn something simply for the joy of learning. He or she more often watches TV, comes up with novel set-ups for his or her living space and looks for stimulating activities that break up his or her routine (John & Naumann in John et al., n.d.). It could be said that someone very open performs better on creativity tests, and has more success in artistic jobs. Further, he or she creates distinctive-looking work and home environments. Someone not so open is characterized by conservative attitudes and political party preferences (John et al., n.d., p. 120). In short, openness/intellect characterizes someone who has wide interests and is complex, imaginative, intelligent, original, insightful, curious, sophisticated, artistic, cultured, clever, inventive, creative, open-minded, unconventional, nonconforming, autonomous, sharp-witted, ingenious, wise, and has a positive attitude toward challenging learning experiences (John & Srivastava, 1999, p. 61; Klein et al., 2004, p. 953; Barrick & Mount, 1991).

2 CONCEPTUAL MODEL AND HYPOTHESES

2.1 The impact of employee centrality on employee work engagement

It is usually assumed that the central position in (learning, advice) networks is something positive and that it brings numerous benefits to central individuals. It could be predicted that benefits of a central position result in higher employee work engagement. However, there are also negative effects to being centrally positioned. It could also result in disengagement. In this section, I discuss both positive and negative effects of employee's central position within a (learning, advice) network and I develop the above mentioned predictions more precisely.

As pointed out, there are many *positive effects* of being centrally positioned in a (learning, advice) network. For instance, in the beginning of the late 1950s, when the first studies were conducted, it was discovered that centrality is related to group efficiency in problem-solving, perception of leadership and personal satisfaction of participants (Freeman, 1979, p. 215; see Bavelas, 1950; Bavelas & Barrett, 1951; Leavitt, 1951).

Centrally positioned employees represent major channels of knowledge and expertise in their network (Freeman, 1979). Each tie in an employee's network represents a channel through which knowledge can flow to and from the employee (Anderson, 2008). It was found that network centrality provides access to valuable resources, such as knowledge and information (Borgatti & Halgin, 2011, p. 9) and that it increases individual performance (Cross & Cummings, 2004, p. 935). More precisely, centrally positioned employees are more likely to access a great amount of knowledge and in addition, other employees perceive them as attractive knowledge-sharing partners (Reinholt et al., 2011, p. 1279; Sparrowe, Liden, & Kraimer, 2001). In other words, they have privileged knowledge-sharing opportunities (Wasserman & Faust in Reinholt et al., 2011, p. 1278; Tsai, 2001, p. 996).

Since other coworkers tend to turn to them while seeking knowledge, they have many knowledge-sharing opportunities and it is therefore more likely that they will further increase their engagement in knowledge sharing (Anderson, 2008). However, an employee has to be adequately motivated for knowledge sharing and has to possess knowledge-sharing abilities in order to fully exploit the opportunities that arise from their central network positions. More precisely, employee's engagement in knowledge sharing is highest when network centrality, motivation and ability are all high (Reinholt et al., 2011, p. 1291).

Moreover, high network centrality increases knowledge acquisition and knowledge provision (Reinholt et al., 2011, p. 1279). In other words, an individual's degree centrality increases the knowledge it receives and its learning (Phelps, Heidl & Wadhwa, 2012, p. 25). In addition, network density increases knowledge transfer among network contacts and enhances learning (Morgan & Soerensen, 1999; Morrison, 2002; Reagans & McEvily, 2003).

Centrally positioned employees generally have better access to all other actors in the system, while peripheral actors depend on central actors, since central actors are structurally dominant (Galaskiewicz, 1979, p. 348). Cross, Parker, Prusak and Borgatti (2001, p. 100) argue that "who you know has a significant impact on what you come to

know, as relationships are critical for obtaining information, solving problems and learning how to do your work." According to Freeman (1979), central employees have numerous network ties that make them focal points of communication. In other words, their network ties provide them the opportunity to interact with many different colleagues possessing diverse knowledge (Burt in Reiholt et al., 2011, p. 1281). Therefore, an individual with a high degree centrality has more opportunities for talking and interacting directly with many other members. This enables the individual to discover and verify expertise cues and consequently enable him or her to accurately perceive other's knowledge. Individuals with high degree centralities in the network thus enjoy structural prestige in accessing expertise cues of other members (Littlepage, Schidt, Whisler, & Frost, 1995). In short, central actors reach a lot of information sources in order to develop and verify their perception of another person's expertise (Chunke, 2012, p. 28).

Network centrality usually provides an individual with higher power (Brass, 1984) and influence in decision-making (Friedkin, 1993). Therefore, centrality is related to leadership emergence. For instance, Neubert and Taggar (2004, p. 175) found that team member network centrality predicts informal leadership, but more for man than for women. In addition, laboratory findings indicated that people with central positions are most often perceived or selected as leaders of the group (Shaw in Brass, 1981). Leavitt (1951) found that a centrally positioned person is viewed as having the greatest problem-solving potential. More precisely, network centrality predicts network member behavior, namely, leadership, satisfaction, and participation (Mullen, Johnson, & Salas, 1991). For instance, Škerlavaj et al. (2010a, pp. 189, 199-200) found that central actors in a learning network have lots of experiences and are more likely to hold senior positions in the organizational hierarchy. In other words, employees at higher levels tend to be more central within the learning network. Employees are more likely to learn from those who are superior to them on the hierarchical ladder and from those who are more experienced (Škerlavaj, Dimovski, Mrvar, & Pahor, 2010b, p. 55).

Another example shows that due to better access to new knowledge, higher degree centrality stimulates innovation (Tsai, 2001, p. 996), thus central employees tend to be more active in organizational innovation (Ibarra, 1993). In addition, they exert more effort (Belhaj & Deroian, 2009, p. 391), and finally, they reach superior performance (Ahuja, Soda & Zaheer, 2012, p. 31). Central actors enjoy a broad array of benefits and opportunities that are not available to those on the periphery of the network (Ibarra & Andrews, 1993). Individuals with central network position tend to have greater access to and control over information in a communication network (Brass, Galaskiewicz, Greve, & Wenpin, 2004, p. 798) and better access to knowledge (Burkhardt & Brass, 1990). In fact, employees with knowledge and skills are more likely to be internally motivated to perform their job well (Oldham & Hackman, 2010).

Boone and Ganeshan (2008, p. 459) found that higher centrality enabling more interactions yields more opportunities for confronting with formal organizational boundaries, which can harm the knowledge transfer. The more workers collaborate on a project, the more they learn from each other. More connections increase socialization and opportunities for information sharing. In short, central employees that drive organizational learning play a crucial role in learning networks. They are either the source of knowledge themselves or an intermediary to other valuable sources. These sources can both suppress or enhance learning within an organization. Through a preferential attachment mechanism, central people can become even more central (Škerlavaj et al., 2010a, p. 200).

It is usually assumed that being the central employee is always good and that central employees are extremely valuable to the organization. Sometimes the assumption holds, but sometimes it does not (Cross & Parker, 2004, p. 71). There are also many *negative effects* of the central position. Engaged employees have psychological capital, they seem to create their own resources, perform better, are more innovative and productive, and have happier clients (Bakker, Albrecht, & Leiter, 2011a, p. 17). More precisely, degree centrality could be seen as a positive and desirable feature of the network. However, it can also lead to strain such as communication overload or constraint on the node's ability to work effectively (Monge & Contractor, 2003, p. 38).

While isolation is negatively related to satisfaction, also a high degree of centrality may lead to stress, conflict situations and interactions with unpleasant individuals (Brass et al. 2004, p. 798). Central employees usually gain reputation for their expertise and responsiveness. In other words, they become a critical source of all kinds of information. Due to increased number of requests that they receive and projects they are involved with, central employees become subjected to stress (Cross & Parker, 2004; Cross, Parker, Prusak & Borgatti, 2001).

It was found that people who are reputed experts in their area are usually tapped for advice to such an extent that they fall behind on their own work (Cross & Parker, 2004, p. 6; Cross et al., 2001, pp. 104, 106, 113). They engage selflessly in various aspect of their work, respond to requests for information directly, engage in problem solving, provide personal support and put people in contact with others. This sort of "invisible work" consumes many hours each day, but it may be the case that their effort is not recognized by senior management (Cross & Parker, 2004).

Moreover, some people become so central to a network that they negatively influence the whole group, because they become a bottleneck. These people either maintain an informational or power advantage or face their job growing too fast and cannot respond quickly enough (Cross & Parker, 2004, pp. 71-73). For instance, Sparrowe, Liden, Wayne, & Kraimer (2001) found that centrally positioned employees exhibit a higher level of in-role and extra-role performance. This could lead to the extent of these people becoming overloaded with work. In turn, they block other's work processes (Škerlavaj et al., 2010a, p. 200).

A similar result was presented by Lechner, Frankenberger and Floyd (2010, pp. 865, 881-882) who found an inverted U-shaped relationship between the level of centrality and the performance of a strategic initiative unit. In other words, they claim that after a certain threshold, the influence of centrality on the initiative performance appears to become negative. Being centrally positioned in a strong network of diverse ties can be good for strategic initiatives, but it is also possible to get too embedded in these relationships. High levels of centrality can bring more costs than benefits. In addition, moderating effects suggest different shapes of the curve depending on the task. In short, effects of centrality depend on whether costs of maintaining a large number of ties exceed the benefits. Finally, Mossholder, Settoon and Henagan (2005, p. 607) found that network centrality predicts turnover.

The hypotheses. In-degree centrality measures in-coming links (number of relationships pointing towards an individual) (Brass, 1995; Hoppe & Reinelt, 2010). Individuals with high in-degree centrality are advice-givers (and knowledge-sharers) (Zagenczyk &

Murrell, 2009). Therefore, I understand this measure as an individual's index of possessing (important) knowledge and of his/her accessibility. In other words, if someone rates high in in-degree centrality he/she has skills, information, and knowledge that are needed by other people. In addition, other people are not reluctant to ask him/her for advice (advice network) or information/knowledge (learning network).

More connections increase socialization and opportunities for information sharing. More central employees that drive organizational learning play crucial role in learning networks (Boone & Ganeshan, 2008). Since they are highly involved in learning/advice network, this might also result in their higher engagement.

Hypothesis 1a. **In-degree centrality in learning networks positively correlates with employee work engagement.**

Hypothesis 1b. **In-degree centrality in advice networks positively correlates with employee work engagement.**

Out-degree centrality measures out-going links (number of relationships pointing outwards an individual) (Brass, 1995; Hoppe & Reinelt, 2010). Individuals with high out-degree centrality are thus called advice-receivers (or knowledge-gatherers) (Zagenczyk & Murrell, 2009). Therefore, I understand this measure as an individual's index of active involvement in gaining new knowledge, information, or advice. In other words, rating high in out-degree centrality reflects both Schaufeli's et al. (2002) and Dvir's et al. (2002) definitions of engagement. In my opinion, active involvement in gathering advice and knowledge involves vigor, dedication, absorption, activity, initiative, and responsibility.

Hypothesis 1c. **Out-degree centrality in learning networks positively correlates with employee work engagement.**

Hypothesis 1d. **Out-degree centrality in advice networks positively correlates with employee work engagement.**

Table 2: Hypothesis 1 – Relationship between employee centrality and employee work engagement

Items	Predicted relationship
In-degree centrality in learning networks → employee work engagement	positive
In-degree centrality in advice networks → employee work engagement	positive
Out-degree centrality in learning networks → employee work engagement	positive
Out-degree centrality in advice networks → employee work engagement	positive

Table 2 summarizes hypothesis 1. In addition, I do not predict only direct relationships between employee centrality and employee work engagement, I predict curvilinear relationship between employee centrality and employee work engagement. As stated, central position in learning and/or advice network enables employees' better access to knowledge and information (Borgatti & Halgin, 2011), better access to other actors (Galaskiewicz, 1979), and consequently increases knowledge-sharing opportunities (Tsai, 2001). In addition, this results in informal leadership, higher job satisfaction and participation (Mullen, Johnson, & Salas, 1991). Therefore, it could be claimed that

employees who are often involved in knowledge and skills transformation processes, are also more engaged.

On the other side, high degree of centrality may lead to stress, conflict situations, and interactions with unpleasant individuals (Brass et al., 2004). Highly central employees as a critical source of all kinds of information have to face increased amount of "invisible work" (increased requests for sharing knowledge and skills with coworkers, increased number of projects and tasks) (Cross & Parker, 2004; Cross et al., 2001). Hence, too strong involvement in learning and/or advice networks can lead to disengagement.

More centrally positioned employees have more opportunities to engage in knowledge sharing (Tsai, 2001, p. 996), but their engagement can result in negative effects. Although engaged employees are not workaholics, they may become so engaged in their work that they take work home (Bakker et al., 2011a, p. 18). Engaged employees are most inclined to show extra-role work behaviors (Halbesleben, Harvey & Bolino, 2009) and therefore, they get overly involved in work activities. Consequently, they are most likely to experience work-family conflict and other negative consequences. In short, there is a limit to engagement (Bakker et al., 2011a, p. 18).

Further on, there are peripheral employees, whose skills, expertise and unique perspectives are not leveraged effectively. They represent underutilized resources. It may be the case that they are holding a peripheral position because of inapplicable skills, or because they are either stuck or choose to be peripheral. Usually, the newcomers may end on the periphery of a network, but they can yield quick results if they are motivated to get more connected with coworkers. However, there are also employees who are on the periphery by choice. For instance, experts cannot nurture their own expertise if they are forced to integrate with coworkers (Cross & Parker, 2004, p. 80). In short, peripheral employees are too removed from daily activities and represent untapped expertise. They are both less accessible and less knowledgeable about the work of their subordinates (Cross & Parker, 2004, p. 6; Cross et al., 2001, pp. 104, 106, 113).

In short, I predict there is a curvilinear relationship (inverted U-shaped relationship) between centrality in learning and/or advice networks and employee work engagement, so that employees exhibit greater engagement when their centrality in learning and/or advice networks is at intermediate levels than when it is at lower or higher levels. Figure 1 shows the predicted relationship and Table 3 shows the hypothesis 2.

Figure 1: Predicted relationship between centrality in learning and advice networks and employee work engagement
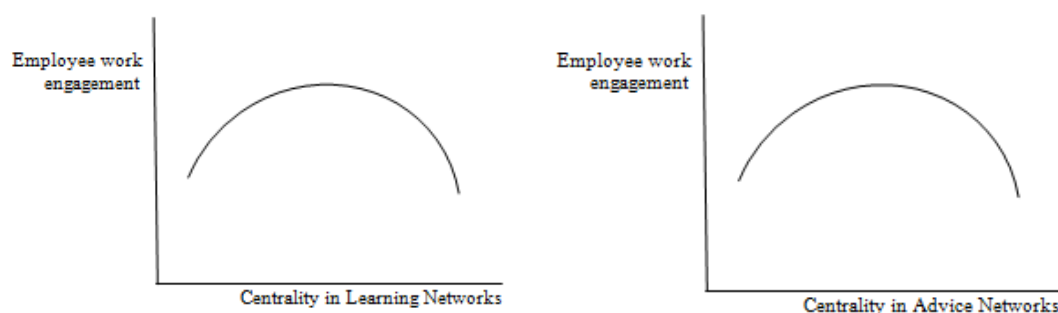
Items	Predicted relationship
Employee (in-degree and out-degree) centrality in (learning and advice) networks → employee work engagement	Curvilinear

To sum up, networks provide unique information and diverse perspectives to individuals who need the resources in order to complete their tasks at work (Cross & Cummings, 2004, p. 928). Node's position in a network determines opportunities and constraints and therefore also the node's outcomes (Borgatti, Mehra, Brass & Labianca, 2009, p. 894). In other words, centrality influences behavioral differences (Leavitt, 1951, p. 38), and different network positions represent different opportunities to engage in knowledge sharing (Tsai, 2001, p. 996). Finally, different levels of network centrality result in different levels of employee work engagement.

2.2 Job characteristics influence employee work engagement

Macey and Schneider (2008a, p. 81) claim that an employer can hire people who are more likely to be engaged. However, after hiring such people, the employer has to create the work environment (e.g., (re)design jobs) to ensure that the employee's energy can be manifested and sustained. People choose to engage themselves in numerous roles and it would be meaningless to refer to the engagement without being specific about the role they have (Saks, 2008, p. 42). In short, in order to improve productivity, particularly of knowledge workers, there has to be a focus on the environment in which work is being completed (Miller, 1977).

The aim of this chapter is to present and analyze the relationship between job characteristics and employee work engagement. First, I discuss what can be done in terms of job characteristics in order to promote employee work engagement. Second, I analyze the review of the literature presenting the positive relationship between job characteristics and employee work engagement.

According to the theory of work design, there are the conditions under which individuals become internally motivated to perform their jobs effectively (Hackman & Oldham, 1976, p. 250). Job characteristics with motivational potential (job resources – autonomy, feedback, task identity) lead to meaningful work and high productivity (Hackman & Oldham, 1980). Job resources either play an intrinsic motivational role, because they foster employees' growth, learning, and development, or they play an extrinsic motivational role, because they are instrumental in achieving work goals" (Bakker, 2009, p. 9).

For instance, proper feedback fosters learning and increases job competence. Decision latitude satisfies the need for autonomy, while the social support satisfies the need to belong (Bakker, 2009). On the other hand, supportive colleagues and performance feedback increase the likelihood of being successful in goal achievements (Bakker, 2009). Moreover, job resources facilitate employee engagement, particularly under conditions of high job demands (Bakker & Demerouti, 2008).

Most importantly, job characteristics have to enable the creation of these psychological states. In addition to that, employee motivation also depends on the attributes of

individuals, which determine how positively an employee responds to a complex or challenging job. Thirdly, employees have to have psychological states that enable them to develop internally motivated work behavior (Hackman & Oldham, 1976, p. 250).

Another thing to take into consideration is that organization can redesign jobs in order to promote engagement. To put it differently, job resources have to be increased (Bakker et al., 2011a, p. 21). Employees may actively change the design of their jobs as well, by choosing tasks, negotiating different job content, and assigning meaning to their tasks (Parker & Ohly in Bakker et al., 2011a). Nevertheless, engaged employees are active job crafters who change their job demands and resources if necessary, in order to maintain their engagement level (Bakker, n.d., p. 239). In other words, job crafting focuses on the processes through which employees change elements of their jobs and relationships with others in order to revise the meaning of the work and the social environment at work. Thus, engaged employees change the job in order to experience an enhanced meaning of it (Wrzesniewski & Dutton, 2001).

In addition, new ways of working (flexible time working; various options of place of work – office, home, during commuting time; new media technologies – e-mails, smart-phones, videoconferences) can greatly stimulate employee work engagement. New working styles enrich employees with more autonomy in deciding where, when and how the work shall be done. In other words, daily use of new ways of working is positively related to daily engagement and negatively related to daily exhaustion, due to increased effective and efficient communication. Moreover, new ways of working enhance connectivity among coworkers and thus result in enhanced daily engagement and reduced exhaustion. However, new ways of working can also stimulate exhaustion, because they increase interruptions during the work process (Ten Brummelhuis, Bakker, Hetland, & Keulemans, 2012, p. 113).

Empirical studies also show that employee work engagement can be stimulated by job characteristics. The details are shown in the table below:

Table 4: Relationship between job resources (job characteristics) and work engagement

Authors	Methodology	Findings
Maslach, Schaufeli, and Leiter (2001)	Using Job Demands-Resources model; meta analysis	Absence of job resources (social support, supervisor support, coworker support, feedback, autonomy) is linked to burnout; people with little participation in decision making are more likely to face burnout.
Bakker and Demerouti (2007)	Job Demands-Resources model; based on existing research – conceptual paper	Job resources have more motivational potential when employees are confronted with high job demands. In such circumstances, employees become motivated to actively learn and develop their skills (Bakker, n.d.).
Bakker, Demerouti, Hakanen, and Xanthopoulou (2007)	Using Job Demands-Resources model; 805 Finnish teachers	Job resources act as buffers and diminish negative relationships between pupil misbehavior and work engagement
Schaufeli and Bakker (2004)	Dutch employees working in an insurance company, an occupational health and safety service company, a pension fund company, a home care institution	Positive relationship between job resources (performance feedback, social support and supervisory coaching) and work engagement (vigor, dedication and absorption)
Hakanen, Bakker and Schaufeli (2006)	2038 Finnish teachers	Job control, information, supervisory support, innovative climate and social climate result in higher work engagement. Work engagement mediates the effects of job resources on organizational commitment.

(table continues)

Authors	Methodology	Findings
Llorens, Bakker, Schaufeli, and Salanova (2006)	Testing the Hakanen, Bakker, and Schaufeli research among 654 Spanish employees, working in different public and private companies (white-collar, blue-collar jobs, education, and human services)	Basic structure of the Job Demands-Resources model is maintained even when applied in different national and occupational contexts.
Koyuncu, Burke, and Fiksenbaum (2006)	286 women managers and professionals employed in Turkish bank	Work life experiences (control, rewards, recognition, and value fit) predict engagement.
Mauno, Kinnunen, and Ruokolainen (2007)	Two-year longitudinal study among 409 Finnish health care personnel	Job resources predict work engagement better than job demands among job resources; job control has been shown as best lagged predictor of work engagement.
Schaufeli, Bakker, and Van Rhenen (2009)	Sample of managers and executives of a Dutch telecom company	Changes in job resources predict engagement over a one-year time period Increase in social support, autonomy, opportunities to learn and to develop, and performance feedback resulted in work engagement.
Bakker, Euwema, and Van Dieren, 2007 (in Bakker, 2009)	193 employees from a pension fund company	Job resources (social support, autonomy, teamwork, and supervisory coaching) predict engagement.

Authors	Methodology	Findings
James, McKechnie, and Swanberg (2011)	Sample of 6047 employees at different points in the cycle of their career in large retail setting	Supervisor support and recognition, schedule satisfaction and job clarity, as job characteristics are significant predictors of employee engagement for all age groups of employees. Career development is a significant predictor of employee engagement for all except retirement-eligible employees
Luthans, Youssef, & Avolio (2007, in Bakker, Albrecht, & Leiter, 2011a)	Psychological capital is defined as "an individual's positive psychological state of development characterized by: (1) having confidence (self efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (optimism) about succeeding now and in the future; (3) persevering toward goals, and when necessary, redirecting paths to goals (hope) in order to succeed; and (4) when beset by problems and adversity, sustaining and bouncing back and even beyond (resilience) to attain success" (Luthans, Youssef, & Avolio, 2007, in Bakker, Albrecht, & Leiter, 2011, p. 7).	Personal resources or psychological capital can be important predictors of work engagement.

Authors	Methodology	Findings
Christian, Garza, & Slaughter (2011)	Using the conceptual model of Macey and Schneider (2008b)	Task variety and task significance increase work engagement; autonomy, feedback, and transformational leadership almost not related with engagement. It is best to employ individuals with high conscientiousness and re-design jobs that include motivating characteristics (task significance, task variety).
Bakker, Albrecht, and Leiter, 2011; see also Bakker and Demerouti, 2008	Based on existing research – discussion on concept of work engagement and summary of research on its most important antecedents	Developing social support or changing work procedures to enhance feedback and autonomy may create a structural basis for work engagement. Job rotations and changing jobs may result in higher engagement because they challenge employees, increase their motivation and stimulate learning and professional development.

In brief, empirical studies on work engagement show a positive association between engagement and job characteristics (see Richardsen, Burke & Martinussen, 2006; Bakker, Hakanen, Demerouti & Xanthopolou, 2007). Beside job resources, personal resources (see the next section) are also part of the main predictors of engagement (Bakker & Demerouti, 2008; Saks, 2006, p. 600).

2.2.2 Job characteristics, centrality in learning and advice networks, the hypotheses

Although the phenomena of work design has changed (telecommuting, working in temporary teams, working in teams with members from different organizations, changing work environment) and become more dynamic and less immune to changes, the issues regarding work design have not changed. Low work motivation, absenteeism, turnover, employee disengagement are still very much alive in work organizations (Oldham & Hackman, 2010). On the other hand, it is necessary to include the social aspects of work, since nowadays, social interaction is much more pervasive and prominent in contemporary work organizations. Therefore, it is expected that social dimensions of work contribute to motivation, performance and well-being of employees (Oldham & Hackman, 2010). As Oldham and Hackman (2010) argue, social dimensions deserve greater attention from scholars, thus accordingly, this paper includes one of the social dimensions (i.e., social network).

Centrally positioned employees are more *autonomous* (Brass, 1981). Karasek (1979) proposed that job control (autonomy) enables employees to master their task and engage in problem-focused coping. Autonomy is beneficial to motivation, attitudes and performance (Fried & Ferris, 1987; Hackman & Oldham, 1976). Jobs with high autonomy provide opportunities for learning, which further facilitate feelings of mastery, resulting in better capacity to learn and cope with pressure (Karasek & Theorell in Grant & Parker, 2009).

Autonomy stimulates proactive behavior of employees by signaling them that they have the ability and the opportunity to take on broader roles (Parker in Grant & Parker, 2009). Parker (1998) argued that autonomy facilitates enactive mastery experiences, because it gives them opportunities to acquire new skills and master new responsibilities. Employees with proactive personalities are more likely to be able and willing to capitalize on autonomy in order to engage in proactive behavior (Grant & Parker, 2009).

An employee's autonomy is affected by the surrounding structure of relationships. A densely connected group of employees facilitates development of trust and norms of reciprocity (Coleman in Kilduff & Brass, 2010, p. 312). An employee can consequently trust his or her closely knit group of coworkers, because "interconnections among them provide for easy monitoring of norms and sanctions against inappropriate or opportunistic behavior" (Kilduff & Brass, 2010, p. 312). The network structure can support smooth operations, but it also inhibits the autonomy of an individual. Employees are constrained by norms and expectations of a dense group of interactions, negatively connecting network density in surrounding work group to task autonomy (Kilduff & Brass, 2010, p. 312).

Providing individuals with autonomy while trust among self-managing teams is high can undermine performance, since team members are discouraged due to performance being monitored by each other (Langfred in Grant & Parker, 2009). Moreover, restricting

autonomy through formal surveillance and monitoring systems can undermine performance also due to perceived lack of trust from superior employees (Kramer, 1999).

Based on (i) theoretical background regarding job characteristics, (ii) relationships between job characteristics and employee work engagement (job characteristics – autonomy - increased employee work engagement), and (iii) relationship between job characteristics and centrality in learning and advice networks (centrality predicts autonomy), I am setting the following hypothesis:

Hypothesis 3a: **Autonomy positively correlates with employee work engagement.**

Brass (1981, p. 335) claims that "tasks performed by persons in highly central positions may have more of an impact on others than tasks performed in isolated, peripheral positions." In other words, due to reachability of the central position to many other task positions, tasks associated with central positions are more likely to have greater significance. Task significance "may be enhanced by the extent to which an individual's personal and workflow network contacts reach out to different parts of the organization rather than remaining limited to the immediate work group" (Kilduff & Brass, 2010, p. 313). Relationships with employees in diverse departments within an organization provide the employee with broader perspective on how his or her job affects others in the organization (Kilduff & Brass, 2010, p. 313). Therefore, we could also claim that they are more proactive in the sense of becoming more engaged at work.

Grant (2007) proposed that employees working in jobs with high task significance, providing opportunities affecting the well-being of beneficiaries are more likely to be aware of the impact of their actions on the beneficiaries. Moreover, Grant et al. (2007) conducted two laboratory experiments, with which they showed that the opportunity to interact with other people (i.e., contact with beneficiaries) with the potential of benefitting these people (feeling of task significance) resulted in higher levels of persistence.

Grant (2008) also realized that task significance is more likely to motivate high performance in employees with high prosocial values (priority on benefiting others) and employees with low level of consciousness (effort dependent on external cues about the importance of their work).

Based on (i) theoretical background about job characteristics, (ii) relationships between job characteristics and employee work engagement (job characteristics – task significance - increased employee work engagement), and (iii) relationship between job characteristics and centrality in learning and advice networks (centrality predicts task significance), I am setting the following hypothesis:

Hypothesis 3b: **Task significance positively correlates with employee work engagement.**

To begin with, Brass (1981, p. 335) argues that the performance of centralized tasks affects many other positions and therefore persons occupying centralized positions are more likely to receive more feedback from agents than persons occupying peripheral positions. Feedback is likely to be richer and more diverse, "to the extent that individuals' work connects them to people or groups who are not themselves working together. To the extent that the individual is constrained within a closed network of people whose work connects

them to each other, then the individual is likely to receive redundant information concerning work performance" (Kilduff & Brass, 2010, p. 312).

Gittell (in Grant & Parker, 2009) conducted a study in airline industry and found that feedback increases employees' capability to engage in relational coordination and is consequently associated with fewer customer complaints, better baggage handling and fewer late arrivals. Feedback interventions are more likely to increase performance of memory tasks/simple tasks, and less likely to increase performance of physical and rule-following tasks/complex or novel tasks, as well as tasks with set goals (Grant & Parker, 2009).

Based on (i) theoretical background about job characteristics, (ii) relationships between job characteristics and employee work engagement (job characteristics – feedback - increase employee work engagement), and (iii) relationship between job characteristics and centrality in learning and advice networks (centrality predicts bigger feedback), I am setting the following hypothesis:

Hypothesis 3c: **Feedback positively correlates with employee work engagement.**

In continuation, Brass (1981, p. 335) claims that the tasks associated with central position also require a greater variety of skills and talents. In short, centrality is positively related not only to task significance and feedback, but also to skill variety, which is likely to be affected by the nature of network (closed network or open network of relatively unconnected people). An open network can provide employees with a variety of communications to facilitate creative solutions. Creative activity increases skill variety (Kilduff & Brass, 2010, p. 312).

Based on (i) theoretical background about job characteristics, (ii) relationships between job characteristics and employee work engagement (job characteristics – skill variety - increased employee work engagement), and (iii) relationship between job characteristics and centrality in learning and advice networks (centrality predicts skill variety), I am setting the following hypothesis:

Hypothesis 3d: **Skill variety positively correlates with employee work engagement.**

Table 5: Hypothesis 3 – Relationship between job characteristics and employee work engagement

Items	Predicted relationship
Autonomy → employee work engagement	positive
Feedback → employee work engagement	positive
Skill variety → employee work engagement	positive
Task significance → employee work engagement	positive

Table 5 summarizes hypothesis 3. After testing hypotheses 1 and 3, I shall be able to solve my research questions, regarding whether centrality in networks or job characteristics influences employee work engagement more importantly. While testing the hypotheses, other contextual (control) variables will be taken into consideration as well (i.e., personality traits, gender, age and education).

2.3 Control variables

2.3.1 Personality traits

"Relations between variables are often more complex than simple bivariate relations between a predictor and a criterion. Rather these relations may be modified by, or informed by, the addition of a third variable in the research design" (Fairchild & MacKinnon, 2009, p. 87). Hence, I claim that the relationship between the employee centrality in learning and advice networks and employee work engagement can be influenced by personality traits.

At this point, personality characteristics can be understood as enduring characteristics, which remain largely consistent across different settings (Klein et al., 2004). Differences among individuals moderate how they react to their work. For instance, "people who have high need for personal growth and development will respond more positively to a job high in motivating potential than people with low growth need strength" (Hackman & Oldham, 1976, p. 258).

For this reason, the following section shall present and analyze a research on personality traits and centrality in learning and advice networks, which have already been conducted. This section is divided in two parts, one discussing the relationship between personality traits and employee work engagement and the other one discussing the relationship between personality traits and centrality in learning and advice networks.

2.3.1.1 Personality traits and employee work engagement

"Since engaged workers also seem to be engaged outside work life, it makes sense to examine the relationship between personal characteristics and work engagement" (Bakker, 2009, p. 13). While measuring employee engagement, the researcher is interested in thepersonal connection to work and we should therefore measure the person. More precisely, we should look at what kinds of people can be highly engaged and passionate about their work (Gubman, 2004, p. 42). Kahn (1990) claimed that dispositional individual differences shape an individual's tendencies toward engagement. Dispositional factors are also key antecedents in the Macey and Schneider (2008b) framework. In short, it could be claimed that personality traits are likely to lead to engagement (Hirschfeld & Thomas, 2008).

Additionally, it has been shown that personal resources or psychological capital can be important predictors of work engagement. Psychological capital is defined as "an individual's positive psychological state of development characterized by: (1) having confidence (self efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (optimism) about succeeding now and in the future; (3) persevering toward goals, and when necessary, redirecting paths to goals (hope) in order to succeed; and (4) when beset by problems and adversity, sustaining and bouncing back and even beyond (resilience) to attain success" (Luthans, Youssef & Avolio in Bakker et al., 2011a, p. 7).

In their study, Xanthopoulou, Bakker, Demerouti, and Schaufeli (2007) examined the role of slightly different operationalization of psychological capital (self-efficacy, self-esteem and optimism – defined as personal resources) in predicting work engagement. They found that engaged employees are highly self-efficacious, they believe they are able to meet

demands they face at their work. Moreover, they have a tendency to believe that they will generally experience good outcomes. In other words, they are optimistic. They also believe they can satisfy their needs by participating in roles within the organization. They have high organizational-based self-esteem and they found that personal resources mediate the relationship between job resources and engagement.

The authors replicated and expanded their study in an 18 months follow-up study (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009) from which resulted that self-efficacy, organizational-based self-esteem and optimism importantly contribute to explaining variance in work engagement over time, over and above the impact of job resources. More precisely, the study showed that not only resources and work engagement, but also job and personal resources were mutually related. It could be claimed that engaged workers have the psychological capital that helps them control their work environment successfully (Bakker, Albrecht & Leiter, 2011a, p. 7).

Moreover, a study among 572 Dutch employees, conducted by Langelaan, Bakker, Van Doornen, and Schaufeli (2006) revealed that engaged workers are characterized by high levels of mobility, low neuroticism and high extraversion. Engaged workers are able of responding adequately to changes in environmental demands, they adapt quickly and switch between activities easily. Moreover, highly engaged employees usually do not experience distressing emotions (fear, depression, frustration), since they tend to be cheerful, sociable and highly active (extraverted).

Mostert and Rothmann (2006) used a cross-sectional survey by 1794 South African police officers and found that conscientiousness, emotional stability and extraversion may predict work engagement. More precisely, emotional stability and conscientiousness inversely predicted exhaustion and cynicism. Emotional stability, conscientiousness and extraversion predicted vigor and dedication. Engaged workers scored high on conscientiousness and they were habitually careful, reliable, hard-working, well-organized and purposeful (Bakker, 2009).

Schaufeli, Bakker and Van Rhenen (2009, p. 893) also found that increases in job demands (overload, emotional demands and work-home interference) and decreases in job resources (social support, autonomy, opportunities to learn and feedback) result in burnout. On the other hand, increases in job resources result in work engagement. Moreover, engagement decreases registered sickness duration (voluntary absence) and frequency (involuntary absence). The study also showed that initial work engagement predicts increase in job resources, which, in turn, further increases work engagement.

Further on, Hakanen, Bakker, and Demerouti (2005, p. 479) discusses how useful in coping with high demands job resources are, which helps employees (in their case, dentists) to stay engaged. Salanova, Agut and Peiro (2005, p. 1217) argue that organizational resources and work engagement predict service climate, which in turn predicts employee performance and customer loyalty. Rich, Lepine and Crawford (2010, p. 627) found that value congruence, perceived organizational support, and core self-evaluations increase job engagement. Engagement enables employees to perform well. Moreover, if engaged, employees want to stay with their employers, and say good things about them (Gubman, 2004, p. 43).

Gubman (2004, pp. 45-46) found that more engaged, passionate people are relatively extraverted, goal-driven, have a variety of interpersonal styles, know when to compete and when to cooperate, handle change well and like different new things in their work. Overall, passionate employees are lively, likeable, and adaptive people with the ability to communicate enthusiastically, navigate changing situations and different types of people well, while keeping their eyes on their goals. Further on, Christian et al. (2011, p. 119) found that conscientiousness and positive affect as two personality traits actually increase work engagement. Conscientious individuals have a strong sense of responsibility and are more likely to involve themselves in their job tasks (Furnham, Petrides, Jackson & Cotter in Christian et al., 2011).

In addition, burnout as an antipode of engagement is higher among people who display low levels of hardiness (involvement in daily activities, a sense of control over events, openness to change), who have external locus of control (attributing events and achievements to powerful others or to chance), and those who cope with stressful events in a passive, defensive way. In addition, research on Big Five personality dimensions revealed that neuroticism (trait anxiety, hostility, depression, self-consciousness, vulnerability and emotional instability) and Type A behavior (competition, time-pressured lifestyle, hostility and excessive need for control) are both linked to burnout (Maslach et al., 2001, p. 410).

In sum, personality traits can influence employee work engagement. Especially extraverted, conscientious and highly agreeable employees seem to be more engaged. In my research, I therefore use personality traits as control variables and test their impact in my models.

2.3.1.2 Personality traits and centrality in learning and advice networks

As already explained, an individual's centrality is the extent to which an individual is linked to others in a group and can be viewed as a measure of how closely he or she belongs to a group (Liu & Ipe, 2010, p. 243). Individuals who have numerous positive social connections gain access to information and assistance that others lack (Klein et al., 2004, p. 952). Different personality types take advantage of structural positions differently (Mehra, Kilduff & Brass, 2001, p. 126). In other words, a job high on the core dimensions will not affect all individuals in the same way. For instance, individuals who do not value personal growth and accomplishment may find such a job anxiety arousing (Hackman & Oldham, 1975, p. 160).

There can be found some previous research on relation between personality and network centrality. For instance, Zhang (2003, p. 1431) found that Big Five personality traits predict learning approaches to a certain degree. More precisely, conscientiousness and openness traits contribute the most in accounting for the differences in learning approaches. Conscientiousness is a good predictor for both the deep and the achieving learning approaches. Openness is a good predictor of the deep approach to learning. Further, neuroticism predicts surface approach to learning, whereas the agreeableness trait predicts a learning approach that is not achieving. Finally, for extraverted individuals there cannot be any prediction made.

Secondly, Mehra et al. (2001, p. 121) researched how different personality types create and benefit from social networks in organizations. More precisely, they tested how self-

monitoring orientation and network position are related to work performance. Most importantly, high self-monitors were more likely than low self-monitors to occupy central positions in social networks. For high self-monitors, longer service in the organization resulted in occupancy of strategically advantageous network positions, while self-monitoring and centrality in social networks independently predict individuals' workplace performance.

Thirdly, Brass (1981) found that employees occupying central positions in the workflow network were no more likely to be high performers than employees occupying less central positions. Later on Klein et al. (2004) researched how demographic characteristics, values and personality influence an individuals' acquisition of central positions in their teams' social networks. Education and neuroticism predicted centrality five months later. More precisely, individuals who were highly educated and low in neuroticism became high in advice and friendship centrality and low in adversarial centrality.

Moreover, personality characteristics influence individual behavior as well as others' view of and response to an individual (Liu & Ipe, 2010). Liu and Ipe (2010, p. 243) found that conscientiousness and agreeableness predict network centrality, since people who are more conscientious and agreeable manifest more interpersonal citizenship behavior and it is therefore more likely that they reach the central position in their teams' social network.

In addition, it was also found that due to highly conscientious people being hardworking, achievement oriented and perseverant, they more likely tend to finish what needs to be done to accomplish their task. Accordingly, high conscientiousness individuals are *more cooperative* than those who have lower conscientiousness, particularly when success at work depends on interdependence and smooth interpersonal relationships (LePine & Van Dyne, 2001, p. 327). Extraversion involves an individual's energy level, potency and positive affectivity, thus promoting positive and cooperative interactions with others in the course of accomplishing work (LePine & Van Dyne, 2001, p. 327). Individuals who score high in neuroticism tend to be uptight. They often express negative attitudes toward coworkers. Thus, they are less likely to be cooperative. Moreover, they would have lower quality interactions with others at work (LePine & Van Dyne, 2001, p. 327). Agreeable individuals tend to engage in more teamwork. They are more cooperative and have higher quality interpersonal interactions (LePine & Van Dyne, 2001, p. 327). To conclude, a laboratory study of 276 individuals, conducted by LePine and Van Dyne (2001) confirmed that conscientiousness, extraversion and agreeableness are related to cooperative behavior.

Furthermore, high self-esteem can lead to underestimation of their own completion times (Buehler, Griffin & Ross, 1994), self-efficacy can harm subsequent performance (Vancouver, Thompson & Williams, 2001) and creativity can result in frustration resulting from unfocused effort and diminished productivity (Ford & Sullivan, 2004). If highly engaged employees are also highly aroused, the levels of arousal might distract cognitive performance (Beal, Weiss, Barros & MacDermid, 2005). Over time, high arousal and positive affect (enthusiasm) of engaged workers include ways of assessing potential long-term negative effects of high work engagement (Bakker et al., 2011a, p. 18).

Moreover, high self-monitors' success in their networks may help them increase their performance, but their acceptance of large workflow networks may make successfully accomplishing tasks more difficult (Mehra et al., 2001, p. 138). Therefore, it could be claimed that high self-monitors who are moderately central in learning or advice networks,

are also highly engaged. However, self-monitors who are highly central in learning networks, may experience stress and therefore lower engagement.

Besides, the Big Five personality traits have been proven to be linked to work achievements. For instance, conscientiousness is a general predictor of job performance (Barrick & Mount, 1991). Agreeableness and neuroticism predict performance in jobs where team work prevails, while extraversion predicts success in sales and management positions; openness predicts success in artistic jobs and conscientiousness predicts success in conventional jobs (Barrick, Mount & Gupta, 2003; Larson, Rottinghaus, & Borgen, 2002). More precisely, motivation levels are contingent upon the degree of congruence between personality traits (extraversion, agreeableness and openness), individuals' preferences for certain activities and job demands. For instance, an extraverted person with congruent interests is motivated when the job emphasizes competitive demands and advancement through hierarchy.

On the other hand, motivational levels for conscientiousness and emotional stability (neuroticism), are derived from self-regulatory processes associated with goal setting, expectancy beliefs and self-efficacy, thus, "motivation levels are not contingent on whether there is congruence between the personality traits and preferences for different types of work environments" (Barrick et al., 2003, p. 70). In addition, neuroticism predicts job satisfaction. Someone highly neurotic is more likely to experience burnout and change jobs, whereas someone who is not neurotic (emotionally stable) feels satisfied and committed to his or her organization (Thoresen, Kaplan, Barsky, Warren & de Chermount, 2003). In short, higher performance can be obtained across all jobs if an employer hires employees who are highly conscientious and emotionally stable. "Whether other personality traits (extraversion, agreeableness, and openness to experience) result in higher performance depends on whether these traits are congruent with the person's interests and actual job activities" (Barrick et al., 2003, p. 70).

Further on, Judge and Illes (2002) showed that the Big Five traits are an important source of performance motivation. More precisely, neuroticism and conscientiousness were found to be the strongest and most consistent correlates of performance motivation (goal-setting, expectancy, and self-efficacy motivation). Finally, proactive network-building behaviors might result in "invitations from colleagues to participate in important projects, thereby increasing task and skill variety, task significance" (Grant & Parker, 2009).

2.3.2 Other control variables

Gender. Schaufeli and Bakker (2004) explained that the Dutch language database including almost 1,000 respondents from Belgium and The Netherlands, as well as the international database including almost 12,000 respondents from nine different countries, proves that UWES has quite satisfactory psychometric properties. Their study showed that men express slightly higher engagement score than women, but although statistically significant, these differences are practically speaking, irrelevant.

Rothbard (2001) investigated the relationship between engagement and multiple roles of work and family. It was found that there are gender differences, since depletion existed only for women. While men experienced enrichment from work to family, women experienced enrichment from family to work. Nordenmark (2002) researched whether a strong engagement in both work and family life is a positive or a negative experience for

men and women respectively. It was found that women with children working more than 40 hours per week wanted to reduce their working hours. Interestingly, both men and women with multiple social roles wanted to reduce working hours, but this did not necessarily mean they experience higher distress.

Furthermore, there are some revelations regarding the relationship between gender and centrality in learning and advice networks. For instance, it is more likely that one person learns from the other person in the network if they are of the same gender (Škerlavaj et al., 2010a, p. 199). Likewise,, team member network centrality predicts informal leadership, nevertheless, more for men than for women (Neubert and Taggar, 2004, p. 175). Ibarra (1992) found that relative to women, men appeared to reap greater network returns from similar individual and positional resources and homophilous relationships. Men were more likely to form more and stronger homophilous ties across multiple networks than women. In addition, distribution gender in an organization's population importantly influences institution and their members, especially in the transfer of knowledge (Pfeffer in Johnson, 2009, p. 210).

Age. Engagement is very rarely positively related to age (Schaufeli & Bakker, 2003, p. 41). However, it has been found that supervisor support and recognition, schedule satisfaction and job clarity as job characteristics are significant predictors of employee engagement for all age groups. Career development is also a significant predictor of employee engagement for all, except the retirement-eligible employees (James, McKechnie, & Swanberg, 2011, p. 173). In their study, Avery, McKay and Wilson (2007) found that perceived age similarity is associated with higher levels of engagement among older workers when they are highly satisfied with coworkers older than 55 and with lower levels of engagement when they are not highly satisfied.

It has been proven that distribution of attributes such as age in an organization's population importantly influences the institution and their members, especially in the transfer of knowledge (Pfeffer in Johnson, 2009, p. 210). In short, while it could not be predicted that the age of an employee, except in case of retirement-eligible employees, is related to work engagement (see James, McKechnie & Swanberg, 2011), there should be a significant correlation between age and centrality in learning and advice networks, since age importantly influences the transfer of knowledge among employees (see Pfeffer in Johnson, 2009, p. 210).

Education. Education is positively related to network centrality, that is, highly educated employees are more likely to be more engaged (Liu & Ipe, 2010, p. 243). More precisely, individuals who are highly educated are more likely to become high in advice and friendship centrality and low in adversarial centrality (Klein et al., 2004). I could predict that this is due to the fact that they are able to use more skills and knowledge and meet higher skill variety at their job. Since centrality is positively related to skill variety (Brass, 1981, p. 335), and task variety increases work engagement (Christian et al., 2011), it could be predicted that employees who are more educated are also more engaged.

3 ANALYSIS

3.1 Methodology

In this section, I first introduce the sample. I define the industry, number of employees, gender, age and education distribution of employees, working experiences (in years) of employees and response rate. Further on, I present the measures for employee work engagement, centrality in learning and advice networks, job characteristics and personality traits. Upon that, I discuss the adequacy of the usage of particular measures in my research.

3.1.1 Sample

I collected data in one of the leading Information Technology (IT) companies in Slovenia. The company is 23 years old and it has been recording growth since its very beginning. During the global economic crisis, it stayed positively oriented, with their focus on innovation and development, therefore still recording profits. Its employees do not only work on the technical implementation phase of IT business solutions, but while working on a certain project, they incorporate relevant knowledge from the areas of finance, accounting, controlling, sales, marketing and supply chain. The employees have to be innovative in order to develop new IT solutions and very communicative in order to transfer their knowledge among themselves and to their clients (see Attachment 3).

I collected data from 118 out of 196 employees, which creates a 60.2% response rate. 72.9% of employees were men and 27.1% were women. Their average age was 33.55 years. There were 59 employees who were 33 years old or younger, and 59 employees who were older than 33. The oldest employee was 52 years old and the youngest was 22 years old. There were 31.4% of employees who finished secondary school, 1.7% who finished a two-year study, 16% of employees who finished the first Bologna stage of education, 51% of employees with second Bologna stage of education and 10.2% of employees who finished their masters of science or have a PhD. In average, the employees were highly educated. In average, employees had been employed in the company for 5.5 years and in average, they had 9.6 years of working experiences in total. In short, the sample included mostly young, educated people with a minimum of a few months' working experience and a maximum of 22 years' working experience.

3.1.2 Measures

3.1.2.1 Employee work engagement

Measures of engagement must have a clear theoretical background and statistical evidence of their validity and reliability. They should have practical utility in organizational contexts (Macey & Schneider, 2008b). The most often used scientifically derived measure of engagement is the Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2002). Measurements, such as UWES can help identify the personality type of employees, which in turn helps employees to indentify new ways of interacting with one another. Moreover, it brings new opportunities to practice new behaviors and it enables work-groups to make the best efforts in improving their collegiality (Bakker et al., 2011a, p. 20).

The UWES has been validated in several countries in Europe and also in North America, Africa, Asia and Australia (Bakker, 2009). In short, UWES has satisfactory psychometric

properties, since the three subscales are internally consistent and stable across time, and the three-factor structure is confirmed and is invariant across samples from different countries (Schaufeli & Bakker, 2003, p. 41; Bakker et al., 2011a, p. 9). However, the UWES has just one psychometric shortcoming and that is the items in each subscale all being framed in the same (positive) direction (Bakker, 2009).

Since the research needed to have a shorter questionnaire performed, Schaufeli, Bakker and Salanova (2006, p. 701) developed a short self-report questionnaire to measure work engagement, defined as "a positive work-related state of fulfillment that is characterized by vigor, dedication, and absorption." They collected data in 10 different countries and the results showed that the original 17-item UWES could be shortened to just 9 items (three items measuring vigor, three items measuring dedication and three items measuring absorption).

Using the confirmatory factor analyses, factor validity of the UWES-9 was demonstrated. Moreover, the three scale scores have good internal consistency and test-retest reliability (Schaufeli et al., 2006). In short, UWES-9 has acceptable psychometric properties and it is appropriate to be used in studies on positive organizational behavior (Schaufeli et al., 2006). Put together, using UWES gives us a valid and reliable indicator of work engagement (Schaufeli & Bakker, 2003, p. 41) and therefore, I decided to use it in my research.

The table below shows all 9 items by which employee work engagement was measured. The respondents had to decide whether they feel this way about their job and if they do, how often do they get this feeling. Thus, they were able to choose between the following answers: 0 (never), 1 (almost never – a few times a year or less), 2 (rarely – once a month or less), 3 (sometimes – a few times a month), 4 (often – once a week), 5 (very often – a few times a week), and 6 (always – every day) (see Schaufeli et al., 2006).

Table 6: Utrecht Work Engagement Scale

Item	What do we measure?
1. At my work, I feel bursting with energy.	vigor
2. At my job, I feel strong and vigorous.	vigor
3. I am enthusiastic about my job.	dedication
4. My job inspires me.	dedication
5. When I get up in the morning, I feel like going to work.	vigor
6. I feel happy when I am working intensely.	absorption
7. I am proud of the work that I do.	dedication
8. I am immersed in my work.	absorption
9. I get carried away when I am working.	absorption

Source: W. B. Schaufeli, A. B. Bakker, A., & M. Salanova, The Measurement of Work Engagement With a Short Questionnaire: A Cross-National Study, 2006.

Using statistical software SPPS, I first measured the validity of the construct (factor analysis). The factor analysis showed that there are not three, but two factors. It was found that with 8 items (without the ninth item) there is one factor in the model. Therefore, I decided to use only the first 8 items for further research and measured the engagement construct as a whole, focusing on reliability (Cronbach's Alpha = 0.899). Upon that, the mean of engagement items for each respondent was calculated. The responses were

averaged to 8 items, in order to create an engagement measure, that is, in order to get the score for each respondent to be further used as a dependent variable.

3.1.2.2 Centrality in learning and advice networks

In my questionnaire, I use five questions/statements in which respondents have to define their knowledge awareness, access to information and knowledge, engagement of their coworkers while being asked for information, and employee's safety while seeking information from his or her coworkers. In addition, respondents are asked who the people in their organization are and who they learn most from (Škerlavaj, 2007). Details are presented in the table below.

Table 7: Centrality in learning and advice networks scale

Item	What do we measure?
1. I understand this person's knowledge and skills. This does not mean that I have these skills or am knowledgeable in these domains but that I understand which skills this person has and the domains they are knowledgeable in.	Information-sharing potential – knowledge awareness (Advice network)
2. When I need information or advice, this person is generally accessible to me within a sufficient amount of time to help me solve my problem.	Information-sharing potential – access (Advice network)
3. If I ask this person for help, I can feel confident that they will actively engage in problem solving with me.	Information-sharing potential – engagement (Advice network)
4. Please indicate the extent to which you feel personally comfortable asking this person for information or advice on work-related topics.	Information-sharing potential – safety (Advice network)
5. Who are the people in your organization you learn the most from?	Network perspective on intra-organizational learning – learning (Learning network)

Source: R. L. Cross & A. Parker, The Hidden Power of Social Networks, 2004; M. Škerlavaj, The network perspective and performance of organizational learning: theoretical and empirical analysis, 2007.

To obtain social network measures, I gave each respondent a questionnaire containing a roster of names of all employees in the company. The roster method of collecting network data has been shown to be an accurate and reliable method (Marsden in Zhou et al., 2009). Each employee was able to select as many coworkers as they wanted, but only those for whom a particular statement was true or completely true.

Using the network analysis software NodeXL, I was able to calculate the selected centralities for each respondent. In further analysis, I decided to use in-degree centrality (number of directional links to the actor from other actors – in-coming links) and out-degree centrality (number of directional links from the actor to other actors – out-coming links) (Monge & Contractor, 2003). Moreover, in the NodeXL, I was able to prepare the learning and advice network developed between employees in a selected company. In my study, an important fact rose, namely, that there were many employees with high in-degree centralities without out-coming links, which means that there are some employees with high centrality scores, who did not answer the questionnaire. In addition, there are some

employees, who have neither the opportunity nor the need to communicate with coworkers due to their work roles.

3.1.2.3 Job characteristics

Based on the Hackman and Lawler's (1971) model of six general job dimensions (that is, variety, autonomy, task identity, feedback, dealing with others and friendship opportunities), Hackman and Oldham (1975) developed a Job Characteristics Model and Job Diagnostic Survey (Boonzaier et al. 2000, p. 11). The Job Diagnostic Survey is intended "to diagnose existing jobs to determine if (and how) they might be redesigned to improve employee motivation and productivity and to evaluate the effects of job changes on employees" (Hackman & Oldham, 1975, p. 159). The instrument provides measures of objective job dimensions, individual psychological states resulting from these dimensions, affective reactions of employees to the job and work setting, and individual growth need strength (readiness of individuals to respond to enriched jobs) (Hackman & Oldham, 1975, p. 159). According to Boonzaier et al. (2000, p. 11), Job Diagnostic Survey serves for three main purposes: to "diagnose jobs considered for redesign in order to establish the current potential of a job for enhancing motivation and satisfaction; identify those specific job characteristics that are most in need of enrichment; assess the 'readiness' of employees to respond positively to improved jobs." Despite some psychometric limitations, it has proven useful in job design research (Taber & Taylor, 1990). It is the most complete and widely used instrument to measure perceived task design (Dunham, Aldag & Brief, 1977, p. 210).

More precisely, the original Job Diagnostic Survey has important psychometric limitations such as test-retest reliability, internal consistency and comprehensiveness of scales. Job Diagnostic Survey as a subjective measure is not able "to provide clear data that could test competitively the viability of the social information processing and the job characteristics model" (Taber & Taylor, 1990, p. 494). Moreover, changes in objective task properties caused significant changes in Job Diagnostic Survey scores (Taber & Taylor, 1990).

Therefore, Idaszak and Drasgow (1987, p. 69) investigated the dimensionality of the original Job Diagnostic Survey and its revision. Factor analysis identified six dimensions underlying the original Job Diagnostic Survey. Five of the factors corresponded to the pattern expected for the Job Diagnostic Survey items, but the sixth was identified as a measurement artifact. Hence, five of the Job Diagnostic Survey items were rewritten in order to eliminate the artifact. The items requiring reverse scoring were revised, so that all of the items in the survey could be scored in the same direction. Finally, it was found that the revised Job Diagnostic Survey scales measure their underlying constructs with reasonable accuracy. Due to only a few items per factor in the Job Diagnostic Survey, sample sizes, which are larger than those typically recommended, are needed in order to consistently recover the true underlying structure (Idaszak, Bottom & Drasgow, 1988, p. 647).

There were some studies conducted trying to show usefulness of the Revised Job Diagnostic Survey. For instance, Kulik, Oldham and Langer (1988, p. 462) used the confirmatory factor analysis and showed that the Revised Job Diagnostic Survey job characteristics items conform more closely to the hypothesized five-factor structure than did the original Job Diagnostic Survey items.

Further on, Cordery and Sevastos (1993) administered the original and revised a version of the Job Diagnostic Survey to 3044 public sector employees in a range of jobs, and they showed that a revised version of Job Diagnostic Survey using only positively worded items fits the five-factor structure underlying the instrument better. Using item analysis and confirmatory factor analysis, Buys, Olckers and Schaap (2007) showed construct validity of the Revised Job Diagnostic Survey. More precisely, they found that Revised Job Diagnostic Survey is a reliable and factorially valid instrument for South African use.

The questionnaire consists of two parts. First, there are five questions, through which respondents can express how much of a particular job characteristic they meet at their job. They can answer on the scale from 1 (very little of a particular job characteristic) to 7 (a lot of a particular job characteristic). Details of the first part of the questionnaire are presented in the table below.

Table 8: Job Diagnostic Survey: first part

Item	What do we measure?
1. How much autonomy is there in your job? That is, to what extent does your job permit you to decide on your own how to go about doing the work?	autonomy
2. To what extent does your job involve doing a 'whole' and identifiable piece of work? That is, is the job a complete piece of work that has an obvious beginning and end? Or is it only a small part of the overall piece of work, which is finished by other people or by automatic machines?	task identity
3. How much variety is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?	skill variety
4. In general, how significant or important is your job? That is, are the results of your work likely to significantly affect the lives or well-being of other people?	task significance
5. To what extent does doing the job itself provide you with information about your work performance? That is, does the actual work itself provide clues about how well you are doing-aside from any 'feedback' co-workers or supervisors may provide?	feedback

Source: J. R. Idaszak & F. Drasgow, A Revision of the Job Diagnostic Survey: Elimination of a Measurement Artifact, 1987.

Second, there are ten statements, two of which measure each of the five job characteristics. On a seven-point ranging scale from 1 (very inaccurate) to 7 (very accurate), the respondents are able to express how accurately a particular statement describes their work. Details are presented in the table below.

Table 9: Job Diagnostic Survey: second part

Item	What do we measure?
1. The job requires me to use a number complex or high-level skills.	skill variety
2. The job is arranged so that I can do an entire piece of work from beginning to end.	task identity
3. Just doing the work required by the job provides many changes for me to figure out how well I am doing.	feedback
4. The job allows me to use a number of complex or high-level skills.	skill variety
5. This job is one where a lot of other people can be affected by how well the work gets done.	task significance
6. The job gives me a chance to use my personal initiative and judgment in carrying out the work.	autonomy
7. The job provides me with the chance to completely finish the pieces of work that I begin.	task identity
8. After I finish a job, I know whether I performed well.	feedback
9. The job gives me considerable opportunity for independence and freedom in how I do the work.	autonomy
10. The job itself is very significant and important in the broader scheme of things.	task significance

Source: Source: J. R. Idaszak & F. Drasgow, A Revision of the Job Diagnostic Survey: Elimination of a Measurement Artifact, 1987.

Using statistical software, I calculated validity of autonomy (factor analysis), task significance, feedback, skill variety and task identity. It proved that there actually is factor validity for all five job characteristics. The reliability was also tested. Results showed appropriate reliability for all five job characteristics: autonomy (Cronbach's Alpha = 0.779), task significance (Cronbach's Alpha = 0.789), feedback (Cronbach's Alpha = 0.798), skill variety (Cronbach's Alpha = 0.817), and task identity (Cronbach's Alpha = 0.699).

3.1.2.4 Personality

With intra-class correlations among raters and correlations between mean peer ratings and self reports, McCrae and Costa (1987) showed substantial cross-observer agreement on all five adjective factors (neuroticism, extraversion, openness, agreeableness and conscientiousness). They suggested adoption of the five-factor model (the Big Five) in personality research and assessment. Consequently, many measurements of the Big Five personality traits developed. In my study, I decided to use the Mini International Personality Item Pool (IPIP) scale.

Goldberg's IPIP scale (Goldberg in Socha, Cooper & McCord, 2010, p. 43) "was initiated in 1996 with the goal of circumventing the severe constraints on personality research imposed by the commercialization and copyrighting of most major personality assessment instruments." Goldberg wanted to develop a repository of personality items that were contextualized (longer than single-word traits adjectives), and shorter than most existing personality questionnaire items. Furthermore, the items had to be easy to translate into multiple languages. The popularity of the IPIP items and scales has increased rapidly.

Items have been translated into more than 25 languages (Socha et al., 2010, p. 43) and at the time almost 470 IPIP-related publications were listed on the IPIP website. Goldberg et al. (in Socha et al., 2010, p. 43) emphasized some important factors confirming the success of the IPIP: the use of IPIP is cost-free; all items are readily visible and retrievable via the Internet, there are no copyright restrictions (items may be used in any order, interspersed with other items, administered via the web, modified and translated, without any required permission). Socha et al. (2010, p. 43) proved reliability and construct validity of the 50-item IPIP.

Based on the 50-item International Personality Item Pool-Five-Factor Model measure (Possible Questionnaire Format for Administering the 50-item set of IPIP Big-Five Factor Markers), Donnellan, Oswald, Baird and Lucas (2006, p. 192) developed a 20-item short pool, called the Mini-IPIP. The Mini-IPIP scales with four items per Big Five trait, has consistent and acceptable internal consistencies, similar coverage of facets as other broad Big Five measures, and test-retest correlations similar to the parent measure across intervals of a few weeks and several months. Moreover, the Mini-IPIP scales have been proven to be a comparable pattern of convergent, discriminant and criterion-related validity with other Big Five measures. In short, the Mini-IPIP scales are psychometrically acceptable and a useful short measure of the Big Five personality traits, presented in the table below.

Table 10: Mini International Personality Item Pool scales

Item	What do we measure?
1. Am the life of the party.	extraversion
2. Sympathize with others' feelings.	agreeableness
3. Get chores done right away.	conscientiousness
4. Have frequent mood swings.	neuroticism
5. Have a vivid imagination.	intellect/imagination
6. Don't talk a lot. (R)	extraversion
7. Am not interested in other people's problems. (R)	agreeableness
8. Often forget to put things back in their proper place. (R)	conscientiousness
9. Am relaxed most of the time. (R)	neuroticism
10. Am not interested in abstract ideas. (R)	intellect/imagination
11. Talk to a lot of different people at parties.	extraversion
12. Feel others' emotions.	agreeableness
13. Like order.	conscientiousness
14. Get upset easily.	neuroticism
15. Have difficulty understanding abstract ideas. (R)	intellect/imagination
16. Keep in the background. (R)	extraversion
17. Am not really interested in others. (R)	agreeableness
18. Make a mess of things. (R)	conscientiousness
19. Seldom feel blue. (R)	neuroticism
20. Do not have a good imagination. (R)	intellect/imagination

Source: M. B. Donnellan, F. L. Oswald, B. M. Baird, & R. E. Lucas, The Mini-IPIP Scales: Tiny-yet-effective measures of the Big Five Factors of Personality, 2006.

As shown in Table 10, there are 20 items, of which four measure each of the five personality traits. Some of the statements had to be reversed (marked with (R) in the table below). On a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree), the

respondents were able to answer how strongly they agree with a particular statement, describing their (current) personality traits.

Using statistical software SPSS, I tested validity of each of Big Five personality traits. Validity was proven for all five personality traits. More precisely, factor analysis showed that conscientiousness consists of two factors and therefore, I decided to delete item 3 (Get chores done right away) in order to have only one factor and achieve higher reliability. Further on, factor analysis showed that there are two factors for intellect/imagination (Factor 1: items 5 and 20; Factor 2: items 10 and 15). Consequently, I decided to keep both factors – one measuring imagination and another measuring understanding of abstract ideas.

Upon that, reliability of all five personality traits was calculated. It was proven that all five factors are reliable: extraversion (Cronbach's Alpha = 0.731), agreeableness (Cronbach's Alpha = 0.610), conscientiousness (Cronbach's Alpha = 0.611), neuroticism (Cronbach's Alpha = 0.650), and intellect/imagination (Cronbach's Alpha = 0.648). Beside personality traits as a control variable, I also checked gender (male, female), age (year of birth) and education (secondary school, two-year high school, first Bologna stage, second Bologna stage, Master of science or PhD) that have been proved to be linked to employee engagement and network centrality.

3.2 Results

3.2.1 Relationship between employee centrality and employee work engagement

For the basic analysis of the questionnaire results (means and standard deviations of core concepts) see Attachment 5. The purpose of this chapter is to first present the results of testing hypotheses 1a-d, stating that there is a positive relationship between employee centrality and employee work engagement. I measure the relationship between in-degree centrality in learning networks and employee work engagement. I test whether there is a positive correlation between in-degree centrality in advice networks and employee work engagement. Further on, I test the relationship between out-degree centrality in learning networks and employee work engagement. Finally, I research whether there is a positive correlation between out-degree centrality in advice networks and employee work engagement.

There was no significant correlation found between in-degree centrality and employee work engagement. There was also no significant correlation between out-degree centrality in learning networks and employee work engagement. However, the results show (see Appendix 4, Table 4) that there is a significant positive correlation between out-degree centrality in advice networks and employee work engagement. More precisely, linear correlation between out-degree centrality in advice networks and employee work engagement is very strong. If out-degree centrality in advice networks increases for one unit, employee work engagement in average increases for 0.075 (while other variables do not change). In short, the higher an employee rates in out-degree centrality in advice network, more likely it is to rate higher also in employee work engagement. The table below summarizes the results of measured relationship between employee centrality and employee work engagement.

Table 11: Results – relationship between employee centrality and employee work engagement

Items	Predicted relationship	Results
In-degree centrality in learning networks → employee work engagement	positive	Not significant
In-degree centrality in advice networks → employee work engagement	positive	Not significant
Out-degree centrality in learning networks → employee work engagement	positive	Not significant
Out-degree centrality in advice networks → employee work engagement	positive	Significant

Additionally, I present the results of testing the hypotheses 2, predicting curvilinear relationship between centrality in learning and/or advice networks and employee work engagement. To be more specific, the hypotheses are divided in four parts. In the first part, I measure whether there is a curvilinear relationship between in-degree centrality in learning networks and employee work engagement. In the second part, I measure whether there is a curvilinear relationship between in-degree centrality in advice networks and employee work engagement. Then I measure whether there is a curvilinear relationship between out-degree centrality in learning networks and employee work engagement. Finally, I measure whether there is a curvilinear relationship between out-degree centrality in advice networks and employee work engagement.

To test the hypothesis, I ran the hierarchical regression (see example Zhou et al., 2009). The control variables test showed that the model is not under impact of personality traits, gender, age, or education. For the detailed results see Appendix 4. Table 1 in Appendix 4 shows that there is no significant curvilinear relationship between in-degree centrality in learning networks and employee work engagement. Table 2 in Appendix 4 shows that there is no significant curvilinear relationship between in-degree centrality in advice networks and employee work engagement. Table 3 in Appendix 4 shows no significant curvilinear relationship between out-degree centrality in learning networks and employee work engagement. Finally, also Table 4 in Appendix 4 shows no significant curvilinear relationship between out-degree centrality in advice networks and employee work engagement.

In addition to hierarchical regression, I made a distinction between low, moderate, and high in-degree employee centrality and I observed whether there is a correlation between employee centrality and employee work engagement. First, using statistical software SPSS, ANOVA (analysis of the variation present in an experiment) (Rovan & Turk, 2008) was conducted and the results showed that there is no statistically significant correlation between low/moderate/high in-degree centrality in learning and advice networks and employee work engagement. Moreover, as an independent variable, I included in-degree centrality scores in the model and then expanded it with squared in-degree centrality scores. Neither in first (simple regression) nor in the second (multiple regression) model there was a statistically significant correlation found.

Second, using statistical software SPSS, ANOVA (analysis of the variation present in an experiment) (Rovan & Turk, 2008) was conducted and the results showed that there is no statistically significant correlation between low/moderate/high out-degree centrality in

learning and advice networks and employee work engagement. First, I included in the model as an independent variable out-degree centrality scores and then I expanded the model with squared out-degree centrality scores. Neither in first (simple regression) nor in second (multiple regression) model there was a statistically significant correlation found. The table below summarizes the results of measuring curvilinear relationship between employee centrality and employee work engagement.

Table 12: Results – curvilinear relationship between employee centrality and employee work engagement

Items	Predicted relationship	Results
Employee centrality (in-degree and out-degree) in (learning and advice) networks → employee work engagement	curvilinear	not significant

3.2.2 Relationship between job characteristics and employee work engagement

In this section, I present the results of testing hypothesis 3. I tested which of the job characteristics (autonomy, feedback, skill variety, or task significance) has an important influence on employee work engagement. The results show that most important job characteristics in terms of employee work engagement are skill variety and feedback. Namely, there is very strong relationship between skill variety and employee work engagement, and very strong relationship between feedback and employee work engagement ($R>0.6$).

It has been proved that if skill variety increases for one unit, employee work engagement in average increases for 0.243 (if other variables do not change). Further, if feedback increases for one unit, employee work engagement in average increases for 0.238 (if other variables do not change) (see Appendix 4, Table 1). In addition, the results shown in Table 2, appendix 4 confirm the same. It shows that if skill variety increases for one unit, employee work engagement in average increases for 0.289 (if other variables do not change). Further, if feedback increases for one unit, employee work engagement in average increases for 0.220 (if other variables do not change).

Table 3, appendix 4 shows that if skill variety increases for one unit, employee work engagement in average increases for 0.206 (if other variables do not change). Further, it shows that if feedback increases for one unit, employee work engagement in average increases for 0.240 (if other variables do not change).

Table 4, appendix 4 confirms the same relationships. It says that if skill variety increases for one unit, employee work engagement in average increases for 0.195 (if other variables do not change). Further, it shows that if feedback increases for one unit, employee work engagement in average increases for 0.180 (if other variables do not change). The table below summarizes the results of measured relationship between job characteristics and employee work engagement.

Table 13: Results – Relationship between job characteristics and employee work engagement

Items	Predicted relationship	Results
Autonomy → employee work engagement	positive	not significant*
Feedback → employee work engagement	positive	significant
Skill variety → employee work engagement	positive	significant
Task significance → employee work engagement	positive	not significant

*Autonomy (measured in models including in-degree centrality in learning and advice networks, and out-degree centrality in advice networks) was significantly (strongly and positively) correlated with employee work engagement only in Models 3, in which other job characteristics were not yet included. This result can be explained by suppression effect (Cohen et al., 2002; Tu, Gunnell & Gilthorpe, 2008).

3.2.3 Summary of results

In sum, the results show that skill variety and feedback play significant role in employee work engagement. Employee centrality is important only in case of measuring out-degree centrality in advice networks. In brief, the results shown above, prove that job characteristics (how we design a job) are more important than employee's centrality in networks.

In order to test the relative impact of employee centrality on employee work engagement, I held constant some other variables, that is, control variables, such as personality traits (extraversion, agreeableness, conscientiousness, neuritocism, and intellect/imagination), age, gender, and education. The analysis showed that the relationship between employee centrality and employee work engagement is not under impact of personality traits, age, gender, or education. In other words, none of the control variables affect the relationship between employee centrality and employee work engagement. The tables below summarize the results of all measured correlations and show some statistical details (significance, R^2, coefficients).

Table 14: Summary of results - part 1

	In-degree_advice network							In-degree_learning network						
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
In-degree	.020	.056	.024	.019	-.013	-.009	.000	.013	.008	-.015	-.019	-.027	-.026	-.014
In-degree square		-.008	-.005		.001				.001	.003	.004	.003	.003	.002
Autonomy			.226**	.161	.063	.047	.055			.167*	.103	-.007	-.020	-.028
Task identity				.101	.017	-.003	-.068				.099	.006	-.007	-.057
Skill variety					.290**	.252**	.188*					.294**	.268**	.208**
Task significance						.080	.012						.058	.001
Feedback							.289**							.243**
Extraversion	.203*	.191*	.213*	.208*	.170*	.164	.152	.228**	.229**	.243**	.236**	.176*	.172	.161
Agreeableness	.238*	.246*	.229*	.246*	.229*	.192	.220*	.241*	.239	.227	.243*	.236*	.210	.238
Conscientiousness	.136	.150	.148	.115	.100	.091	.038	.156	.156	.155	.126	.124	.115	.074
Neuroticism	-.168	-.167	-.152	-.167	-.083	-.096	-.093	-.143	-.145	-.140	-.155	-.077	-.085	-.099
Intellect/imagination	.134	.117	.081	.063	.116	.106	.122	.115	.115	.079	.057	.105	.100	.112
Gender	.155	.137	-174	.192	.202	.165	.247	.065	.067	.092	.105	.131	.108	.173
Age	-.012*	-.013*	-.007	-.007	-.004	-.003	-.005	-.012*	-.012*	-.008	-.008	-.006	-.005	-.007
Education	.059	.047	.011	.011	.035	.032	.021	.052	.053	.027	.025	.045	.045	.040
R^2	.198	.205	.246	.255	.333	.339	.398	.181	.181	.205	.213	.295	.298	.341
ΔR^2		.007	.041	.009	.078	.006	.059		.000	.024	.008	.082	.003	.043
F	2.806	2.609	2.973	2.820	3.761	3.560	4.236	2.628	2.344	2.460	2.341	3.315	3.097	3.485

**p<0.01, *p<0.05

Table 15: Summary of results - part 2

	Out-degree_advice network							Out-degree_learning network						
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Out-degree	.078**	.111**	.097**	.091*	.094*	.092*	.075*	.041	.028	.026	.021	.022	.023	.013
Out-degree square		-.013	-.010	-.009	-.013	-.012	-.010		.004	.003	.003	.000	-.001	-.030
Autonomy			.209**	.158	.052	.036	.055			.148	.098	-.017	-.031	-.030
Task identity				.081	-.011	-.024	-.086				.079	-.005	-.017	-.066
Skill variety					.285**	.255**	.195*					.288	.262**	.206*
Task significance						.066	.011						.057	.004
Feedback							.263**							.240**
Extraversion	.220*	.239**	.253**	.244**	.204*	.200*	.180*	.223*	.226*	.238**	.231*	.172	.168	.157
Agreeableness	.227*	.199	.195	.212	.194	.164	.191	.227	.227	.226	.241*	.239*	.213	.238*
Conscientiousness	.147	.153	.149	.125	.121	.110	.063	.167	.162	.165	.141	.139	.131	.083
Neuroticism	-.115	-.121	-.102	-.117	-.037	-.048	-.058	-.142	-.143	-.131	-.142	-.065	-.073	-.091
Intellect/imagination	.175	.175	.125	.107	.148	.139	.149	.136	.132	.090	.071	.111	.106	.118
Gender	.144	.152	.187	.198	.199	.171	.237	.063	.060	.084	.093	.125	.103	.165
Age	-.008	-.010	-.005	-.005	-.004	-.003	-.004	-.011	-.011	-.007	-.007	-.005	-.005	-.007
Education	.071	.070	.030	.028	.045	.044	.030	.053	.052	.025	.022	.041	.041	.038
R^2	.233	.242	.280	.285	.363	.368	.417	.190	.191	.211	.216	.295	.299	.341
ΔR^2		.009	.038	.005	.078	.005	.049		.001	.020	.005	.079	.004	.042
F	3.451	3.221	3.536	3.295	4.302	4.034	4.579	2.786	2.508	2.560	2.393	3.323	3.104	3.488

**p<0.01, *p<0.05

4 DISCUSSION

4.1 Relationship between employee centrality and employee work engagement

Cowardin-Lee and Soyalp (2011) showed that there is no significant correlation between employee centrality in (access, problem-solving, conflict-solving and tacit knowledge) networks and employee engagement. I can build on their findings by showing that employee in-degree centrality (in learning and advice networks) is not a significant antecedent of employee work engagement. However, I can add an additional finding, namely, that employee out-degree centrality in advice networks increases employee work engagement. Since out-degree centrality measures out-going links (number of relationships pointing outwards an individual) (Brass, 1995; Hoppe & Reinelt, 2010), individuals with high out-degree centrality can be seen as advice-receivers (advice-seekers) (Zagenczyk & Murrell, 2009). As such, I view them as proactive employees who actively engage in gathering advice from other employees (in order to gain more information and to perform better).

It could be claimed that in-degree centrality in networks is characteristic of employees who possess important knowledge, information and skills, but are not necessarily actively involved in gathering knowledge or advice from others. On the other hand, out-degree centrality measures level of active involvement (engagement) in receiving advice and therefore significantly correlates with employee work engagement (as a measure of active involvement in work, see Dvir's et al., 2002 definition).

Furthermore, Cowardin-Lee and Soyalp (2011) tried to find a linear correlation between employee centrality and employee engagement. Thus, I build on their work and try to find the curvilinear correlation. I can confirm that there is no curvilinear (inverted U-shaped) correlation between employee centrality and employee work engagement, neither can I confirm my Hypothesis 2. More precisely, there is neither a statistically significant curvilinear correlation between in-degree centrality and employee work engagement, nor a statistically significant curvilinear correlation between out-degree centrality and employee work engagement.

Squared in-degree and out-degree centrality did not prove any differentiation between low, medium and high employee centrality and therefore, it did not prove any curvilinear relationship between employee centrality and employee work engagement. Although central position enables employees better access to knowledge and information (Borgatti & Halgin, 2011), enables better access to other actors (Galaskiewicz, 1979), and increases knowledge-sharing opportunities (Tsai, 2001), it has not been proven that central position also increases employee work engagement. Although high degree centrality may lead to stress and conflict situations (Brass et al., 2004), it has not been proven that too high employee centrality in learning networks may lead to disengagement. In short, moderate employee centrality in learning networks does not necessarily result in high employee work engagement; and high employee centrality in learning networks does not necessarily result in low(er) employee work engagement.

Lastly, since there are employees in selected company employed for only a few years, it could be predicted that low centrality in learning networks is characteristic for (i)

newcomers, or (ii) IT experts with specific knowledge and skills. Newcomers may end on the periphery of a network, but they can yield quick results if they are motivated to get more connected with coworkers (Cross & Parker, 2004, p. 80). Their low centrality in learning network is not necessarily correlated with low employee engagement. It may be the case that they are not involved in the whole business process and are therefore interacting with only a few coworkers. Since they are new in the company, they are not perceived as a source of knowledge and expertise and consequently also have low in-degree centrality. On the other hand there are a few IT experts with specific skills and knowledge, who do not need to interact with coworkers in order to do their job and work individually as IT programmers. Due the nature of their work, they might be scoring low in employee centrality; however, they might score high in employee work engagement.

To summarize, due to specific job characteristics in IT industry, where employees are mainly divided in two groups, that is, IT experts and support departments (which are very small in smaller companies), the curvilinear relationship (inverted U-shaped relationship) between centrality in learning or advice networks and employee work engagement are such that the employees exhibit greater engagement when their centrality in learning networks is at intermediate levels then when it is at lower or higher levels and cannot be predicted.

4.2 Relationship between job characteristics and employee work engagement

Already existing studies on work engagement show a positive association between engagement and job characteristics (see Richardsen, Burke, & Martinussen, 2006; Bakker, Hakanen, Demerouti & Xanthopolou, 2007). It was claimed by Macey and Schneider (2008a) that an employer, while already having engaged employees, has to create a work environment where the employees' energy could be manifested and sustained. The idea was that jobs can be re-designed in terms of increasing skill variety, autonomy, feedback or task identity in order to increase employee work engagement. The results partially confirmed these findings. It was proven that skill variety and feedback (structure) influence employee work engagement (individual's behavior) (see Brass, 1981).

Wood and Bandura (1989) claimed that context also matters. Their results showed statistically significant impact of job characteristics on employee work engagement. As Brass (1981) explained, persons occupying centralized positions are more likely to receive more feedback from agents than persons occupying peripheral positions. Feedback increases the employees' capability to engage (see Gittell in Grant & Parker, 2009), fosters learning, increases job competence (Bakker, 2009) and stimulates the process of giving and gathering advice (see my research results).

As explained by Hackman and Oldham (1976) the task is more likely to be experienced as meaningful when it requires an employee to engage in activities that challenge or stretch his or her skills and abilities. It could be predicted that the more a job requires usage of a variety of different skills, the more the employee should try to seek these skills from coworkers and therefore reach higher centrality in learning and advice networks. In addition, it could be claimed that when the employee satisfies the need for a meaningful job, the employee is also more engaged in gaining knowledge and skills from coworkers. In short, skill variety increases employee work engagement.

Although Schaufeli et al. (2009) found that autonomy increases work engagement, my results prove findings of Christian's et al. (2011) stating that autonomy is almost not related to engagement, which implies that the practical importance of these variables may be minimal when other factors (feedback, skill variety, task significance, task identity) are taken into account. In contradiction with their findings, task significance has not been proven as an antecedent of employee work engagement. It is more likely to be engaged in work if an employee understands that the results of his or her work may have a significant impact on the well-being of others (Hackman & Oldham, 1976). It seems that the type of industry (IT sector) influences the perception of task significance and its impact on the level of employee work engagement.

In sum, the results show that job characteristics influence employee work engagement more importantly than employee centrality. However, future research should take into consideration also the influence of individual's involvement in social networks. Perhaps other types of social networks next to learning and advice are more important in the context of employee work engagement (for instance, knowledge networks). For instance, it has been proven that tasks associated with central position require also greater variety of skills and talents. If skill variety increases employee work engagement and employee centrality requires higher skill variety, it might also be the case that employee centrality influences employee work engagement via skill variety.

In their study, Cross et al. (2001) explained that people who are reputed experts in their area are more likely to fall behind in their work due to too high involvement in invisible work of giving advice and sharing knowledge with others. Additionally, Brass et al. (2004) stressed that high degree of employee centrality may lead to negative consequences, such as conflicting expectations and stress. Further research could investigate whether there is a negative correlation between high employee centrality and employee work engagement.

4.3 Control variables and other findings

To test the basic model, I included some control variables. More precisely, personality traits (extraversion, agreeableness, conscientiousness, neuroticism and intellect/imagination), age, gender and education were the variables testing the relationship between employee centrality in learning networks and employee work engagement. Although personality traits can be a predictor of employee work engagement (Hirschfeld & Thomas, 2008) and can also greatly influence employee centrality (e.g., Zhang, 2003; Mehra et al., 2001; Klein et al., 2004), they seemed not to be very influential in terms of relationship between employee centrality and employee work engagement. The results have not proved any significant correlations and impacts of control variables (see Attachment 4).

However, extraversion (while measuring out-degree centrality and advice network) positively influences employee work engagement. It is known as a fact that if someone is more extraverted (for one unit), employee work engagement increases (for 0.180, while other variables do not change). Since extraversion factor includes distinguishable components such as activity level (active, energetic), dominance (assertive, forceful, bossy), sociability (outgoing, sociable, talkative), expressiveness (adventurous, outspoken, noisy, show-off) and positive emotionality (enthusiastic, spunky) (John & Srivastava, 1999, p. 61), it is natural to correlate with employee work engagement as a factor including

energy, enthusiasm, significance, pride, challenge and individual's persistence at work; activity, initiative and responsibility (Dvir et al., 2002; Schaufeli et al., 2002).

4.4 Limitations and future research

One of the core shortcomings of my research is the fact that employee engagement has been criticized for lacking consistent definition and measurement (Masson, Royal, Agnew & Fine, 2008). In addition, when measuring employee work engagement the potential drivers of engagement might not be important for all employees. For instance, increasing autonomy at job is not likely to improve employee work engagement for those employees who already perceive enough autonomy at their work. Further on, if an organization wants to increase employee work engagement it is necessary to guarantee well-integrated and connected practices and programs focusing on developing and measuring employee work engagement (Gruman & Saks, 2011).

Some limitations could also be found regarding the questionnaire. First of all, the questionnaire is a self-report measure, thus leaving a concern about the validity of causal conclusions due to systematic response distortions (for instance, employees prefer socially desirable responding), method variance bias and psychometric properties (reliability – repeatability or dependability of measurement, and validity – extent to which an instrument measures what it purports to measure) of questionnaire scales (Razavi, 2001).

Secondly, the first part of the questionnaire measured centrality in learning and advice networks. The roster (list of all employees with assigned numbers) was given to each employee in order to guarantee anonymity. Nevertheless, after discussing with some of the respondents, they did not perceive the questionnaire as anonymous. Therefore, the response rate was lower and perhaps the answers of those who answered are not honest, but rather socially desirable. As well, there are some challenges in developing proper social network measures, such as edge deletion, node deletion, edge addition, and node addition. Accuracy of centrality measures decline with the amount of error (Borgatti, Carley & Krackhardt, 2006).

Thirdly, the respondents are not familiar with the type of the questionnaire that was used for measuring centrality in learning and advice networks. Therefore, they may had had some difficulties answering the questions, especially since it takes a lot of time to check the number of employees on one paper and then write the number on the electronic version of the questionnaire. Generally, respondents prefer short questionnaires where they can express whether they agree with a statement or not, because that type of the questionnaire can be answered quickly. Due to that fact, I wonder to what extent their answers reflect reality. For instance, there may be an employee who mentioned only two or three employees whose expertise he or she knows, although in reality, his or her out-degree centrality should be much higher.

Moreover, during the discussion with some of the respondents, I found out that the nature of work importantly influences the possibility of being centrally positioned in learning and/or advice networks. For instance, someone working in human relations department might seek advice and learn from coworkers only within his or her own department, consisting of only four employees. As a result, correlation between their centrality in learning/advice networks and employee work engagement cannot be found.

In addition to that, I did not manage to reach the desirable response rate (at least 80%). Nevertheless, I reached a 60.2% response rate, which may lead to misleading results. There were a few employees (21) who scored moderately high in in-degree centrality in learning/advice networks and scored zero in out-degree centrality. This means that there are 21 employees who are more central, but did not answer the questionnaire. Therefore, the results showing correlation (or the absence of correlation) between centrality in learning/advice networks and employee work engagement may be misleading.

Furthermore, the Mini IPIP scale measuring the personality traits was designed to provide a very short measure of the Big Five traits only in instances when longer measures are not feasible (The Mini-IPIP, 2012). Due to the fact that my questionnaire was quite long, the Mini IPIP scale was the right decision. However, the measure is useful in large-scale studies with large sample sizes in which the items must be carefully chosen. It is not meant to be a replacement for longer questionnaires, which can measure personality traits more precisely. Mini-IPIP scale cannot be used to show that Big Five personality traits do not relate to other measures or outcomes. Moreover, it cannot be used to show that an additional construct has incremental validity over personality traits (The Mini-IPIP, 2012).

Similarly, the research was conducted in only one company with 196 employees. For future research, I suggest that the questionnaire is delivered in bigger companies with approximately 250 employees in order to have a more representative sample. Moreover, there could be cross-industry and cross-cultural research conducted in order to be able to prepare a comparison analysis from different environments. Thus, we would be able to see whether the results are characteristic of only one industry/group in a country or whether the results can be generalized globally. For the same purpose, the research should be supplemented with in-depth interviews with the human resource department and chosen employees.

In addition, my research only measures information-sharing potential regarding the centrality in advice networks. Future research could take into consideration also collaboration, rigidity well-being and supportiveness (see Škerlavaj, 2007). However, I did measure the impact of four different types of centralities: I discussed in-degree centrality in learning networks, in-degree centrality in advice networks, out-degree centrality in learning networks, and out-degree centrality in advice networks. Four items were used to measure advice network (knowledge awareness, access, engagement and safety). Learning networks were measured through one item (learning).

CONCLUSION

The purpose of the master thesis was a) to determine whether there is a curvilinear relationship between employee centrality in learning networks and employee work engagement, (b) to re-test whether job characteristics (autonomy, feedback, skill variety, task identity and task significance) are correlated to employee work engagement, c) to determine whether employee centrality (in-degree and out-degree centrality in learning and advice networks) correlates with employee work engagement, and d) whether job characteristics or employee centrality have more important impact on employee work engagement.

First, in-degree centrality measures in-coming links (number of directional links pointing towards an individual) (Brass, 1995) and reflects how high someone rates in possessing

important knowledge, accessibility, safety (affability) and engagement in solving problems of others (Cross et al., 2001). In terms of learning networks, individuals with high in-degree centrality are knowledge-sharers, while in terms of advice networks, they are seen as advice-givers (Zagenczyk & Murrell, 2009). Because they possess important knowledge or information that is desired by other people, they may face overload of invisible work (that is, responding to calls and other informational requests not seen in their performance metrics) (Cross et al., 2001). However, in-degree centrality does not reflect the level of someone's engagement in his or her work. Therefore, no significant correlation was found between in-degree centrality in learning and/or advice networks and employee work engagement.

Second, out-degree centrality measures out-coming links (number of directional links pointing from an individual) (Brass, 1995) and reflects how high someone rates in seeking knowledge, advice or information. In terms of learning networks, individuals with high out-degree centrality are called knowledge-gatherers, while in terms of advice networks, they are seen as advice-receivers (Zagenczyk & Murrell, 2009). Because they want to gather information, knowledge and advice in order to perform better, they actively engage in their work. Out-degree centrality measures the level of active involvement in seeking advice and it is therefore not surprising that the results showed significant correlation between out-degree centrality in advice networks and employee work engagement.

Third, central position in learning and advice network enables employees with better access to knowledge, information (Borgatti & Halgin, 2011) and other actors (Galaskiewicz, 1979), and therefore increases knowledge-sharing opportunities (Tsai, 2001). In addition, it results in informal leadership, higher job satisfaction and participation (Mullen, Johnson, & Salas, 1991). On the other hand, high degree of centrality may lead to stress, conflict situations and interactions with unpleasant other individuals (Brass et al., 2004). Highly central employees, as a critical source of all kinds of information have to confront increased requests for sharing knowledge and skills with coworkers (Cross & Parker, 2004; Cross et al., 2001). Finally, there are some peripheral employees, who are too removed from the daily activities and represent untapped expertise. They are both less accessible and less knowledgeable regarding the work of their subordinates (Cross & Parker, 2004, p. 6; Cross et al., 2001, pp. 104, 106, 113). As a result, I predicted a curvilinear relationship (inverted U-shaped relationship) between centrality in learning and/or advice networks and employee work engagement, as employees exhibit greater engagement when their centrality in learning and/or advice networks is at intermediate levels, rather than when it is at lower or higher levels. However, the results did not confirm the hypothesis. In future research, a larger sample and a higher response rate should be reached in order to re-test my hypothesis.

Fourth, autonomy, as the "the degree to which the job provides substantial freedom, independence, and discretion to the employee in scheduling the work and in determining the procedures to be used in carrying it out" (Hackman & Oldham, 1975, p. 162), facilitates enactive mastery experiences, because it gives individuals opportunities to acquire new skills and master new responsibilities (Parker, 1998). Developing social support or changing work procedures to enhance autonomy may create a structural basis for work engagement (Bakker, Albrecht & Leiter, 2011). However, as Christian, Garza, and Slaughter (2011) discovered, autonomy is almost non-related to employee work engagement, neither can my results show any significant correlation between autonomy and employee work engagement.

In addition, Christian, Garza, and Slaughter (2011) showed that greater task significance, namely the degree to which a job has a substantial impact on the lives or work of other people (Hackman & Oldham, 1975), positively influences employee work engagement. However, my results cannot confirm their findings. Task significance, as one of the job characteristics has not been proven to be one of the factors influencing the level of employees' work engagement.

Moreover, feedback, defined as "the degree to which carrying out the work activities required by the job results in the employee obtaining direct and clear information about the effectiveness of his or her performance" (Hackman & Oldham, 1975, p. 162), has been proven to be an important antecedent of employee work engagement. My results confirm previous studies (e.g., Schaufeli & Bakker, 2004; Bakker, Albrecht, & Leiter, 2011) showing that honest performance feedback as one of the job resources increases employee work engagement (i.e., levels of vigor, dedication and absorption).

Lastly, skill variety – i.e., "the degree to which a job requires a variety of different activities in carrying out the work, which involve the use of a number of different skills and talents of the employee" (Hackman & Oldham, 1975, p. 161), has been proven to be an important antecedent of employee work engagement. If a job requires the usage of a variety of different skills, employees are more engaged in their work due to a higher level of challenge they face at work (see Bakker, Albrecht & Leiter, 2011).

Finally, I can answer my research question regarding which of the two influences employee work engagement more importantly, job characteristics or employee centrality. While job characteristics (feedback, skill variety) importantly increase employee work engagement, employee centrality has not been proven as an important antecedent of employee work engagement (except in the case of out-degree centrality in advice networks). Basically, it is more important that the employer creates work environment (e.g.,, (re)designs jobs – increases feedback, offers skill variety), in which employee work engagement can become manifested and sustained (Macey & Schneider, 2008a) than that the employee increases his or her level of centrality within advice and/or learning networks. However, for the future research, it is necessary to include the social aspects of work, since nowadays, social interaction is much more pervasive and prominent in contemporary work organizations. Therefore, it is expected that social dimensions of work contribute to motivation, performance and well-being of employees (Oldham & Hackman, 2010).

In conclusion, I would like to express that the purpose of the master thesis was to contribute to the management literature by studying work engagement and the employee learning and advice networks by combining organizational science and social network analysis and to determine whether there is a cross-section between these two areas of research. The results of the research showed that there is significant correlation between a) out-degree centrality in advice networks and employee work engagement, b) autonomy and employee work engagement, and c) skill variety and employee work engagement. It has been proven that job characteristics are a more important antecedent of employee work engagement than employee centrality in learning and advice networks. However, future research should further investigate the role of social networks for employees' behavior and organizational outcome.

SUMMARY IN SLOVENE LANGUAGE

Magistrsko delo obravnava koncept zavzetosti zaposlenega za delo. Ne le zadovoljen, temveč za delo zavzet zaposlen, je ključnega pomena za uspešnost posamezne organizacije oziroma podjetja. Še več, za delo zavzet zaposlen lahko pomeni konkurenčno prednost podjetja (Gruman & Saks, 2011). Tovrstni zaposleni so namreč bolj kreativni, produktivni, proaktivni ter polni energije. Delu so predani in nadurno delo jim ni ovira (Sonnentag, 2003; Bakker, 2011).

Prav zato je za organizacije oziroma podjetja ključnega pomena, da razumejo, kateri so dejavniki, ki spodbujajo zavzetost zaposlenega za delo. Magistrsko delo obravnava dva (potencialna) dejavnika spodbujanja zavzetosti zaposlenega za delo: lastnosti delovnega mesta ter centralnost zaposlenega v omrežjih učenja in nasvetov. Namen dela je ugotoviti, kateri od omenjenih dejavnikov igra pomembnejšo vlogo v opisanem kontekstu.

Zavzetost zaposlenega (angl. *employee engagement*) je razmeroma nov koncept v organizacijski znanosti (Macey & Schneider, 2008b). V zadnjem desetletju je postal osrednji koncept svetovalnih podjetij (Gruman & Saks, 2011; Saks, 2006). Obstaja več definicij koncepta, vendar pa prav vse združujejo idejo, da je zavzetost zaposlenega zaželeno stanje (organizacije in posameznika), ki vključuje predanost, vključenost, energijo, strast, navdušenost ter usmerjeno vlaganje truda v delo (Macey & Schneider, 2008b).

V magistrski nalogi uporabljam kombinacijo dveh definicij. Prvič, zavzetost zaposlenega za delo razumem kot pozitivno, z delom povezano stanje posameznika, za katerega je značilna predanost (angl. *dedication*), zatopljenost (angl. *absorption*) in živahnost (angl. *vigor*). Predanost predstavlja občutek pomembnosti, navdušenosti in ponosa. Zaznamuje delo, ki zaposlenemu predstavlja izziv. Zatopljenost opisuje visoko stopnjo koncentracije, in veselje zaposlenega ob delu. Zaposleni zaradi zatopljenosti v delo navadno izgubi občutek za čas. Živahnost se nanaša na visoko raven energije ob delu, željo po investiranju v delo ter vztrajnost (tudi v primeru težkih nalog in stresnih situacij) (Schaufeli et al., 2002; Salanova, Agut, & Peiro, 2005). Drugič, zavzetost zaposlenega za delo razumem kot aktivno zavzetost, ki jo zaznamujejo visoka raven aktivnosti, iniciativnosti in odgovornosti posameznika (Dvir et al., 2002).

Med ključne dejavnike spodbujanja zavzetosti zaposlenega za delo štejemo psihološko smiselnost (angl. *psychological meaningfulness*; tj. občutek pomembnosti, dragocenosti in povračila investicije v samega sebe), psihološko varnost (angl. *psychological safety;* tj. občutek varnosti, zaupanja, predvidljivosti), psihološko razpoložljivost (angl. *psychological availability;* občutek sposobnosti vlaganja fizičnih, intelektualnih in čustvenih energij v delo) (Kahn, 1990), lastnosti delovnega mesta (stopnja neodvisnosti, celovitost dela, raznolikost dela, pomembnost dela, povratne informacije o uspešnosti opravljanja dela), nagrade in priznanja (glej Idaszak & Drasgow, 1987). Zavzetost zaposlenega za delo spodbuja tudi percepcija zaposlenega o stopnji podpore, ki mu jo nudita organizacija in nadrejeni. Pomemben dejavnik spodbujanja zavzetosti zaposlenega za delo pa je tudi percepcija posameznika o pravičnosti sprejemanja odločitev in razdelitve virov med zaposlenimi (Saks, 2006).

Za razumevanje koncepta zavzetosti zaposlenega za delo pa niso pomembni le dejavniki spodbujanja, temveč tudi posledice. Večja zavzetost zaposlenih pozitivno vpliva na

organizacijsko vedenje posameznika (Maslach, Schaufeli, & Bakker, 2001).Večja kot je zavzetost zaposlenega za delo, večja je njegova predanost organizaciji in s tem je večja tudi njegova uspešnost pri delu. Bolj zavzet zaposlen je navadno bolj zadovoljen z delom, bolj zdrav in obenem v manjši meri nagnjen k prekinitvi delovnega razmerja (Halbesleben, 2010; Sonnentag, 2003; Bakker, 2004).

Kot omenjeno, v magistrskem delu proučujem dva dejavnika spodbujanja zavzetosti zaposlenega za delo: a) centralnost posameznika v omrežju učenja in nasvetov ter b) lastnosti delovnega mesta. Še več, proučujem kateri od navedenih dejavnikov ima večji vpliv na zavzetost zaposlenega za delo.

Centralnost posameznika razumem kot število direktnih vezi (preko katerih se prenaša znanje in nasveti) med zaposlenimi v izbranem podjetju (glej Freeman, 1979). Centralnost zaposlenega pojasni, do kolikšne mere se posameznik nahaja v središču izbranega omrežja (Monge & Contractor, 2003). V magistrskem delu proučujem vpliv štirih tipov centralnosti zaposlenega: vhodna (angl. *in-degree*) centralnost zaposlenega v omrežju učenja (angl. *learning network*), izhodna (angl. *out-degree*) centralnost zaposlenega v omrežju učenja, vhodna centralnost zaposlenega v omrežju nasvetov (angl. *advice network*) ter izhodna centralnost zaposlenega v omrežju nasvetov.

Vhodna centralnost zaposlenega v omrežju se nanaša na število direktnih povezav od drugih akterjev do izbranega akterja (vhodne povezave ali število povezav, ki so usmerjene v izbranega posameznika). Izhodna centralnost zaposlenega v omrežju se nanaša na število direktnih povezav od akterja do drugih akterjev (izhodne povezave ali število povezav, usmerjenih iz posameznika v druge posameznike) (Brass; 1995; Monge & Contractor, 2003).

Vhodna in izhodna centralnost zaposlenega v omrežju je najpomembnejša mera komunikacije med posamezniki v izbranem omrežju (Freeman, 1979; Barnett et al., 2010). Opisani meri centralnosti sta v mojem magistrskem delu najbolj primeren izbor mere, saj proučujem dve vrsti komunikacije (učenje od sodelavca – omrežje učenja ter iskanje nasvetov pri sodelavcu – omrežje nasvetov).

Teorija omrežij učenja pojasnjuje, da je učenje aktivnost posameznika, ki se uči v interakciji z okoljem, v katerem deluje (Van der Krogt, 1998). Učenje je sprememba v obnašanju ali uspešnosti in je rezultat izkušenj (Daft & Marcic, 2011). Zaradi hitrih sprememb v globalnem okolju, morajo zaposleni ves čas pridobivati nova znanja in veščine. Kljub temu, da sodobna tehnologija ponuja nešteto možnosti za pridobivanje informacij, znanja in nasvetov, raziskave kažejo, da se ljudje še vedno v največji meri obračamo na sodelavce, ki jih poznamo in jim zaupamo (Cross & Parker, 2004).

Omrežja učenja nastajajo postopoma in so rezultat aktivnosti posameznikov (Van der Krogt, 1998). Prav v vsaki organizaciji se zaposleni učijo in zato lahko trdimo, da znotraj vsake organizacije obstaja omrežje učenja. Člani omrežja tvorijo grozde, znotraj katerih je učenje še intenzivnejše. Navadno učenje poteka v večji meri med ljudmi istega spola, starosti in geografske lokacije (Škerlavaj, 2007; Škerlavaj et al., 2010).

Omrežja nasvetov lahko pojasnimo preko štirih logičnih zaporednih korakov. Če zaposleni potrebuje nasvet, mora najprej vedeti, na koga se lahko obrne. Povedano drugače, zaposleni mora poznati in razumeti znanje in veščine sodelavcev, če želi najti osebo, ki mu

bo pomagala pri reševanju njegovega problema. Bolj ko posameznik pozna znanje in veščine sodelavcev, lažje se sooča z izzivi, priložnostmi ali problemi na delovnem mestu (Cross et al., 2001; Cross & Parker, 2004; Cross & Cummings, 2004).

Posameznik, ki je seznanjen z znanji in veščinami ostalih članov omrežja, lahko hitreje in bolj učinkovito reagira v primeru, ko njegovo delo zahteva drugačno znanje. Zavedati se, kakšno znanje imajo sodelavci pa vendarle ni dovolj. Pomembno je, da ima sodelavec z želenim znanjem in veščinami tudi čas, da se bo zavzel za reševanje tvojega problema. Navadno potrebujemo pomoč in nasvet takoj. Problem nastane, ko izbrani zaposleni zaradi svojega preobsežnega dela nima časa za deljenje nasvetov in znanja s svojimi sodelavci (Cross et al., 2001; Cross & Parker, 2004; Cross & Cummings, 2004).

Četudi najdemo zaposlenega, ki ima znanje, ki ga potrebujemo in ima zaposleni tudi čas, to ne zadostuje. Zaposleni se mora aktivno zavzeti za reševanje tvojega problema. Najprej mora poskušati razumeti tvoj problem, nato pa s svojim znanjem in veščinami aktivno sodelovati pri reševanju tvojega problema. To ne pomeni, da problem reši izbrani zaposleni, temveč da te usmeri in pouči o stvareh, ki so ključne za rešitev tvojega problema (Cross et al., 2001; Cross & Parker, 2004; Cross & Cummings, 2004).

Nazadnje pa je pomembno tudi, da je izbrani zaposleni z znanjem, veščinami, časom in zadostno mero zavzetosti, tudi prijetna oseba. Če nam je osebo neprijetno vprašati za nasvet, je manjša verjetnost, da bomo do te osebe dejansko pristopili. Samo v primeru, ko zadostimo vsem štirim kriterijem – zavedanje o znanju, razumljiv časovni okvir, zavzetost ter prijetnost/dostopnost izbranega zaposlenega, lahko govorimo o vzpostavljenem omrežju nasvetov (Cross et al., 2001; Cross & Parker, 2004; Cross & Cummings, 2004).

Na učenje (v omrežjih učenja) in deljenje nasvetov (v omrežjih nasvetov) pa bistveno vpliva okolje, v katerem omenjena procesa potekata (glej Wood & Bandura, 1989). Povedano drugače, lastnosti delovnega mesta so prav gotovo eden od dejavnikov okolja, ki pomembno vplivajo na posameznikovo organizacijsko vedenje (na primer, njegovo zavzetost za delo). V magistrskem delu zato uporabljam tako imenovani model lastnosti delovnega mesta (Hackman & Oldham, 1975), ki kot ključnih pet dejavnikov šteje stopnjo neodvisnosti (angl. *autonomy*), celovitost dela (angl. *task identity*), raznolikost dela (angl. *skill variety*), pomembnost dela (angl. *task significance*), povratne informacije o uspešnosti opravljanja dela (angl. *feedback*).

Neodvisnost pri delu opisuje, do kolikšne mere delovno mesto zaposlenemu omogoča samostojno odločanje o tem, kako delo opraviti. Pojasni, do kolikšne mere posameznik lahko sam oblikuje svoj urnik in način dela. Celovitost dela pojasni, ali je delo zaposlenega zaključena celota, ki ima jasen začetek in konec, ali pa je le majhen del skupne celote dela, ki je dokončan s strani drugih oseb ali avtomatskih naprav. Navadno so ljudje pripisujejo več pomena delu, ki ga opravijo v celoti. Raznolikost dela se nanaša na mero, do katere delo od zaposlenega zahteva opravljanje različnih stvari in uporabo palete veščin in nadarjenosti. Več veščin in znanj posameznik potrebuje za opravljanje dela, večji pomen pripisuje delu. Pomembnost dela odgovarja na vprašanje, ali rezultati dela pomembno vplivajo na življenje in blagor drugih ljudi. Povratne informacije pa pojasnijo, ali delo samo zaposlenemu že zagotovi občutek, kako dobro to delo opravlja – poleg povratnih informacij sodelavcev in nadrejenih (Idaszak & Drasgow, 1987; Hackman & Oldham, 1975; Hackman & Oldham, 1976).

Nenazadnje pa na zavzetost zaposlenega za delo vplivajo tudi posameznikove osebnostne lastnosti. Osebnostne lastnosti zato v svojem modelu (ki meri vplivanje centralnosti zaposlenega in lastnosti delovnega mesta na zavzetost zaposlenega za delo) uporabljam kot kontrolne spremenljivke. Za razumevanje koncepta uporabljam tako imenovani model velikih pet, ki kot ključnih pet osebnostnih lastnosti šteje ekstravertnost, sprejemljivost, vestnost, nevroticizem ter odprtost za izkušnje (glej Norman, 1963; Goldberg, 1990; Peabody & Goldberg, 1989; McCrae & Costa, 1987; John & Srivastava, 1999).

Ekstravertirani ljudje so polni energije in navdušenja. So družabni in so srce vsake zabave. Lahko pristopijo do tujcev in se hitro vključijo v družbo. V timih so deležni večje pozornosti. So dominantni, komunikativni in lahko tudi postavljaški. Ljudje, ki želijo biti sprejemljivi, čutijo čustva drugih, se zanimajo za probleme drugih ljudi in s tem gradijo na zaupanju do drugih ljudi. Sprejemljivost pomeni več kot koncept družabnosti. Vestnost zaznamuje zagon in želja po doseganju ciljev in rezultatov. Ljudje, ki so vestni, vedno želijo doseči več, tj. cilj z večjim pomenom. Stopnja nevroticizma pojasni, kako se posameznik sooča s težavami in občutki žalosti, depresije in sovražnosti. Ljudje, ki so odprti za nove izkušnje, stvari, ljudi in situacije so radovedni. Navadno imajo tudi bujno domišljijo (John & Srivastava, 1999; John et al., n.d.; Klein et al., 2004; Barrick & Mount, 1991).

Predstavljene koncepte v svojem magistrskem delu povežem v tri osnovne hipoteze: a) vhodna in izhodna centralnost zaposlenega v omrežjih učenja in nasvetov pozitivno vpliva na zavzetost zaposlenega za delo, ter b) lastnosti delovnega mesta pozitivno vplivajo na zavzetost zaposlenega za delo, c) odnos med centralnostjo zaposlenega in zavzetostjo zaposlenega za delo je kurvilinearen (narobe obrnjena črka U),

Vhodna centralnost meri število vhodnih vezi (število sodelavcev, ki se učijo od nas oziroma od nas pridobivajo nasvete) (Brass, 1995; Hoppe & Reinelt, 2010). Prav zato posameznike z visoko stopnjo vhodne centralnosti lahko označimo kot posameznike, ki dajejo nasvete oziroma delijo svoje znanje (Zagenczyk & Murrell, 2009). Gre za posameznike, ki imajo veliko znanj in veščin, ki jih potrebujejo sodelavci. Še več, sodelavci poznajo njihove veščine. Posamezniki z visoko stopnjo vhodne centralnosti so dostopni (časovno in v smislu prijetnosti) ter se aktivno zavzamejo za reševanje problemov sodelavcev (glej Cross & Parker, 2004). Zaradi znanja in veščin so ključni akterji v omrežjih učenja in nasvetov (Boone & Ganeshan, 2008).

Izhodna centralnost meri število izhodnih vezi (število sodelavcev, od katerih se učimo in pridobivamo nasvete) (Brass, 1995; Hoppe & Reinelt, 2010). Prav zato posameznike z visoko stopnjo izhodne centralnosti lahko označimo kot posameznike, ki iščejo nasvete in stremijo k učenju od sodelavcev (Zagenczyk & Murrell, 2009). Gre torej za posameznike, ki so proaktivni. Aktivno iščejo znanje, informacije in nasvete. Menim, da so to ljudje, ki beležijo višjo stopnjo predanosti, zatopljenosti, živahnosti, aktivnosti, iniciativnosti in odgovornost pri delu (glej Schaufeli et al., 2002; Dvir et al., 2002).

Na temelju opisanega lahko predpostavljamo pozitiven odnos med a) vhodno centralnostjo v omrežjih učenja in zavzetostjo zaposlenega za delo, b) vhodno centralnostjo v omrežjih nasvetov in zavzetostjo zaposlenega za delo, c) izhodno centralnostjo v omrežjih učenja in zavzetostjo zaposlenega za delo, ter č) izhodno centralnostjo v omrežjih nasvetov in zavzetostjo zaposlenega za delo (hipoteza 1).

Visoko centralnost v omrežjih znanja in učenja navadno vidimo kot pozitivno. Centralnost v omrežju učenja ali nasvetov posamezniku namreč omogoča boljši dostop do znanja in informacij (Borgatti & Halgin, 2011), preostalih akterjev v omrežju (Galaskiewicz, 1979) in tako omogoča tudi več priložnosti za deljenje znanja (Tsai, 2001). Višja stopnja centralnosti v omrežjih navadno vodi tudi v neformalno vodenje ter večje zadovoljstvo z delom (Mullen, Johnson, & Salas, 1991).

Vendarle pa visoka stopnja centralnosti zaposlenega v omrežjih lahko vodi tudi v stres in konfliktne situacije (Brass et al., 2004). Centralni zaposleni so namreč lahko hitro preobremenjeni zaradi prevelike količine tako imenovanega nevidnega dela (deljenje nasvetov, učenje sodelavcev, aktivno zavzemanje za reševanje problemov drugih) (Cross & Parker, 2004; Cross et al., 2001). Prevelika vključenost v procese učenja in deljenja nasvetov tako lahko vodi celo v nezavzetost zaposlenega za delo.

Poleg preobremenjenih centralnih posameznikov, pa so v vsakem podjetju tudi periferni zaposleni. To so tisti zaposleni, ki zaradi lastne odločitve ali pa narave dela, niso intenzivno vključeni v procese učenja ali deljenja znanja. Na temelju opisanega lahko predpostavimo kurvilinearno (narobe obrnjeno črko U) povezanost med centralnostjo zaposlenega v omrežjih učenja in nasvetov ter zavzetostjo posameznika za delo (hipoteza 2).

Macey in Schneider (2008a) trdita, da delodajalec lahko zaposli posameznika, za katerega lahko z večjo verjetnostjo trdimo, da bo bolj zavzet za delo. Vendar to ni dovolj. Ko takšnega posameznika zaposlimo, mu moramo zagotoviti okolje, v katerem bo lahko vzdrževal svojo stopnjo zavzetosti. Prav zato je pomembno, kako delodajalec (pre)oblikuje delovna mesta. Dosedanje raziskave namreč kažejo, da večja stopnja neodvisnosti, večja količina povratnih informacij, večja pomembnost in raznolikost dela pozitivno vplivajo na zavzetost zaposlenega za delo (glej Schaufeli & Bakker, 2004; Schaufeli et al., 2009; Bakker, 2009; Christian et al., 2011). V svojem magistrskem delu preverjam, ali lahko potrdim dosedanje ugotovitve na vzorcu izbranega podjetja. Še več, primerjam ali lastnosti delovnega mesta vplivajo na zavzetost zaposlenega za delo bolj ali manj v primerjavi s centralnostjo posameznika v omrežju učenja in nasvetov.

Hipoteze in raziskovalno vprašanje sem preverila na vzorcu 196 zaposlenih izbranega slovenskega podjetja. Gre za 23 let staro podjetje iz sektorja informacijske tehnologije. Podjetje temelji na inovativnosti, zaposluje mlade (povprečna starost 33,5 let) in izobražene (kar 78,9% zaposlenih ima višjo izobrazbo ali več). Od zaposlenih se zaradi narave dela ves čas pričakuje uporaba široke palete veščin in znanj. Vsi zaposleni so prejeli anketni vprašalnik in 60,2% zaposlenih je vprašalnik rešilo v celoti.

Vprašalnik je sestavljen iz petih delov. Prvi del vprašalnika se nanaša na merjenje centralnosti zaposlenega v omrežjih učenja in nasvetov. Štiri trditve merijo centralnost zaposlenega v omrežjih nasvetov (Poznam znanje in veščine, ki jih ima ta oseba; Ko potrebujem informacijo ali nasvet, mi je ta oseba običajno dostopna (na razpolago) v okviru razumnega časa, da mi pomaga rešiti moj problem; Če to osebo prosim za pomoč, sem lahko prepričan/a, da se bo ta oseba aktivno zavzela za reševanje problema skupaj z menoj; Prosim, določite, do kolikšne mere vam je prijetno vprašati to osebo za informacijo ali nasvet glede z delom povezanih tematik.).

Z zadnjim vprašanjem prvega dela vprašalnika pa sem izmerila centralnost posameznika v omrežju učenja (Od katerih ljudi v vašem podjetju se največ učite?) (glej Cross & Parker, 2004; Škerlavaj, 2007). Vsak anketiranec je lahko pri vsakem od vprašanj navedel poljubno število sodelavcev (z omejitvijo, da lahko zapiše le tiste, za katere trditev velja ali popolnoma velja). Anonimnost se je zagotovila s šifrantom. Vhodno in izhodno centralnost v obeh vrstah omrežij za vsakega anketiranca sem izračunala s pomočjo programa NodeXL.

Drugi del vprašalnika se nanaša na zavzetost zaposlenega za delo. Za merjenje osrednjega koncepta magistrske naloge sem uporabila tako imenovano *'Utrecht Work Engagement Scale'* (UWES; Schaufeli et al., 2002). Koncept zavzetosti zaposlenega za delo je sestavljen iz treh delov: predanosti, zatopljenosti in živahnosti. Vsakega od treh delov merijo tri trditve (živahnost: Pri svojem delu sem poln/a energije. Pri svojem delu se počutim živahnega/o. Ko zjutraj vstanem, grem rad/a v službo.; zatopljenost: Vesel/a sem, ko delam intenzivno. Zatopljen/a sem v svoje delo. Ko delam, pozabim na ostale stvari.; predanost: Sem navdušen/a nad svojim delom. Moje delo me navdihuje. Ponosen/a sem na delo, ki ga opravljam.).

Tretji del vprašalnika s pomočjo tako imenovane *'Revised Job Diagnostic Survey'* (Idaszak & Drasgow, 1987) meri značilnosti delovnega mesta. Pet vprašanj (opisana zgoraj) in deset trditev preverja, kolikšna je stopnja neodvisnosti (Z lastno pobudo in presojo lahko odločam o izvajanju svojega dela. V svoji službi imam precejšnje možnosti, da se neodvisno in svobodno odločim, kako bom opravil/a delo.), celovitost dela (Delo je oblikovano tako, da ga lahko opravim v celoti, od samega začetka do konca. Delovno mesto mi ponuja možnost, da v celoti dokončam posamezne dele celotnega delovnega procesa, ki sem ga začel/a.), raznolikost dela (Moje delovno mesto zahteva uporabo številnih kompleksnih veščin. Delovno mesto mi omogoča uporabo številnih kompleksnih veščin.), pomembnost dela (S tem, kako dobro opravim delo, lahko močno vplivam na druge ljudi. Moja služba je zelo pomembna v širšem (družbenem) smislu); ter koliko povratnih informacij o uspešnosti opravljanja dela prejme zaposleni (Opravljanje dela, ki ga zahteva moja služba, mi zagotavlja veliko priložnosti, da ugotovim, kako dobro delo opravljam. Ko končam s svojim delom, vem, ali sem delo opravil/a dobro.).

Četrti del vprašalnika s pomočjo tako imenovane *'Mini-IPIP Scale'* (Donnellan et al., 2006) meri osebnostne lastnosti: ekstravertnost (Sem srce vsake zabave. Ne govorim veliko. Na zabavah se pogovarjam z veliko različnimi ljudmi. Držim se v ozadju, se ne izpostavljam.), sprejemljivost (Sočustvujem z drugimi. Ne zanimajo me problemi drugih ljudi. Občutim čustva drugih. Drugi ljudje me resnično ne zanimajo.), vestnost (Gospodinjska dela opravim takoj. Pogosto pozabim vrniti stvari na svoje mesto. Rad/a imam red. Imam/delam nered.), nevroticizem (Hitro menjam razpoloženje. Večino časa sem sproščen/a. Hitro se razjezim. Sem redko potrt/a.) ter odprtost za izkušnje (Imam bujno domišljijo. Ne zanimajo me abstraktne ideje. Težko razumem abstraktne ideje. Nimam dobre domišljije.). Zadnji del vprašalnika se obravnava demografske podatke (spol, starost, izobrazbo, število let delovnih izkušenj).

Rezultati analize so pokazali, da so lastnosti delovnega mesta bolj pomemben dejavnik spodbujanja zavzetosti zaposlenega za delo kot centralnost zaposlenega v omrežju učenja ali/in omrežju nasvetov. Že Cowardin-Lee in Soyalp (2011) v svoji raziskavi nista odkrila statistično značilne povezanosti med centralnostjo zaposlenega (v omrežjih dostopa, reševanja problema, reševanja konflikta ter omrežjih neotipljivega znanja) in zavzetostjo

zaposlenega. S svojimi rezultati lahko dodam, da statistično značilne povezanosti ni niti med izhodno centralnostjo v omrežjih učenja ter zavzetostjo zaposlenega za delo, izhodno centralnostjo v omrežjih nasvetov ter zavzetostjo zaposlenega za delo ter vhodno centralnostjo v omrežjih učenja ter zavzetostjo zaposlenega za delo.

Vendarle pa lahko potrdim del prve hipoteze. Rezultati so namreč pokazali statistično značilno pozitivno in močno povezanost med izhodno centralnostjo v omrežjih nasvetov ter zavzetostjo zaposlenega za delo. Natančneje, če se izhodna centralnost v omrežjih nasvetov poveča za eno enoto, se zavzetost zaposlenega za delo v povprečju poveča za 0,075 (pri čemer ostali dejavniki – ostale lastnosti delovnega mesta, osebnostne lastnosti ter demografski dejavniki, ostajajo nespremenjeni). Zaključim lahko, da posamezniki, ki so le vir informacij, znanja in nasvetov (vhodno centralni) še niso nujno tudi zavzeti zaposleni. Na drugi strani pa se je pokazalo, da so izhodno centralni zaposleni (torej tisti, ki iščejo nasvete) kot proaktivni posamezniki tudi bolj zavzeti za delo.

Kljub temu, da a) periferni zaposleni niso intenzivno vključeni v procese učenja ali deljenja znanja, na podlagi pridobljenih podatkov, b) srednje visoka centralnost v omrežju učenja ali nasvetov posamezniku omogoča boljši dostop do znanja in informacij (Borgatti & Halgin, 2011), preostalih akterjev v omrežju (Galaskiewicz, 1979) in tako povečuje možnosti večje zavzetosti zaposlenega, ter c) lahko previsoka stopnja centralnosti zaposlenega v omrežjih vodi v stres in konfliktne situacije (Brass et al., 2004; Cross & Parker, 2004; Cross et al., 2001) na podlagi pridobljenih podatkov ne morem potrditi, da med centralnostjo zaposlenega in zavzetostjo zaposlenega za delo obstaja kurvilinearna (narobe obrnjena črka U) povezanost med centralnostjo zaposlenega v omrežjih učenja in nasvetov ter zavzetostjo posameznika za delo.

Prav tako ne morem potrditi, da stopnja neodvisnosti in pomembnosti dela pomembno vplivata na zavzetost zaposlenega za delo. Tip industrije (informacijska tehnologija) in s tem povezana narava dela očitno vplivata na percepcijo zaposlenih o tem, kako pomembna je stopnja odvisnosti in pomembnost dela za širšo družbo. Vendarle pa so rezultati potrdili, da sta raznolikost dela ter povratne informacije o uspešnosti dela pomembna dejavnika spodbujanja zavzetosti zaposlenega za delo.

Rezultati so namreč pokazali statistično značilno pozitivno in močno povezanost med povratnimi informacijami o uspešnosti dela ter zavzetostjo zaposlenega za delo. Natančneje, če se povratne informacije o uspešnosti dela povečajo za eno enoto, se zavzetost zaposlenega za delo v povprečju poveča za 0,240 (pri čemer ostali dejavniki – ostale lastnosti delovnega mesta, osebnostne lastnosti ter demografski dejavniki, ostajajo nespremenjeni). Zaposleni v izbranem podjetju torej velik pomen pripisujejo povratnim informacijam, na podlagi katerih vedo, ali so pri svojem delu uspešni ali ne. Več kot dobijo povratnih informacij, bolj zavzeti so za delo.

Rezultati so pokazali tudi statistično značilno pozitivno in močno povezanost med raznolikostjo dela ter zavzetostjo zaposlenega za delo. Natančneje, če se povratne informacije o uspešnosti dela povečajo za eno enoto, se zavzetost zaposlenega za delo v povprečju poveča za 0,243 (pri čemer ostali dejavniki – ostale lastnosti delovnega mesta, osebnostne lastnosti ter demografski dejavniki, ostajajo nespremenjeni). Zaposleni v izbranem podjetju velik pomen pripisujejo tudi možnosti uporabe palete znanj in veščin (kar ni presenetljivo glede na povprečno starost in izobrazbeno strukturo vzorca). Več znanj in različnih veščin zahteva delo, bolj se za delo tudi zavzamejo.

Predstavljene rezultate naj bralec bere v luči raziskovalnih omejitev. Ena izmed pomembnih omejitev je kritika osnovnega koncepta zavzetosti zaposlenega. Koncept namreč ni enotno definiran, zato tudi merske lestvice za merjenje koncepta niso enotne (Masson et al., 2008). Ko merimo zavzetost zaposlenega za delo, moramo upoštevati, da za vse zaposlene vse lastnosti delovnega mesta ne bodo enako pomembne. Tako na primer nekdo, ki ima že zadostno mero svobode oblikovanja delovnega urnika, neodvisnosti ne bo percepiral kot pomembne. Večja neodvisnost torej ne bo povečala njegove zavzetosti za delo (Gruman & Saks, 2011).

Vprašalnik ima tudi nekaj omejitev. Gre namreč za vprašalnik, ki nudi obliko samo-poročanja, ki pa je lahko subjektivno (družbeno zaželeni odgovori namesto realna slika) (Razavi, 2001). Oblika vprašalnika je bila zaposlenim nekoliko nenavadna. Za merjenje centralnosti so namreč morali uporabljati šifrant, tj. seznam zaposlenih s pripadajočimi naključno izbranimi števili. Mnogi zaposleni so dvomili v popolno anonimnost vprašalnika. Nekateri zaposleni so v pogovoru omenili, da narava njihovega dela ne omogoča visoke centralnosti v omrežjih učenja ali nasvetov. Tako na primer nekdo, ki dela v kadrovski službi navadno išče nasvete in informacije pri svojih (le treh) sodelavcih.

Pomembna omejitev raziskave je tudi stopnja odzivnosti (60,2%). Zaradi prenizke stopnje odzivnosti so se v bazi podatkov znašli številni zaposleni, ki so imeli visoko izhodno centralnost v omrežjih učenja in nasvetov (tj. velikokrat so jih navedli drugi zaposleni), na vprašalnik pa niso odgovarjali. Obenem sem raziskavo opravila v podjetju z relativno majhnim številom zaposlenih (196). Del vprašalnika, ki meri osebnostne lastnosti pa je bolj primeren za večje vzorce. Tako imenovana *'Mini-IPIP scale'* namreč ne more nadomestiti daljših verzij vprašalnika, ki bistveno bolj podrobno merijo osebnostne lastnosti anketiranca.

Namen magistrskega dela je bil prispevati k literaturi, ki se ukvarja z managementom. Proučila sem vpliv omrežij znanja in nasvetov na zavzetost zaposlenega za delo in tako povezala dve področji raziskovanja: delovanje organizacij ter družbena omrežja. Rezultati so pokazali pozitivno povezanost med a) izhodno centralnostjo zaposlenega v omrežju nasvetov in zavzetostjo zaposlenega za delo, b) povratnimi informacijami o uspešnosti dela in zavzetostjo zaposlenega za delo, ter c) raznolikostjo dela in zavzetostjo zaposlenega za delo. Na izbranem vzorcu lahko potrdim, da lastnosti delovnega mesta bolj pomembno vplivajo na zavzetost zaposlenega za delo, kakor centralnost zaposlenega v omrežjih učenja in nasvetov. Kljub temu za prihodnje raziskave priporočam nadaljnje raziskovanje preseka družbenih omrežij in vedenja posameznika.

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APPENDIXES

LIST OF APPENDIXES

Appendix 1: English version of the questionnaire

Please, write down the number that was assigned to you (see the list of all employees).

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PART 1: CENTRALITY

PART 1: Centrality in learning networks
The statements below are describing the centrality in learning networks. From the roster please choose the number of your coworker and write it in the place below. If you want to write down more than ten coworkers, please choose "Other."

I understand this person's **knowledge and skills**. This does not mean that I have these skills or am knowledgeable in these domains but that I understand which skills this person has and the domains they are knowledgeable in.
You are allowed to write down as many coworkers as you wish, but please, write down only those coworkers, for which this statement is true or completely true.

Other:

When I need **information or advice**, this person is generally **accessible** to me within a sufficient amount of time to help me solve my problem.
You are allowed to write down as many coworkers as you wish, but please, write down only those coworkers, for which this statement is true or completely true.

Other:

If I ask this person **for help**, I can feel confident that they will **actively engage** in problem solving with me.
You are allowed to write down as many coworkers as you wish, but please, write down only those coworkers, for which this statement is true or completely true.

Other:

Please indicate the extent to which you feel personally **comfortable asking** this person for information or advice on work-related topics.
You are allowed to write down as many coworkers as you wish, but please, write down only those coworkers, who you are <u>most comfortable</u> to ask for information or advice.

Other:

Who are the people in your organization you **learn the most from**?
You are allowed to write down as many coworkers as you wish, but please, write down only those coworkers, who you learn the most from.

Other:

~

<table>
<tr><td colspan="2">PART TWO: Employee work engagement
The following 9 statements describe how you feel at work. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, cross the "0" (zero) in the space after the statement. If you have had this feeling, indicate how often you felt it by crossing the number (from 1 to 6) that best describes how frequently you feel that way.</td></tr>
</table>

Never 0 Never	Almost Never 1 A few times a year or less	Rarely 2 Once a month or less	Sometimes 3 A few times a month	Often 4 Once a week	Very Often 5 A few times a week	Always 6 Every day

	Never						Always
1. At my work, I feel bursting with energy.	0	1	2	3	4	5	6
2. At my job, I feel strong and vigorous.	0	1	2	3	4	5	6
3. I am enthusiastic about my job.	0	1	2	3	4	5	6
4. My job inspires me.	0	1	2	3	4	5	6
5. When I get up in the morning, I feel like going to work.	0	1	2	3	4	5	6
6. I feel happy when I am working intensely.	0	1	2	3	4	5	6
7. I am proud of the work that I do.	0	1	2	3	4	5	6
8. I am immersed in my work.	0	1	2	3	4	5	6
9. I get carried away when I am working.	0	1	2	3	4	5	6

~

1. How much *autonomy* is there in your job? That is, to what extent does your job permit you to decide *on your own* how to go about doing the work?

1	2	3	4	5	6	7
Very little; the jobs gives me alomost no personal 'say' about how and when the work is done.			Moderate autonomy; many things are standardised and not under my control, but I can make some decisions about the work.			Very much; the job gives me almost complete responsibility for deciding how and when the work is done.

2. To what extent does your job involve doing a '*whole*' and *identifiable piece of work*?That is, is the job a complete piece of work that has an obvious beginning and end? Or is it only a small *part* of the overall piece of work, which is finished by other people or buy automatic machines?

1	2	3	4	5	6	7
My job is only a tiny part of the overall piece of work; the results of my activities cannot be seen in the final product or service.			My job is a moderate-sized 'chunk' of the overall piece of work; my own contribution can be seen in the final outcome.			My job involves doing the whole piece of work, from start to finish; the results of my activities are easily seen in the final product or service.

3. How much *variety* is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?

1	2	3	4	5	6	7
Very little; the job requires me to do the same routine things over and over			Moderate variety.			Very much; the job requires me to do many different things, using a number of different skills and talents.

again.

4. In general, *how significant or important* is your job? That is, are the results of your work likely to significantly affect the lives or well-being of other people?

1	2	3	4	5	6	7
Not very significant; the outcomes of my work are not likely to have important effects on other people.			Moderately significant.			Highly significant; the outcomes o my work can affect other people in very important ways.

5. To what extent does *doing the job* itself provide you with information about your work performance? That is, does the actual *work itself* provide clues about how wellyou are doing-aside from any 'feedback' co-workers or supervisors may provide?

1	2	3	4	5	6	7
Very little; the job itself is set up so that I could work forever without finding out how ell I am doing.			Moderately; sometimes doing the job provides 'feedback' to me; sometimes it does not.			Very much; the job is set up so that I get almost constant 'feedback' as I work about how well I am doing.

~

Listed below are a number of statements which could be used to describe a job. Please indicate 'how accurate is the statement in describing your job?'.

1	2	3	4	5	6	7
Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain	Slightly Accurate	Mostly Accurate	Very Accurate

1. The job requires me to use a number complex or high-level skills.	1	2	3	4	5	6	7
2. The job is arranged so that I can do an entire piece of work from beginning to end.	1	2	3	4	5	6	7
3. Just doing the work required by the job provides many changes for me to figure out how well I am doing.	1	2	3	4	5	6	7
4. The job allows me to use a number of complex or high-level skills.	1	2	3	4	5	6	7
5. This job is one where a lot of other people can be affected by how well the work gets done.	1	2	3	4	5	6	7
6.The job gives me a chance to use my personal initiative and judgement in carrying out the work.	1	2	3	4	5	6	7

7. The job provides me with the chance to completely finish the pieces of work that I begin.	1	2	3	4	5	6	7
8. After I finish a job, I know whether I performed well.	1	2	3	4	5	6	7
9. V svoji službi imam precejšnje možnosti, da se neodvisno in svobodno odločim, kako bom opravil/a delo.	1	2	3	4	5	6	7
10. Moja služba je zelo pomembna v širšem (družbenem) smislu.	1	2	3	4	5	6	7

~

ČETRTI DEL: Osebnostne lastnosti
Describe your personality traits that you have at the moment and do not describe what kind of personality type you want to be. Honestly describe how you see yourself in the relationship with other people of the same gender and approximately of the same age. Please choose the number (from 1 to 5) indicating how much you agree with the each of the statements.

1 Strongly disagree	2 Disagree	3 Neither agree, neither disagree	4 Agree	5 Strongly agree

1. Am the life of the party.	1	2	3	4	5
2. Sympathize with others' feelings.	1	2	3	4	5
3. Get chores done right away.	1	2	3	4	5
4. Have frequent mood swings.	1	2	3	4	5
5. Have a vivid imagination.	1	2	3	4	5
6. Don't talk a lot. (R)	1	2	3	4	5
7. Am not interested in other people's problems. (R)	1	2	3	4	5
8. Often forget to put things back in their proper place. (R)	1	2	3	4	5
9. Am relaxed most of the time. (R)	1	2	3	4	5
10. Am not interested in abstract ideas. (R)	1	2	3	4	5
11. Talk to a lot of different people at parties.	1	2	3	4	5
12. Feel others' emotions.	1	2	3	4	5
13. Like order.	1	2	3	4	5
14. Get upset easily.	1	2	3	4	5
15. Have difficulty understanding abstract ideas. (R)	1	2	3	4	5
16. Keep in the background. (R)	1	2	3	4	5
17. Am not really interested in others. (R)	1	2	3	4	5
18. Make a mess of things. (R)	1	2	3	4	5
19. Seldom feel blue. (R)	1	2	3	4	5
20. Do not have a good imagination. (R)	1	2	3	4	5

~

PETI DEL: Demografski podatki
Please, fill in your demographic data.

Sex: ◯ Male ◯ Female
Year of birth:

Education:
__ primary school or less
__ two or three year secondary school
__ four year secondary school
__ two years of high school
__ First Bologna Stage
__ Second Bologna Stage
__ scientific MsC or PhD

Department, that you are working in:

Years of **working experiences** (in the company):

Years of **working experiences** (all together):

Thank you for participating in the survey!

Appendix 2: Slovene version of the questionnaire

Prosim, da v okence vpišete svojo dodeljeno šifro iz priloženega šifranta:

~

PRVI DEL: Centralnost v omrežjih učenja
Spodnje trditve opredeljujejo centralnost v omrežjih učenja. Iz šifranta izberite šifro sodelavca/ke in jo vpišite v okence. V kolikor bi radi vpisali več kot 10 sodelavcev, izpolnite polje »drugo«.

Poznam **znanje in veščine**, ki jih ima ta oseba. To ne pomeni, da imam jaz te sposobnosti ali znanje na teh področjih, ampak da razumem, katere veščine ima ta oseba in na katerih področjih ima znanje. Navedete lahko poljubno število sodelavcev, prosim pa, da navajate samo sodelavce, za katere trditev velja ali popolnoma velja.

	Prosim, vpišite šifro sodelavca/ke
Sodelavec/ka 1	
Sodelavec/ka 2	
Sodelavec/ka 3	
Sodelavec/ka 4	
Sodelavec/ka 5	
Sodelavec/ka 6	
Sodelavec/ka 7	
Sodelavec/ka 8	
Sodelavec/ka 9	
Sodelavec/ka 10	
Drugo:	

Ko potrebujem **informacijo ali nasvet**, mi je ta oseba običajno **dostopna (na razpolago)** v okviru razumnega časa, da mi pomaga rešiti moj problem. Navedete lahko poljubno število sodelavcev, prosim pa, da navajate samo sodelavce, za katere trditev velja ali popolnoma velja.

	Prosim, vpišite šifro sodelavca/ke
Sodelavec/ka 1	
Sodelavec/ka 2	
Sodelavec/ka 3	
Sodelavec/ka 4	
Sodelavec/ka 5	
Sodelavec/ka 6	
Sodelavec/ka 7	
Sodelavec/ka 8	
Sodelavec/ka 9	
Sodelavec/ka 10	
Drugo:	

Če to osebo prosim za **pomoč**, sem lahko prepričan/a, da se bo ta oseba **aktivno zavzela** za reševanje problema skupaj z menoj. Navedete lahko poljubno število sodelavcev, prosim pa, da navajate samo sodelavce, za katere trditev velja ali popolnoma velja.

	Prosim, vpišite šifro sodelavca/ke
Sodelavec/ka 1	
Sodelavec/ka 2	
Sodelavec/ka 3	
Sodelavec/ka 4	
Sodelavec/ka 5	
Sodelavec/ka 6	
Sodelavec/ka 7	
Sodelavec/ka 8	
Sodelavec/ka 9	
Sodelavec/ka 10	
Drugo:	

Prosim, določite, do kolikšne mere vam je **prijetno vprašati** to osebo za informacijo ali nasvet glede z delom povezanih tematik. Iz priložene liste sodelavcev navedite šifre tistih ljudi, katere vam je najbolj prijetno vprašati za informacijo. Navedete lahko poljubno število sodelavcev, prosim pa, da navajate samo sodelavce, za katere trditev velja ali popolnoma velja.

	Prosim, vpišite šifro sodelavca/ke
Sodelavec/ka 1	
Sodelavec/ka 2	
Sodelavec/ka 3	
Sodelavec/ka 4	
Sodelavec/ka 5	
Sodelavec/ka 6	
Sodelavec/ka 7	
Sodelavec/ka 8	
Sodelavec/ka 9	
Sodelavec/ka 10	
Drugo:	

Od katerih ljudi v vašem podjetju se največ **učite**? Iz priložene liste sodelavcev navedite šifre tistih ljudi, od katerih se najpogosteje učite. Navedete lahko poljubno število sodelavcev, prosim pa, da navajate samo sodelavce za katere velja določena trditev pogosto ali zelo pogosto.

	Prosim, vpišite šifro sodelavca/ke
Sodelavec/ka 1	
Sodelavec/ka 2	
Sodelavec/ka 3	
Sodelavec/ka 4	
Sodelavec/ka 5	
Sodelavec/ka 6	
Sodelavec/ka 7	
Sodelavec/ka 8	
Sodelavec/ka 9	
Sodelavec/ka 10	
Drugo:	

~

DRUGI DEL: Zavzetost zaposlenega za delo
Spodnjih devet trditev govori o vašem počutju na delovnem mestu. Prosim, natančno preberite vsako trditev in se odločite, ali se kdaj tako počutite na vašem delovnem mestu. Če nikoli niste imeli tega občutka, izberite 0 (nič). Če ste kdaj imeli ta občutek, določite kako pogosto ste tako čutili, in sicer tako da izberete število od 1 do 6, ki najbolje opisuje pogostost vašega občutka.

Nikoli 0 Nikoli	Skoraj nikoli 1 Nekajkrat na leto ali manj	Redko 2 Enkrat na mesec ali manj	Včasih 3 Nekajkrat na mesec	Pogosto 4 Enkrat na teden	Zelo pogosto 5 nekajkrat na teden	Vedno 6 Vsak dan

	Nikoli						Vedno
1. Pri svojem delu sem poln/a energije.	0	1	2	3	4	5	6
2. Pri svojem delu se počutim živahnega/o.	0	1	2	3	4	5	6
3. Sem navdušen/a nad svojim delom.	0	1	2	3	4	5	6
4. Moje delo me navdihuje.	0	1	2	3	4	5	6
5. Ko zjutraj vstanem, grem rad/a v službo.	0	1	2	3	4	5	6
6. Vesel/a sem, ko delam intenzivno.	0	1	2	3	4	5	6
7. Ponosen/a sem na delo, ki ga opravljam.	0	1	2	3	4	5	6
8. Zatopljen/a sem v svoje delo.	0	1	2	3	4	5	6
9. Ko delam, pozabim na ostale stvari.	0	1	2	3	4	5	6

~

TRETJI DEL: Značilnosti delovnega mesta
Spodnje trditve opisujejo značilnosti delovnega mesta. Prosim, ocenite spodnje trditve na danih lestvicah od 1 do 7.

Kolikšna je stopnja **avtonomije (neodvisnosti)** pri vašem delu? Natančneje, do kolikšne mere vam vaše delovno mesto omogoča samostojno odločanje o tem, kako opraviti delo?

1	2	3	4	5	6	7
Zelo majhna; pri svojem delu nimam besede, kako in kdaj mora biti delo opravljeno.			Srednja neodvisnost; veliko stvari je standardiziranih in jih ne nadzorujem, vendar nekaj odločitev o delu lahko naredim sam/a.			Zelo velika; pri svojem delu sem popolnoma odgovoren/a za odločitve, kako in kdaj mora biti delo opravljeno.

Do kolikšne mere vaše delo vključuje opravljanje **celotnega** dela? Natančneje, ali je vaše delo zaključena celota, ki ima jasen začetek in konec; ali je vaše delo le majhen del skupne celote dela, ki je dokončan s strani drugih oseb ali avtomatskih naprav?

1	2	3	4	5	6	7
Moje delo je le majhen del celotnega delovnega procesa; rezultati mojih aktivnosti niso vidni v končnem proizvodu ali storitvi.			Moje delo je srednje velik del celotnega delovnega procesa; moj prispevek k delu je viden v končnem proizvodu ali storitvi.			Moje delo vključuje celoten delovni proces, od začetka do konca; rezultati mojih aktivnosti so jasno vidni v končnem proizvodu ali storitvi.

Kolikšna je stopnja **raznolikosti** pri vašem delu? Natančneje, do kolikšne mere vaše delo zahteva opravljanje različnih stvari in uporabo palete vaših veščin in nadarjenosti?

1	2	3	4	5	6	7
Zelo majhna stopnja raznolikosti; znova in znova opravljam rutinsko delo.			Srednje velika stopnja raznolikosti.			Zelo velika stopnja raznolikosti; opravljati moram različne stvari in pri tem uporabljati različne veščine in nadarjenosti.

Kako **pomembno** je vaše delo? Natančneje, ali rezultati vašega dela pomembno vplivajo na življenje in blagor drugih ljudi?

1	2	3	4	5	6	7
Ne zelo pomembno; rezultati mojega dela nimajo pomembnih vplivov na druge ljudi.			Srednje pomembno.			Zelo pomembno; rezultati mojega dela lahko zelo pomembno vplivajo na druge ljudi.

Do kolikšne mere vam delo samo poda **informacije o uspešnosti** pri delu? Natančneje, ali vam delo samo že zagotovi občutek, kako dobro to delo opravljate – poleg povratnih informacij sodelavcev in nadrejenih?

1	2	3	4	5	6	7
Zelo malo; moje delo je sestavljeno tako, da lahko delam večno, pa ne ugotovim, kako dobro delam.			Srednje; včasih z opravljanjem naloge že dobim povratne informacije o učinkovitosti mojega dela, včasih pa ne.			Zelo veliko; moje delo je sestavljeno tako, da stalno pridobivam povratne informacije, kako dobro opravljam svoje delo.

~

Spodaj naštete trditve opisujejo **delo**. Prosimo, označite v kolikšni meri se strinjate s spodnjimi trditvami. Prosim, bodite objektivni, ko se odločate, kako natančno posamezna trditev opisuje vaše delo – ne glede na to, ali imate svoje delo radi ali ne.

1	2	3	4	5	6	7
Popolnoma se ne strinjam	Ne strinjam se	Deloma se strinjam	Niti se ne strinjam niti se strinjam	Deloma se strinjam	Strinjam se	Popolnoma se strinjam

1. Moje delovno mesto zahteva uporabo številnih kompleksnih veščin.	1	2	3	4	5	6	7
2. Delo je oblikovano tako, da ga lahko opravim v celoti, od samega začetka do konca.	1	2	3	4	5	6	7
3. Opravljanje dela, ki ga zahteva moja služba, mi zagotavlja veliko priložnosti, da ugotovim, kako dobro delo opravljam.	1	2	3	4	5	6	7
4. Delovno mesto mi omogoča uporabo številnih kompleksnih veščin.	1	2	3	4	5	6	7
5. S tem, kako dobro opravim delo, lahko močno vplivam na druge ljudi.	1	2	3	4	5	6	7
6. Z lastno pobudo in presojo lahko odločam o izvajanju svojega dela.	1	2	3	4	5	6	7
7. Delovno mesto mi ponuja možnost, da v celoti dokončam posamezne dele celotnega delovnega procesa, ki sem ga začel/a.	1	2	3	4	5	6	7
8. Ko končam s svojim delom, vem, ali sem delo opravil/a dobro.	1	2	3	4	5	6	7
9. V svoji službi imam precejšnje možnosti, da se neodvisno in svobodno odločim, kako bom opravil/a delo.	1	2	3	4	5	6	7
10. Moja služba je zelo pomembna v širšem (družbenem) smislu.	1	2	3	4	5	6	7

~

Opišite vaše osebnostne lastnosti, kakršne imate sedaj in ne opisujte, kakšni želite biti v prihodnosti. Iskreno opišite, kako vidite sami sebe v odnosu do drugih ljudi istega spola in okvirno iste starosti. Za vsako trditev določite stopnjo strinjanja na lestvici od 1 do 5.

1	2	3	4	5
Popolnoma se ne strinjam	Ne strinjam se	Niti se ne strinjam niti se strinjam	Strinjam se	Popolnoma se strinjam

1. Sem srce vsake zabave.	1	2	3	4	5
2. Sočustvujem z drugimi.	1	2	3	4	5
3. Gospodinjska dela opravim takoj.	1	2	3	4	5
4. Hitro menjam razpoloženje.	1	2	3	4	5
5. Imam bujno domišljijo.	1	2	3	4	5
6. Ne govorim veliko.	1	2	3	4	5
7. Ne zanimajo me problemi drugih ljudi.	1	2	3	4	5
8. Pogosto pozabim vrniti stvari na svoje mesto.	1	2	3	4	5
9. Večino časa sem sproščen/a.	1	2	3	4	5
10. Ne zanimajo me abstraktne ideje.	1	2	3	4	5
11. Na zabavah se pogovarjam z veliko različnimi ljudmi.	1	2	3	4	5
12. Občutim čustva drugih.	1	2	3	4	5
13. Rad/a imam red.	1	2	3	4	5
14. Hitro se razjezim.	1	2	3	4	5
15. Težko razumem abstraktne ideje.	1	2	3	4	5
16. Držim se v ozadju, se ne izpostavljam.	1	2	3	4	5
17. Drugi ljudje me resnično ne zanimajo.	1	2	3	4	5
18. Imam/delam nered.	1	2	3	4	5
19. Sem redko potrt/a.	1	2	3	4	5
20. Nimam dobre domišljije.	1	2	3	4	5

~

PETI DEL: Demografski podatki
Prosim, izpolnite lastne demografske podatke.

Spol: ○ Moški ○ Ženski

Letnica rojstva:

Kakšna je vaša najvišja dosežena formalna **izobrazba**?
○ osnovna šola ali manj
○ poklicna šola (2 ali 3 letna strokovna šola)
○ štiriletna srednja šola
○ višja šola
○ visoka šola - prva stopnja
○ univerzitetna izobrazba ali bolonjska druga stopnja (bolonjski magisterij)
○ znanstveni magisterij ali doktorat

Prosim, navedite **oddelek**, v katerem ste zaposleni:

Število let **delovnih izkušenj** (v _podjetju_):

Število let delovnih izkušenj (v _celoti_):

Najlepša hvala za sodelovanje!

Appendix 3: The sample

Table 1: Gender distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	86	72,9	72,9	72,9
	female	32	27,1	27,1	100,0
	Total	118	100,0	100,0	

Table 2: Age distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1891,00	1	0,8	0,8	0,8
	1960,00	1	0,8	0,8	1,7
	1961,00	1	0,8	0,8	2,5
	1962,00	1	0,8	0,8	3,4
	1964,00	1	0,8	0,8	4,2
	1965,00	2	1,7	1,7	5,9
	1967,00	3	2,5	2,5	8,5
	1968,00	2	1,7	1,7	10,2
	1969,00	1	0,8	0,8	11,0
	1970,00	2	1,7	1,7	12,7
	1971,00	4	3,4	3,4	16,1
	1972,00	4	3,4	3,4	19,5
	1973,00	1	0,8	0,8	20,3
	1974,00	4	3,4	3,4	23,7
	1975,00	2	1,7	1,7	25,4
	1976,00	5	4,2	4,2	29,7
	1977,00	9	7,6	7,6	37,3
	1978,00	9	7,6	7,6	44,9
	1979,00	7	5,9	5,9	50,8
	1980,00	7	5,9	5,9	56,8
	1981,00	11	9,3	9,3	66,1
	1982,00	8	6,8	6,8	72,9
	1983,00	12	10,2	10,2	83,1
	1984,00	5	4,2	4,2	87,3
	1985,00	4	3,4	3,4	90,7
	1986,00	2	1,7	1,7	92,4
	1987,00	2	1,7	1,7	94,1
	1988,00	3	2,5	2,5	96,6

(table continues)

1990,00	3	2,5	2,5	99,2
1991,00	1	0,8	0,8	100,0
Total	118	100,0	100,0	

Table 3: Education distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3,00	37	31,4	31,4	31,4
	4,00	2	1,7	1,7	33,1
	5,00	16	13,6	13,6	46,6
	6,00	51	43,2	43,2	89,8
	7,00	12	10,2	10,2	100,0
	Total	118	100,0	100,0	

Table 4: Years of working experiences in company

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	0,8	0,8	0,8
	0	8	6,8	6,8	7,6
	0,2	2	1,7	1,7	9,3
	0,375	1	0,8	0,8	10,2
	0,5	2	1,7	1,7	11,9
	0,6	1	0,8	0,8	12,7
	0,7	1	0,8	0,8	13,6
	1	23	19,5	19,5	33,1
	1,5	3	2,5	2,5	35,6
	1,8	1	0,8	0,8	36,4
	10	7	5,9	5,9	42,4
	11	3	2,5	2,5	44,9
	12	2	1,7	1,7	46,6
	14	1	0,8	0,8	47,5
	15	2	1,7	1,7	49,2
	17	1	0,8	0,8	50,0
	2	6	5,1	5,1	55,1
	22	1	0,8	0,8	55,9
	3	9	7,6	7,6	63,6
	3,5	3	2,5	2,5	66,1
	4	13	11,0	11,0	77,1

5	7	5,9	5,9	83,1
5,5	2	1,7	1,7	84,7
5.5	1	0,8	0,8	85,6
6	9	7,6	7,6	93,2
7	2	1,7	1,7	94,9
8	3	2,5	2,5	97,5
9	3	2,5	2,5	100,0
Total	118	100,0	100,0	

Table 5: Years of working experiences in total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0,5	1	0,8	0,8	0,8
	1	3	2,5	2,5	3,4
	10	8	6,8	6,8	10,2
	11	4	3,4	3,4	13,6
	12	5	4,2	4,2	17,8
	15	10	8,5	8,5	26,3
	16	2	1,7	1,7	28,0
	17	3	2,5	2,5	30,5
	18	2	1,7	1,7	32,2
	2	7	5,9	5,9	38,1
	20	3	2,5	2,5	40,7
	21	2	1,7	1,7	42,4
	22	3	2,5	2,5	44,9
	23	1	0,8	0,8	45,8
	24	1	0,8	0,8	46,6
	25	1	0,8	0,8	47,5
	26	1	0,8	0,8	48,3
	27	1	0,8	0,8	49,2
	29	1	0,8	0,8	50,0
	3	5	4,2	4,2	54,2
	4	12	10,2	10,2	64,4
	5	11	9,3	9,3	73,7
	6	11	9,3	9,3	83,1
	7	9	7,6	7,6	90,7
	8	5	4,2	4,2	94,9
	9	6	5,1	5,1	100,0
	Total	118	100,0	100,0	

Appendix 4: Hierarchical regressions

Table 1: In-degree centrality in learning networks and employee work engagement

Model	Unstandardized Coefficients (B/Std. Error)		Stand. Coeff. (Beta)	t	Sig.
1 (Constant)	26,330	13,641		1,930	,056
Indegree	,013	,026	,045	,503	,616
Gender	,065	,179	,036	,364	,717
Date of birth	-,012	,007	-,152	-1,720	,088
Education	,052	,050	,095	1,048	,297
Extraversion	,228	,108	,199	2,107	,037
Agreeableness	,241	,143	,160	1,686	,095
Conscientiousness	,156	,114	,125	1,370	,174
Neuroticism	-,143	,121	-,112	-1,179	,241
Intelect_imagination	,115	,130	,085	,884	,378
2 (Constant)	26,417	13,727		1,925	,057
Indegree	,008	,049	,029	,172	,864
Gender	,067	,181	,037	,369	,713
Date of birth	-,012	,007	-,153	-1,716	,089
Education	,053	,051	,097	1,045	,298
Extraversion	,229	,109	,200	2,099	,038
Agreeableness	,239	,145	,159	1,652	,102
Conscientiousness	,156	,114	,124	1,359	,177
Neuroticism	-,145	,123	-,114	-1,178	,241
Intelect_imagination	,115	,131	,086	,884	,379
Indegree_centered_square	,001	,008	,019	,111	,912
3 (Constant)	17,619	14,469		1,218	,226
Indegree	-,015	,050	-,053	-,303	,762
Gender	,092	,179	,051	,511	,610
Date of birth	-,008	,007	-,100	-1,073	,286
Education	,027	,053	,050	,517	,606
Extraversion	,243	,108	,213	2,248	,027
Agreeableness	,227	,143	,151	1,582	,117
Conscientiousness	,155	,113	,124	1,365	,175
Neuroticism	-,140	,122	-,110	-1,147	,254
Intelect_imagination	,079	,131	,059	,606	,546
Indegree_centered_square	,003	,008	,059	,350	,727
Autonomy	,167	,094	,185	1,772	,079
4 (Constant)	17,248	14,471		1,192	,236
Indegree	-,019	,050	-,067	-,382	,703
Gender	,105	,180	,058	,584	,561
Date of birth	-,008	,007	-,097	-1,045	,299
Education	,025	,053	,045	,471	,639
Extraversion	,236	,108	,207	2,179	,032
Agreeableness	,243	,144	,161	1,682	,096
Conscientiousness	,126	,117	,101	1,083	,281
Neuroticism	-,155	,123	-,122	-1,262	,210
Intelect_imagination	,057	,133	,042	,430	,668
Indegree_centered_square	,004	,008	,082	,482	,631
Autonomy	,103	,114	,114	,902	,369
Task_identity	,099	,098	,121	1,013	,313

(table continues)

(continued)

5	(Constant)	12,603	13,825		,912	,364
	Indegree	-,027	,048	-,092	-,552	,582
	Gender	,131	,171	,072	,766	,446
	Date of birth	-,006	,007	-,072	-,817	,416
	Education	,045	,051	,082	,893	,374
	Extraversion	,176	,104	,154	1,683	,095
	Agreeableness	,236	,137	,157	1,720	,088
	Conscientiousness	,124	,111	,099	1,114	,268
	Neuroticism	-,077	,119	-,061	-,650	,517
	Intelect_imagination	,105	,127	,078	,829	,409
	Indegree_centered_square	,003	,007	,070	,432	,667
	Autonomy	-,007	,113	-,008	-,063	,950
	Task_identity	,006	,097	,008	,065	,948
	Skill_variety	,294	,085	,371	3,469	,001
6	(Constant)	11,559	13,942		,829	,409
	Indegree	-,026	,048	-,090	-,537	,593
	Gender	,108	,175	,059	,615	,540
	Date of birth	-,005	,007	-,064	-,716	,476
	Education	,045	,051	,082	,885	,378
	Extraversion	,172	,105	,151	1,637	,105
	Agreeableness	,210	,142	,140	1,474	,144
	Conscientiousness	,115	,112	,092	1,027	,307
	Neuroticism	-,085	,120	-,067	-,711	,479
	Intelect_imagination	,100	,128	,075	,786	,433
	Indegree_centered_square	,003	,007	,061	,373	,710
	Autonomy	-,020	,115	-,023	-,178	,859
	Task_identity	-,007	,099	-,008	-,069	,945
	Skill_variety	,268	,092	,339	2,902	,005
	Task_significance	,058	,083	,083	,691	,491
7	(Constant)	14,963	13,642		1,097	,275
	Indegree	-,014	,047	-,048	-,293	,770
	Gender	,173	,172	,095	1,002	,319
	Date of birth	-,007	,007	-,089	-1,011	,314
	Education	,040	,049	,073	,812	,419
	Extraversion	,161	,102	,141	1,573	,119
	Agreeableness	,238	,139	,159	1,713	,090
	Conscientiousness	,074	,110	,059	,668	,506
	Neuroticism	-,099	,117	-,077	-,844	,401
	Intelect_imagination	,112	,124	,083	,902	,369
	Indegree_centered_square	,002	,007	,054	,344	,732
	Autonomy	-,028	,112	-,031	-,252	,801
	Task_identity	-,057	,098	-,069	-,577	,565
	Skill_variety	,208	,093	,262	2,228	,028
	Task_significance	,001	,084	,002	,014	,989
	Feedback	,243	,095	,279	2,560	,012

a. Dependent Variable: Engagement

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Table 2: In-degree centrality in advice networks and employee work engagement

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	27,514	13,542		2,032	,045
Indegree	,020	,030	,063	,689	,493
Gender	,155	,183	,086	,848	,399
Date of birth	-,012	,007	-,163	-1,819	,072
Education	,059	,050	,108	1,173	,244
Extraversion	,203	,108	,182	1,871	,064
Agreeableness	,238	,141	,162	1,692	,094
Conscientiousness	,136	,113	,111	1,205	,231
Neuroticism	-,168	,122	-,133	-1,383	,170
Intelect_imagination	,134	,129	,102	1,042	,300
2 (Constant)	27,796	13,554		2,051	,043
Indegree	,056	,048	,171	1,158	,250
Gender	,137	,184	,076	,746	,458
Date of birth	-,013	,007	-,165	-1,833	,070
Education	,047	,052	,086	,901	,370
Extraversion	,191	,109	,171	1,751	,083
Agreeableness	,246	,141	,168	1,746	,084
Conscientiousness	,150	,114	,123	1,321	,189
Neuroticism	-,167	,122	-,132	-1,374	,173
Intelect_imagination	,117	,130	,089	,900	,370
Indegree_centered_square	-,008	,009	-,138	-,932	,354
3 (Constant)	15,149	14,325		1,058	,293
Indegree	,024	,049	,073	,482	,631
Gender	,174	,180	,096	,962	,338
Date of birth	-,007	,007	-,087	-,929	,355
Education	,011	,053	,020	,205	,838
Extraversion	,213	,107	,191	1,988	,050
Agreeableness	,229	,138	,156	1,658	,100
Conscientiousness	,148	,111	,121	1,323	,189
Neuroticism	-,152	,119	-,121	-1,277	,205
Intelect_imagination	,081	,128	,061	,631	,530
Indegree_centered_square	-,005	,008	-,093	-,635	,527
Autonomy	,226	,097	,244	2,338	,021
4 (Constant)	14,884	14,320		1,039	,301
Indegree	,019	,049	,059	,389	,698
Gender	,192	,181	,106	1,060	,292
Date of birth	-,007	,007	-,085	-,910	,365
Education	,011	,053	,020	,205	,838
Extraversion	,208	,107	,186	1,937	,056
Agreeableness	,246	,139	,168	1,771	,080
Conscientiousness	,115	,116	,094	,993	,323
Neuroticism	-,167	,120	-,132	-1,389	,168
Intelect_imagination	,063	,129	,048	,486	,628
Indegree_centered_square	-,004	,009	-,066	-,445	,657
Autonomy	,161	,115	,173	1,395	,166
Task_identity	,101	,096	,123	1,047	,297

(table continues)

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(continued)

		B	Std. Error	Beta	t	Sig.
5	(Constant)	9,616	13,706		,702	,485
	Indegree	-,013	,048	-,039	-,265	,792
	Gender	,202	,172	,112	1,173	,244
	Date of birth	-,004	,007	-,057	-,633	,528
	Education	,035	,051	,064	,681	,498
	Extraversion	,170	,103	,152	1,659	,100
	Agreeableness	,229	,132	,156	1,728	,087
	Conscientiousness	,100	,110	,082	,905	,367
	Neuroticism	-,083	,117	-,066	-,715	,476
	Intelect_imagination	,116	,124	,088	,938	,351
	Indegree_centered_square	,001	,008	,022	,153	,879
	Autonomy	,063	,113	,068	,560	,577
	Task_identity	,017	,095	,020	,176	,861
	Skill_variety	,290	,085	,360	3,387	,001
6	(Constant)	8,290	13,775		,602	,549
	Indegree	-,009	,048	-,028	-,192	,848
	Gender	,165	,176	,091	,936	,352
	Date of birth	-,003	,007	-,046	-,506	,614
	Education	,032	,051	,059	,633	,528
	Extraversion	,164	,103	,147	1,595	,114
	Agreeableness	,192	,137	,131	1,397	,166
	Conscientiousness	,091	,110	,075	,825	,411
	Neuroticism	-,096	,117	-,076	-,820	,414
	Intelect_imagination	,106	,125	,080	,850	,398
	Indegree_centered_square	,001	,008	,000	,003	,998
	Autonomy	,047	,115	,050	,408	,685
	Task_identity	-,003	,097	-,003	-,029	,977
	Skill_variety	,252	,094	,313	2,691	,008
	Task_significance	,080	,082	,117	,983	,328
7	(Constant)	10,870	13,242		,821	,414
	Indegree	,000	,046	-,001	-,007	,994
	Gender	,247	,171	,137	1,442	,153
	Date of birth	-,005	,007	-,067	-,765	,446
	Education	,021	,049	,039	,432	,666
	Extraversion	,152	,099	,136	1,539	,127
	Agreeableness	,220	,132	,150	1,666	,099
	Conscientiousness	,038	,107	,031	,350	,727
	Neuroticism	-,093	,113	-,073	-,823	,413
	Intelect_imagination	,122	,120	,092	1,017	,311
	Indegree_centered_square	,001	,008	,019	,139	,889
	Autonomy	,055	,110	,059	,496	,621
	Task_identity	-,068	,095	-,083	-,717	,475
	Skill_variety	,188	,092	,233	2,033	,045
	Task_significance	,012	,081	,018	,152	,880
	Feedback	,289	,094	,326	3,064	,003

a. Dependent Variable: Engagement

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Table 3: Out-degree centrality in learning networks and employee work engagement

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	24,153	13,716		1,761	,081
Outdegree	,041	,035	,106	1,193	,236
Gender	,063	,178	,035	,355	,723
Date of birth	-,011	,007	-,139	-1,565	,121
Education	,053	,049	,096	1,073	,286
Extraversion	,223	,107	,195	2,076	,040
Agreeableness	,227	,142	,151	1,596	,113
Conscientiousness	,167	,114	,133	1,466	,145
Neuroticism	-,142	,120	-,112	-1,183	,239
Intelect_imagination	,136	,128	,101	1,056	,293
2 (Constant)	24,425	13,781		1,772	,079
Outdegree	,028	,045	,073	,625	,533
Gender	,060	,179	,033	,333	,740
Date of birth	-,011	,007	-,140	-1,575	,118
Education	,052	,049	,096	1,060	,291
Extraversion	,226	,108	,198	2,091	,039
Agreeableness	,227	,143	,151	1,592	,114
Conscientiousness	,162	,115	,130	1,417	,160
Neuroticism	-,143	,121	-,112	-1,183	,240
Intelect_imagination	,132	,129	,098	1,024	,308
Outdegree_centered_square	,004	,010	,051	,448	,655
3 (Constant)	16,457	14,513		1,134	,259
Outdegree	,026	,045	,066	,572	,569
Gender	,084	,178	,046	,472	,638
Date of birth	-,007	,007	-,093	-,994	,323
Education	,025	,052	,045	,478	,634
Extraversion	,238	,107	,208	2,213	,029
Agreeableness	,226	,142	,150	1,593	,114
Conscientiousness	,165	,114	,132	1,453	,149
Neuroticism	-,131	,120	-,102	-1,087	,280
Intelect_imagination	,090	,131	,067	,690	,492
Outdegree_centered_square	,003	,010	,031	,275	,783
Autonomy	,148	,091	,164	1,637	,105
4 (Constant)	16,332	14,538		1,123	,264
Outdegree	,021	,045	,053	,454	,651
Gender	,093	,179	,051	,519	,605
Date of birth	-,007	,007	-,091	-,981	,329
Education	,022	,052	,040	,423	,673
Extraversion	,231	,108	,203	2,146	,034
Agreeableness	,241	,143	,160	1,683	,095
Conscientiousness	,141	,118	,113	1,196	,234
Neuroticism	-,142	,121	-,111	-1,172	,244
Intelect_imagination	,071	,133	,053	,533	,596
Outdegree_centered_square	,003	,010	,032	,281	,779
Autonomy	,098	,110	,109	,897	,372
Task_identity	,079	,098	,097	,808	,421

(table continues)

(continued)

5	(Constant)	12,003	13,910		,863	,390
	Outdegree	,022	,043	,056	,499	,619
	Gender	,125	,171	,069	,731	,467
	Date of birth	-,005	,007	-,069	-,771	,442
	Education	,041	,050	,076	,830	,409
	Extraversion	,172	,104	,151	1,650	,102
	Agreeableness	,239	,136	,159	1,753	,083
	Conscientiousness	,139	,112	,111	1,239	,218
	Neuroticism	-,065	,118	-,051	-,551	,583
	Intelect_imagination	,111	,127	,083	,872	,385
	Outdegree_centered_square	,000	,010	-,004	-,034	,973
	Autonomy	-,017	,110	-,019	-,155	,877
	Task_identity	-,005	,097	-,006	-,052	,959
	Skill_variety	,288	,085	,363	3,399	,001
6	(Constant)	10,930	14,032		,779	,438
	Outdegree	,023	,043	,060	,540	,591
	Gender	,103	,174	,057	,593	,555
	Date of birth	-,005	,007	-,060	-,670	,505
	Education	,041	,050	,075	,827	,410
	Extraversion	,168	,105	,147	1,605	,111
	Agreeableness	,213	,142	,142	1,501	,136
	Conscientiousness	,131	,113	,105	1,158	,250
	Neuroticism	-,073	,119	-,057	-,616	,539
	Intelect_imagination	,106	,128	,078	,825	,411
	Outdegree_centered_square	-,001	,010	-,012	-,111	,912
	Autonomy	-,031	,112	-,035	-,279	,781
	Task_identity	-,017	,098	-,021	-,173	,863
	Skill_variety	,262	,092	,331	2,838	,005
	Task_significance	,057	,083	,083	,692	,491
7	(Constant)	14,360	13,733		1,046	,298
	Outdegree	,013	,043	,034	,312	,755
	Gender	,165	,171	,091	,966	,336
	Date of birth	-,007	,007	-,085	-,963	,338
	Education	,038	,049	,069	,775	,440
	Extraversion	,157	,102	,138	1,543	,126
	Agreeableness	,238	,138	,158	1,721	,088
	Conscientiousness	,083	,112	,066	,740	,461
	Neuroticism	-,091	,116	-,071	-,786	,434
	Intelect_imagination	,118	,125	,088	,947	,346
	Outdegree_centered_square	,000	,009	-,001	-,013	,990
	Autonomy	-,030	,109	-,033	-,274	,785
	Task_identity	-,066	,098	-,081	-,679	,499
	Skill_variety	,206	,093	,260	2,217	,029
	Task_significance	,004	,084	,005	,045	,964
	Feedback	,240	,094	,276	2,554	,012

a. Dependent Variable: Engagement

Table 4: Out-degree centrality in advice networks and employee work engagement

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	18,552	13,798		1,345	,182
Outdegree	,078	,035	,213	2,270	,025
Gender	,144	,178	,080	,810	,420
Date of birth	-,008	,007	-,108	-1,183	,239
Education	,071	,049	,130	1,441	,153
Extraversion	,220	,106	,197	2,071	,041
Agreeableness	,227	,137	,155	1,648	,102
Conscientiousness	,147	,110	,120	1,337	,184
Neuroticism	-,115	,121	-,091	-,946	,346
Intelect_imagination	,175	,126	,133	1,388	,168
2 (Constant)	22,208	14,220		1,562	,121
Outdegree	,111	,046	,302	2,393	,019
Gender	,152	,178	,084	,853	,396
Date of birth	-,010	,007	-,132	-1,406	,163
Education	,070	,049	,128	1,424	,157
Extraversion	,239	,108	,214	2,219	,029
Agreeableness	,199	,140	,136	1,425	,157
Conscientiousness	,153	,110	,125	1,384	,169
Neuroticism	-,121	,121	-,096	-,998	,321
Intelect_imagination	,175	,126	,133	1,393	,167
Outdegree_centered_square	-,013	,012	-,136	-1,054	,294
3 (Constant)	10,872	14,768		,736	,463
Outdegree	,097	,046	,264	2,122	,036
Gender	,187	,175	,103	1,067	,288
Date of birth	-,005	,007	-,062	-,645	,521
Education	,030	,051	,055	,589	,557
Extraversion	,253	,106	,227	2,396	,018
Agreeableness	,195	,137	,133	1,425	,157
Conscientiousness	,149	,108	,122	1,381	,170
Neuroticism	-,102	,119	-,081	-,860	,392
Intelect_imagination	,125	,125	,095	,997	,321
Outdegree_centered_square	-,010	,012	-,110	-,861	,391
Autonomy	,209	,091	,225	2,305	,023
4 (Constant)	10,648	14,790		,720	,473
Outdegree	,091	,047	,248	1,966	,052
Gender	,198	,176	,109	1,125	,263
Date of birth	-,005	,007	-,061	-,626	,533
Education	,028	,051	,051	,544	,588
Extraversion	,244	,106	,219	2,301	,023
Agreeableness	,212	,139	,145	1,533	,129
Conscientiousness	,125	,112	,102	1,118	,266
Neuroticism	-,117	,120	-,092	-,968	,335
Intelect_imagination	,107	,127	,081	,842	,402
Outdegree_centered_square	-,009	,012	-,098	-,764	,447
Autonomy	,158	,108	,170	1,460	,147
Task_identity	,081	,094	,098	,860	,392

(table continues)

(continued)

5	(Constant)	8,339	14,047		,594	,554
	Outdegree	,094	,044	,256	2,139	,035
	Gender	,199	,167	,110	1,191	,236
	Date of birth	-,004	,007	-,050	-,549	,584
	Education	,045	,049	,082	,917	,362
	Extraversion	,204	,101	,183	2,016	,046
	Agreeableness	,194	,132	,132	1,473	,144
	Conscientiousness	,121	,106	,099	1,142	,256
	Neuroticism	-,037	,117	-,029	-,316	,752
	Intelect_imagination	,148	,121	,112	1,220	,225
	Outdegree_centered_square	-,013	,011	-,136	-1,115	,267
	Autonomy	,052	,107	,056	,483	,630
	Task_identity	-,011	,093	-,013	-,118	,906
	Skill_variety	,285	,082	,354	3,464	,001
6	(Constant)	7,248	14,127		,513	,609
	Outdegree	,092	,044	,249	2,072	,041
	Gender	,171	,170	,095	1,008	,316
	Date of birth	-,003	,007	-,041	-,447	,656
	Education	,044	,049	,081	,898	,371
	Extraversion	,200	,102	,179	1,964	,052
	Agreeableness	,164	,136	,112	1,204	,231
	Conscientiousness	,110	,107	,090	1,033	,304
	Neuroticism	-,048	,117	-,038	-,409	,684
	Intelect_imagination	,139	,122	,106	1,144	,256
	Outdegree_centered_square	-,012	,011	-,132	-1,082	,282
	Autonomy	,036	,109	,039	,328	,743
	Task_identity	-,024	,094	-,030	-,258	,797
	Skill_variety	,255	,090	,318	2,850	,005
	Task_significance	,066	,079	,096	,842	,402
7	(Constant)	9,263	13,656		,678	,499
	Outdegree	,075	,043	,204	1,740	,085
	Gender	,237	,166	,131	1,431	,156
	Date of birth	-,004	,007	-,058	-,643	,521
	Education	,030	,047	,055	,632	,529
	Extraversion	,180	,098	,161	1,828	,071
	Agreeableness	,191	,132	,130	1,447	,151
	Conscientiousness	,063	,105	,051	,600	,550
	Neuroticism	-,058	,113	-,046	-,507	,613
	Intelect_imagination	,149	,118	,113	1,269	,208
	Outdegree_centered_square	-,010	,011	-,109	-,924	,358
	Autonomy	,055	,106	,059	,523	,602
	Task_identity	-,086	,093	-,105	-,920	,360
	Skill_variety	,195	,089	,243	2,196	,031
	Task_significance	,011	,079	,016	,140	,889
	Feedback	,263	,093	,297	2,844	,005

a. Dependent Variable: Engagement

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Appendix 5: Basic analysis of the questionnaire results

Employee work engagement

Table 1: Employee work engagement – Means and Standard Deviation

	MEAN	ST. DEV.
My job inspires me.	5,24	1,24
At my job, I feel strong and vigorous.	5,36	1,11
I am enthusiastic about my job.	5,42	1,05
When I get up in the morning, I feel like going to work.	5,54	1,21
At my work, I feel bursting with energy.	5,60	0,91
I am proud of the work that I do.	5,75	1,15
I feel happy when I am working intensely.	5,77	1,08
I get carried away when I am working.	5,79	0,98
I am immersed in my work.	6,02	0,78

Figure 1: Employee work engagement – Means
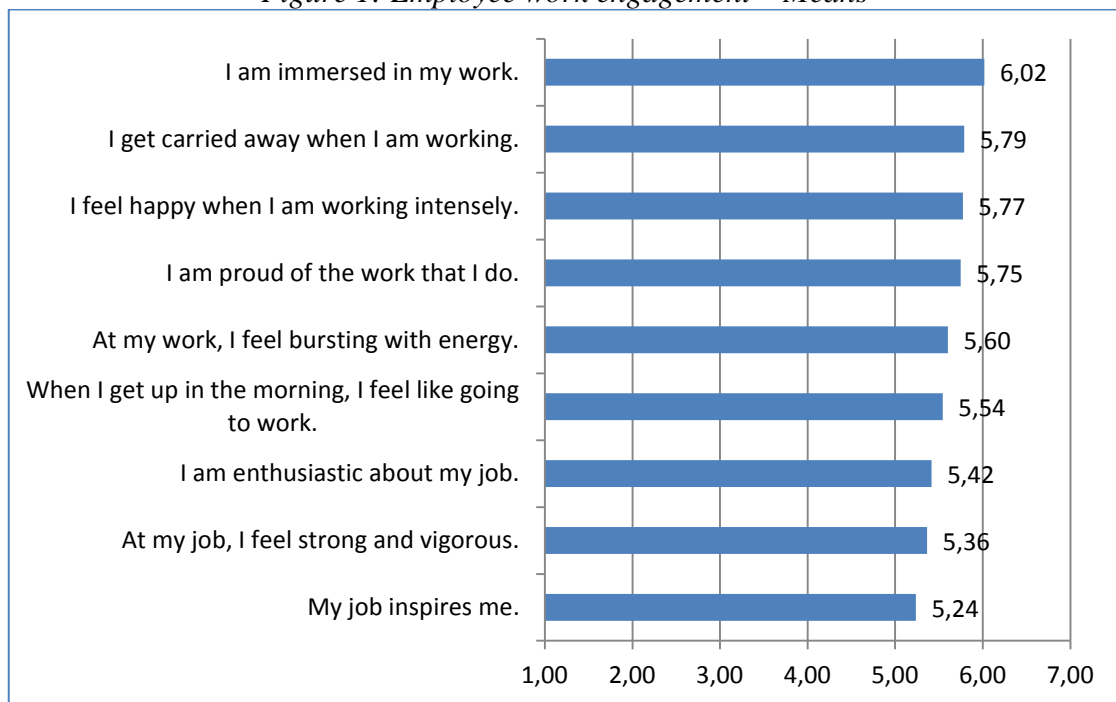
Figure 2: Employee work engagement answers (average and detailed)
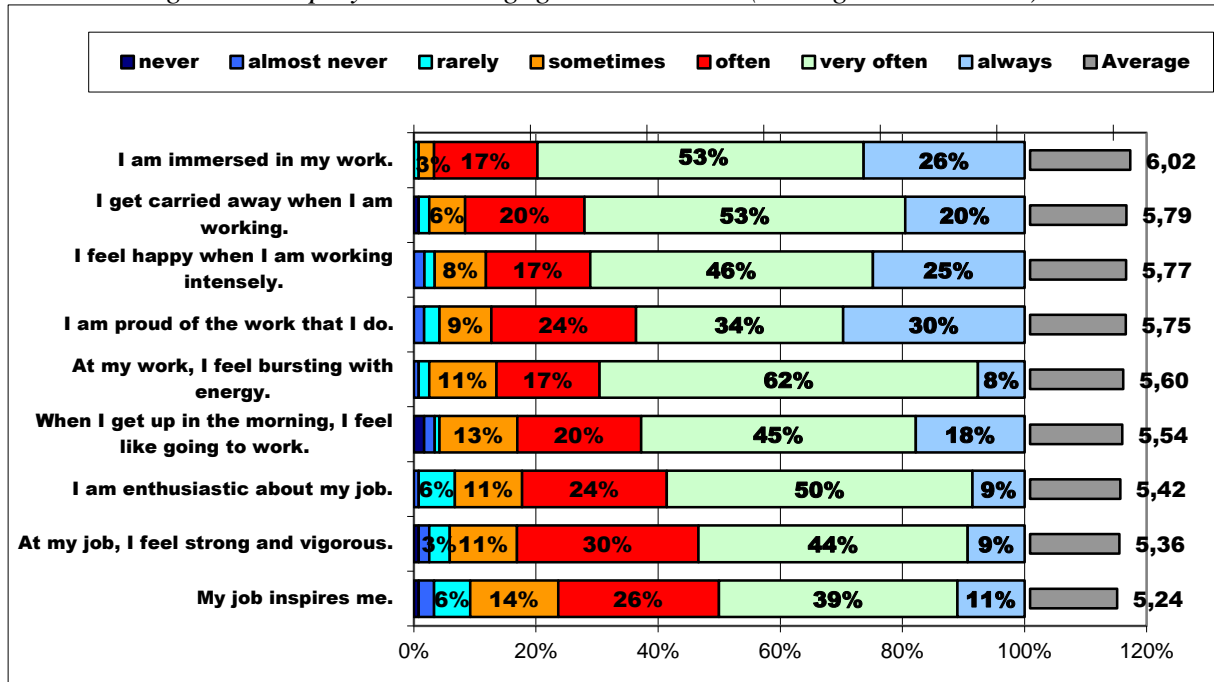
Job characteristics

Autonomy

Table 2: Autonomy – Means and Standard Deviation

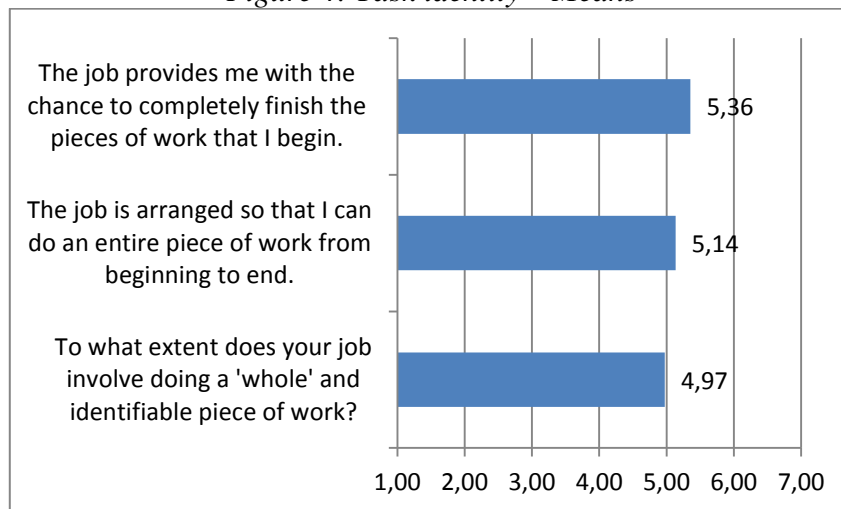|	MEAN	STD. DEV.
How much autonomy is there in your job?	5,32	1,23
The job gives me condirerable opportunity for independence and freedom in how I do the work.	5,52	1,06
The job gives me a chance to use my personal initiative and judgement in carrying out the work.	5,63	0,95

Figure 3: Autonomy – Means
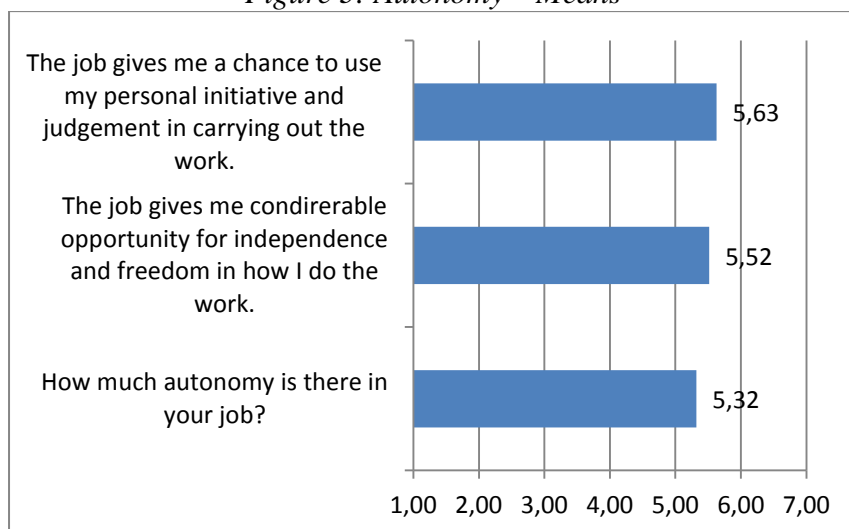
Task identity

Table 3: Task identity – Means and Standard Deviation

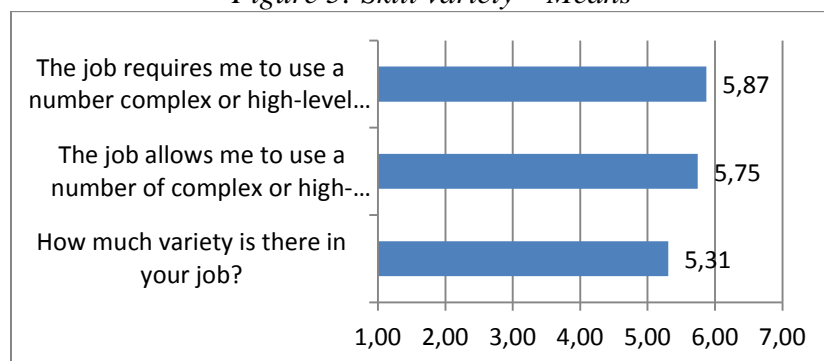|	MEAN	STD. DEV.
To what extent does your job involve doing a 'whole' and identifiable piece of work?	4,97	1,44
The job is arranged so that I can do an entire piece of work from beginning to end.	5,14	1,16
The job provides me with the chance to completely finish the pieces of work that I begin.	5,36	1,08

Figure 4: Task identity – Means

Skill variety

Table 4: Skill variety – Means and Standard Deviation

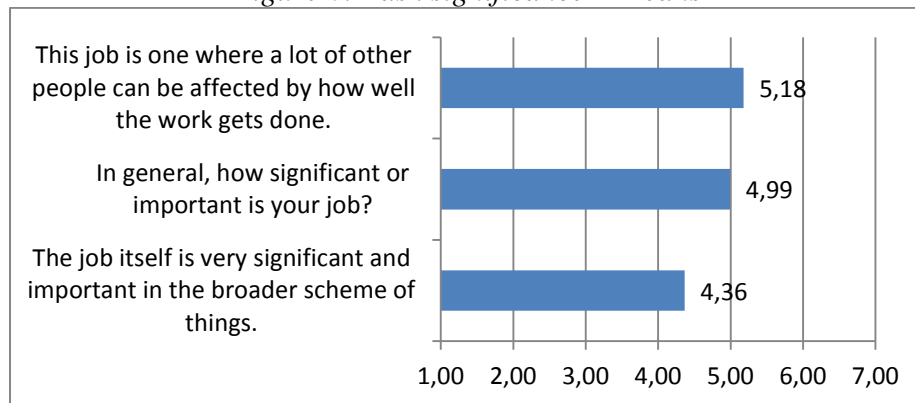|	MEAN	STD. DEV.
How much variety is there in your job?	5,31	1,34
The job allows me to use a number of complex or high-level skills.	5,75	1,13
The job requires me to use a number complex or high-level skills.	5,87	1,14

Figure 5: Skill variety – Means

Task significance

Table 5: Task significance – Means and Standard Deviation

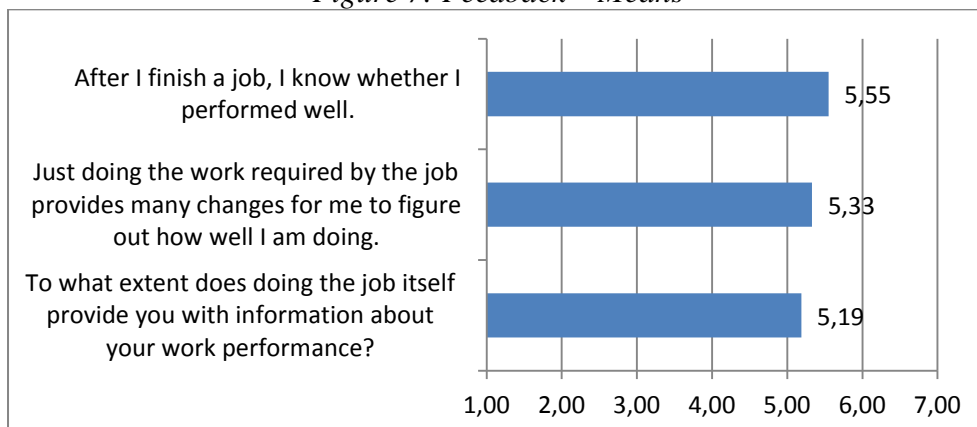|	MEAN	STD. DEV.
The job itself is very significant and important in the broader scheme of things.	4,36	1,43
In general, how significant or important is your job?	4,99	1,40
This job is one where a lot of other people can be affected by how well the work gets done.	5,18	1,34

Figure 6: Task significance – Means

Feedback

Table 6: Feedback – Means and Standard Deviation

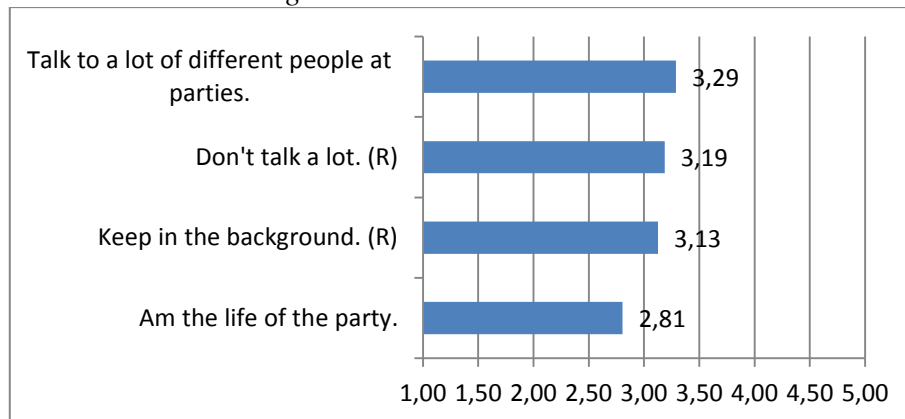|	MEAN	STD. DEV.
To what extent does doing the job itself provide you with information about your work performance?	5,19	1,21
Just doing the work required by the job provides many changes for me to figure out how well I am doing.	5,33	1,08
After I finish a job, I know whether I performed well.	5,55	1,03

Figure 7: Feedback – Means

Personality traits

Extraversion

Table 7: Extraversion – Means and Standard Deviation

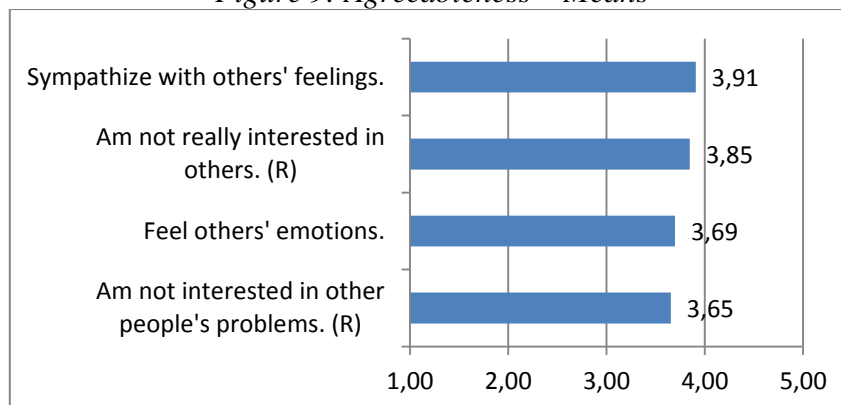|	MEAN	STD. DEV.
Am the life of the party.	2,81	0,83
Keep in the background. (R)	3,13	0,96
Don't talk a lot. (R)	3,19	1,00
Talk to a lot of different people at parties.	3,29	0,97

Figure 8: Extraversion – Means

Agreeableness

Table 8: Agreeableness – Means and Standard Deviation

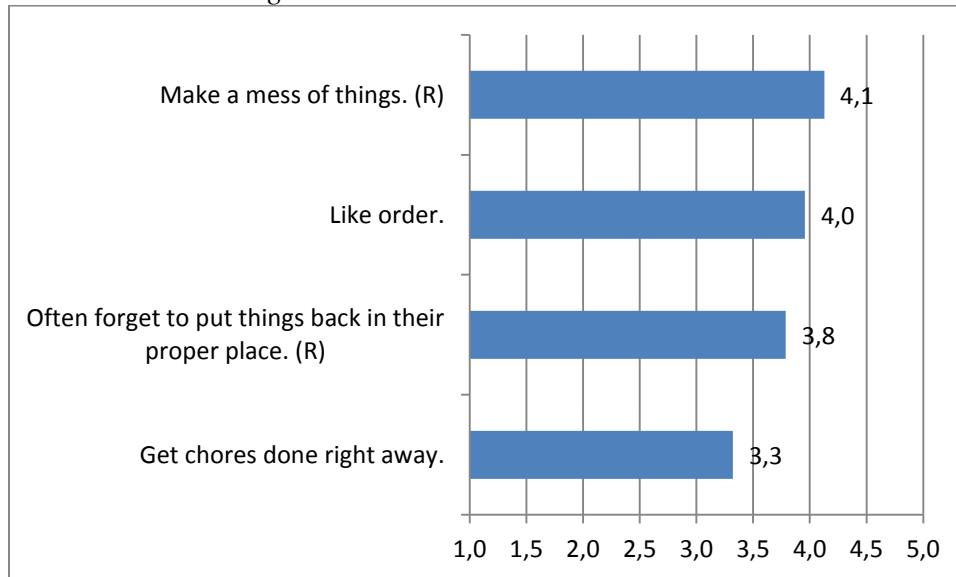|	MEAN	STD. DEV.
Am not interested in other people's problems. (R)	3,65	0,85
Feel others' emotions.	3,69	0,79
Am not really interested in others. (R)	3,85	0,80
Sympathize with others' feelings.	3,91	0,69

Figure 9: Agreeableness – Means

Conscientiousness

Table 9: Conscientiousness – Means and Standard Deviation

	MEAN	STD. DEV.
Get chores done right away.	3,3	0,92
Often forget to put things back in their proper place. (R)	3,8	0,99
Like order.	4,0	0,76
Make a mess of things. (R)	4,1	0,80

Figure 10: Conscientiousness – Means

Neuroticism

Table 10: Neuroticism – Means and Standard Deviation

	MEAN	STD. DEV.
Am relaxed most of the time. (R)	2,29	0,79
Have frequent mood swings.	2,33	0,92
Get upset easily.	2,40	0,92
Seldom feel blue. (R)	2,45	0,97

Figure 11: Neuroticism – Means
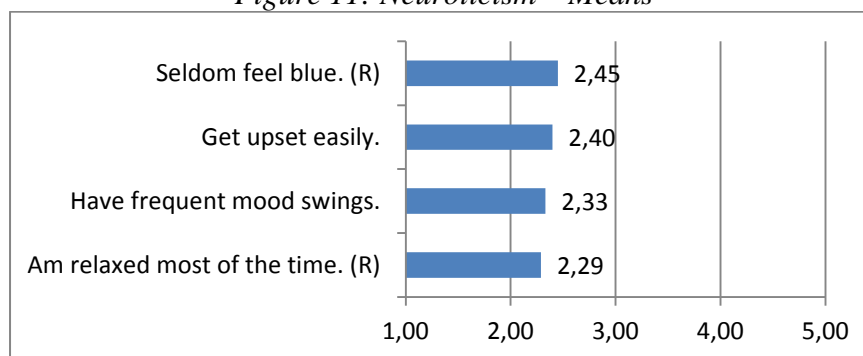
Intellect/imagination

Table 11: Intellect/imagination – Means and Standard Deviation

	MEAN	STD. DEV.
Have a vivid imagination.	3,66	0,87
Am not interested in abstract ideas. (R)	3,75	0,98
Have difficulty understanding abstract ideas. (R)	3,95	0,81
Do not have a good imagination. (R)	3,99	0,78

Figure 12: Intellect/imagination – Means