The Relationships between Employee Engagement, Turnover and Sickness Absenteeism

A CASE STUDY IN HR ANALYTICS

Caitlin van Mil (U1271284)

HUMAN RESOURCE STUDIES | TILBURG UNIVERSITY

SUPERVISOR: MARINUS VERHAGEN

CONTENT

1 ABSTRACT

HR Analytics has gained more and more interest over the past few years (Bersin, 2015). Rightfully so, because studies have shown that companies using it outperform their peers (Bersin by Deloitte, 2013). Therefore, in order to optimize performance, organizations should use HR Analytics to drive strategic HR decisions. This study used HR Analytics by analyzing employee engagement, turnover and sickness absenteeism data from Innogy, an energy company working towards a sustainable future by generating energy from renewable energy sources like the sun and wind. The aim was to discover the effect of turnover and sickness absenteeism on employee engagement and the effect of employee engagement on voluntary turnover and sickness absenteeism, whilst controlling for several covariates. As the former has been researched very little, this research design contributes to the theory. The design was possible due to the fact that data were obtained from three different time periods, which allowed for both cross-sectional and longitudinal multivariate regression analyses and multivariate analyses of covariance. As longitudinal research is also scarce in this field, this is another theoretical contribution of the study. Finally, research on how employee engagement influences sustainable employability is very scarce, resulting in yet another theoretical contribution of this study. Results show that sickness absenteeism is significantly negatively related to engagement in the longitudinal study and age is significantly negatively related to sickness absenteeism in the cross-sectional study. Based on the results, recommendations for Innogy are provided.

Key words: HR Analytics; employee engagement; turnover; sickness absenteeism; job demands; job resources.

2 INTRODUCTION

HR Analytics is increasingly gaining more interest (Bersin, 2015). Currently, 79 percent of the companies with 500 or more employees use analytics to drive strategic HR decisions (Paychex Worx, 2016). Furthermore, nearly 40 percent of all global firms are either replacing or plan to replace their core HR systems over the next two years (Jones, 2014) and more people with analytic backgrounds are coming into HR (Bersin, 2015). This increasing interest is justified by the fact that companies that build capabilities in HR analytics outperform their peers in quality of hire, retention and leadership capabilities, and are generally higher ranked in their employment brand (Bersin by Deloitte, 2013). HR Analytics can be defined as all data that

organizations can collect to better understand and evaluate the impact of HR activities and to influence business strategy and business performance (Lawler, Levenson, & Boudreau, 2004).

This study will use HR analytics to shed light on the interrelationships between employee engagement, turnover and sickness absenteeism. Employee engagement is the extent to which individuals are involved and satisfied with, and enthused for their work (Harter, Schmidt, & Hayes, 2002). Much research has already been done on the effects of employee engagement on both turnover (Halbesleben & Wheeler, 2008; Van den Heuvel, Freese, Schalk, & Van Assen, 2017; Saks, 2006; Shemueli, Dolan, Ceretti, & Del Prad, 2016; Memon, Salleg, & Baharom, 2016; Wan, Li, Zhou, & Shang, 2018; Harter et al., 2002; Collini, Guidroz, & Perez, 2015; Jones & Harter, 2005; Schaufeli & Bakker, 2004; Brunetto, Teo, Shacklock, & Farr-Wharton, 2012; Shuck, Reio, & Rocco, 2011) and sickness absenteeism (Schaufeli, Bakker, & Van Rhenen, 2009; Rongen, Robroek, Schaufeli, & Burdorf, 2014; Shantz & Alfes, 2015). For instance, Jones and Harter's (2005) longitudinal study shows that employee engagement had a negative effect on turnover. Schaufeli and Bakker (2004) found that employee engagement mediates the negative relationship between job resources and turnover, and they found a positive relationship between job resources and employee engagement. Shuck et al. (2011) found a negative relationship between employee engagement and turnover while Brunetto et al. (2012) found that the relationship between engagement and turnover was not significant. This difference could be due to the fact that Brunetto et al. (2012) only studied one type of employees. However, most of these studies were limited in their inferences about causality due to the limitations of a cross-sectional design (Schaufeli & Bakker, 2004; Brunetto et al., 2012; Shuck et al., 2011; Van den Heuvel et al., 2017; Saks, 2006; Shemueli et al., 2016; Memon et al., 2016, Wan et al., 2018; Harter et al., 2002; Collini et al., 2015; Alfes, 2015). This means that no directions can be derived from the results. Additionally, Schaufeli et al.'s (2009) longitudinal study shows that engagement negatively affects sickness absence duration as well as frequency.

A main theory in this study is the Job Demands-Resources model by Bakker & Demerouti (2007). The Job Demands-Resources model (JD-R model) is a model widely used for identifying the relationships between job aspects and job outcomes (Bakker & Demerouti, 2007) and distinguishes job demands and job resources. Job demands are aspects of a job that require effort from the employee and will therefore lead to psychological and/or physiological strain. Job resources are aspects of a job that help an employee achieve work goals, reduce job demands, and/or stimulate personal growth and development (Bakker & Demerouti, 2007). Though useful in this study, the data did not allow for testing the validity of the model.

However, this JD-R model does not take into account the social concept of reciprocity. Social exchange theory does and is therefore used as well. Social exchange theory states that obligations come from interactions between parties who are interdependent (Saks, 2006). When individuals get resources from their organization, they feel obligated to repay the organization in some way. Last, conservation of resources theory is used to understand why engaged employees are less likely to leave an organization. Conservation of resources theory states that individuals try to protect their resources and are careful when it comes to investing those resources (Hobfoll, 2001). As the JD-R model only views this relationship based on motivation, not based on a natural habit of people to preserve their resources, this addition was considered necessary.

This study is both theoretically and practically relevant. As mentioned before, many studies were limited in their inferences about causality due to the limitations of a cross-sectional design, resulting in a need for additional longitudinal studies. This study adopts both designs, thereby theoretically contributing to the field. This study also differentiates itself in that the researcher had access to the data at the individual-level. Furthermore, "research on how employee engagement influences sustainable employability is scarce and evidence on the explanatory contribution of employee engagement for sustainable employability beyond health behaviors and work-characteristics is lacking" (Rongen et al., 2014, p. 2). By focusing on turnover and sickness absenteeism, this study aims to bridge this gap of knowledge on how employee engagement influences sustainable employability beyond health behaviors and work-characteristics. Furthermore, little is known about the effects of turnover and sickness absenteeism of a department on that department's level of employee engagement as the widely used theories like the JD-R model generally argue for effects the other way around. Another important theoretical contribution of this study is therefore the examination of the effects of turnover and sickness absenteeism on employee engagement. Finally, the results of this study will either provide support for or contradiction to earlier found results. The practical relevance for Innogy of this study is threefold. First, Innogy's dashboard shows that it is aware of the importance of employee engagement for performance, and therefore wants to explore its relationship with variables like turnover and sickness absenteeism. Second, Innogy's strategy is to decrease the 'regretted turnover' 'desired turnover' ratio. It is therefore important to know what predicts (voluntary) turnover. Third, Innogy's current dashboard does not yet include sickness absence. This study therefore helps Innogy clear the picture of how sickness absenteeism influences the aforementioned to concepts. By finding the strength and direction(s) of the effects of the interrelationships between employee engagement, turnover and sickness

absenteeism within Innogy, it will help Innogy anticipate on these outcomes in order to optimize performance. The outcomes also provide other companies with an image of how these concept could influence each other.

Consequently, the research question in this study is "To what extent do turnover and sickness absenteeism influence employee engagement, and to what extent are voluntary turnover and sickness absenteeism influenced by employee engagement?".

3 THEORETICAL FRAMEWORK

Based on literature, the following section describes the variables in this study and the expectations concerning their relationships.

3.1 THE VARIABLES

3.1.1 Employee Engagement

Different forms of engagement have been defined in many different ways. For instance, Maslach, Schaufeli, and Leiter (2001, p. 398) defined engagement as "the relationship that people have with their work" while Colbert, Mount, Harter, Witt, and Barrick (2004, p. 603) defined it as "a high internal motivational state". Kahn (1990, p. 694) defined engagement at work as "the harnessing of organizational members' selves to their work roles; in engagement, people employ and express themselves physically, cognitively and emotionally during role performances". Bakker and Schaufeli (2008) and Schaufeli and Salanova (2007) defined work engagement as a positive work-related state of mind that is characterized by vigor, dedication, and absorption. Harter et al., 2002, p. 269) defined employee engagement as "the individual's involvement and satisfaction with as well as enthusiasm for work". A close look at these definitions reveals that there is no major difference between engagement, work engagement or employee engagement. As the definitions by Maslach et al. (2001), Colbert et al. (2004) and Kahn (1990) are very generic and offer few handles for researchers to find underlying dimensions, the choice was made not to use these definitions. Furthermore, other research has suggested that the absorption component in Bakker and Schaufeli's (2008) and Schaufeli and Salanova's (2007) definition of work engagement is related to the concept of flow (Csikszentmihalyi, 1990) and plays a different role compared to both other engagement dimensions (Salanova, Llorens, Cifre, Martínez, & Schaufeli, 2003). Flow refers to "a short-term state of optimal experience – also outside the realm of work – that is characterized by

focused attention, clear mind and body unison, effortless concentration, complete control, distortion of time, and intrinsic enjoyment" (Schaufeli et al., 2009, p. 895). That is why the choice was made to use the definition provided by Harter et al. (2002). The term 'employee engagement' will therefore be used throughout the paper rather than 'engagement' or 'work engagement'. Employee engagement is argued to significantly differ from constructs as organizational commitment, job satisfaction or job involvement (Maslach et al., 2001). Organizational commitment refers to "an employee's allegiance to the organization that provides employment" (Maslach et al., 2001, p. 416), thus focussing on the organization, whereas employee engagement focuses on the work itself. Additionally, job satisfaction is "the extent to which work is a source of need fulfilment and contentment, or a means of freeing employees from hassles or dissatisfiers" (Maslach et al., 2001, p. 416), it does not encompass the person's relationship with the work itself. Finally, job involvement is similar to the involvement aspect of employee engagement, but does not include the satisfaction and enthusiasm dimensions. Macey and Schneider (2008) have identified three components of employee engagement after having studies many different definitions, one of which was Harter et al.'s (2002). They found the following three components: trait engagement, state engagement and behavioural engagement. Trait engagement refers to positive views of life and work characterised by a proactive and autotelic personality, trait positive effect and conscientiousness. State engagement refers to feelings of energy and absorption characterised by involvement, commitment and empowerment. Behavioural engagement refers to extra-role behaviour characterised by organizational citizenship behaviour (OCB), proactive and personal initiative, role expansion and adaptive orientation.

3.1.2 Total Turnover

Turnover is broadly defined as "individuals terminating their employment or otherwise choosing to (or being forced to) exit the organization" (Selden & Sowa, 2015). The more specific definition as provided by Shaw, Delery, Jenkins, and Gupta (1998, p. 512) describes turnover as "voluntary turnover (when employees quit); involuntary turnover (when employees are fired or laid off); and retirements (when employees leave after meeting specific service requirements for retirement)". Innogy however used a fourth category: mutual agreement. Total turnover in this study is therefore the sum of voluntary turnover, involuntary turnover, retirements and mutual agreement during the three periods in 2017.

Turnover due to retirement is expected (Selden & Sowa, 2015), it is something an organization can anticipate on. However, turnover due to poor performance or poor person-organization fit is something the organization cannot anticipate on (Selden & Sowa, 2015).

Turnover as a whole can be both desirable and undesirable for an organization. Mobley (1982) illustrated the negative and positive consequences of turnover for an organization. Possible negative consequences include recruiting, hiring, assimilation and training costs; replacement costs; out-processing costs; disruption of social and communication structures; productivity loss during replacement search and retraining; loss of high performance; decreased satisfaction among stayers; stimulate "undifferentiated" turnover control strategies and negative promotion from leavers. Possible positive consequences include displacement of poor performers; infusion of new knowledge or technology via replacements; stimulate changes in policy and practice; increased internal mobility opportunities; increased structural flexibility; increased satisfaction among stayers; decrease in other "withdrawal" behaviours and opportunities for cost reduction and consolidation. In this study, another possible consequence is examined: engagement.

3.1.3 Voluntary Turnover

As explained above, voluntary turnover is the part of total turnover that is a consequence of an employee's decision to quit (Shaw et al., 1998). It is the employee rather than the employer who terminates the employment contract, something that organizations wish to prevent in most instances (Selden & Moynihan, 2000). Most problematic for an organization is when good performers voluntarily leave the organization (Selden & Sowa, 2015). Voluntary turnover can be extremely costly for organizations as they must bear the cost of replacing the existing employee, along with losing the sunk costs associated with the recruitment, selection, and development of that employee (Barrick & Zimmerman, 2009; Karsan, 2007; Moynihan & Pandey, 2007). For many organizations, this kind of expenditure could significantly challenge the organization's financial sustainability (Selden & Sowa). To reduce the loss of talented employees (Selden & Moynihan, 2000) and to reduce the costs associated with turnover, an employer must understand the reasons associated with voluntary turnover. One of those reasons is therefore investigated in this study: engagement.

3.1.4 Sickness Absenteeism

Claes (2014, p. 367) defined sickness absenteeism as "non-attendance at work due to poor health and / or poor well-being". Although this definition only considers health and well-being antecedents of sickness absenteeism, this study will also include antecedents that are non-

health or -well-being related as this study focuses on "voluntary sickness absenteeism". The term voluntary absenteeism stems from the idea that this kind of absenteeism involves an escape from, or even protest against poor or aversive work circumstances (Chadwick-Jones, Nicholson, & Brown, 1982). In this study, the form frequency will be used to measure sickness absenteeism because frequency is more relevant for work-related sickness since absenteeism frequency is considered to be an indicator of voluntary absenteeism and a function of employees' motivation (Bakker, Demerouti, de Boer, & Schaufeli, 2003). Sickness absence frequency is "the number of spells of sickness absence during a particular interval" (Claes, 2014, p. 371). A spell is "the period between the start and the end of the time of absence due to sickness" (Claes, 2014, p. 371). According to Schaufeli et al. (2009), sickness absenteeism is a complex phenomenon that is influenced by a host of social, organizational and personal factors. When considering reasons that are grounded in the nature of the employee's job, it is assumed that there are two explanations for employees' decisions to report themselves sick. Firstly, according to the withdrawal hypothesis, employees may be absent because they want to withdraw from aversive work circumstances. Secondly, according to the stress reaction hypothesis, employees may be absent as a reaction to distress caused by job demands. In this case, absenteeism is not merely a behavioural reaction to job dissatisfaction, but it is used as a coping mechanism to deal with stressful job demands.

3.2 THE RELATIONSHIPS

3.2.1 The Job Demands-Resources Model

To understand why certain relationships are expected, an explanation of the JD-R model is required. The JD-R model is a model developed by Bakker and Demerouti (2007) that distinguishes two types of work characteristics: 'job demands' and 'job resources'. Job demands are defined as "those physical, social, or organizational aspects of the job that require sustained physical or mental effort and are therefore associated with certain physiological and psychological costs" (Bakker & Demerouti, 2007, p. 312). These include, for instance, long work hours, high work pressure and emotionally demanding interactions with clients. When the situation is costing a lot of energy and the employee does not have enough time to fully restore, these job demands can turn into stress. Employees can recover by taking a break, changing tasks or working at a slower pace. When they do not do this, a state of continuous activation and therefore an increase in job demands will arise, which could lead to a burnout. Job resources are defined as "those physical, social, or organizational aspects of the job that may do any of

the following: (a) be functional in achieving work goals, (b) reduce job demands and the associated physiological and psychological costs, and (c) stimulate personal growth and development'' (Bakker & Demerouti, 2007, p. 312). Examples are job control, participation in decision making, and social support (Demerouti et al., 2001a, b). Following the social aspect of job resources, Price (1977) argues that an increase in turnover will lead to a decrease in job satisfaction due to a lower level integration. Integration is "the degree to which members of an organization have close friends in their immediate work units" (Mueller & Price, 1989, p. 391). In other words, high turnover will disrupt the informal interaction pattern since unit members must constantly adjust to losing friends plus meeting and working with their replacements (Price, 1977). Integration and therefore low turnover levels will be treated as job resources.

Moreover, two mechanisms form the relationship between job demands and strain and between job resources and motivation, namely, the health impairment process and the motivational process (Bakker & Demerouti, 2007). Bakker and Demerouti (2007, p. 313) defined the former as a process in which "poorly designed jobs or chronic job demands (e.g. work overload, emotional demands) exhaust employees' mental and physical resources and may therefore lead to the depletion of energy (i.e. a state of exhaustion) and to health problems". The latter has been referred to as a process in which "job resources have motivational potential and lead to high work engagement, low cynicism, and excellent performance" (Bakker & Demerouti, 2007, p. 313). Figure 1 below illustrates these two processes. If integration and a low level of turnover and sickness absenteeism are indeed viewed as job resources, these will have motivational potential and will lead to high work engagement. Therefore, employee engagement is viewed as a motivational process, leading to more positive organizational outcomes like less voluntary turnover and sickness absenteeism.

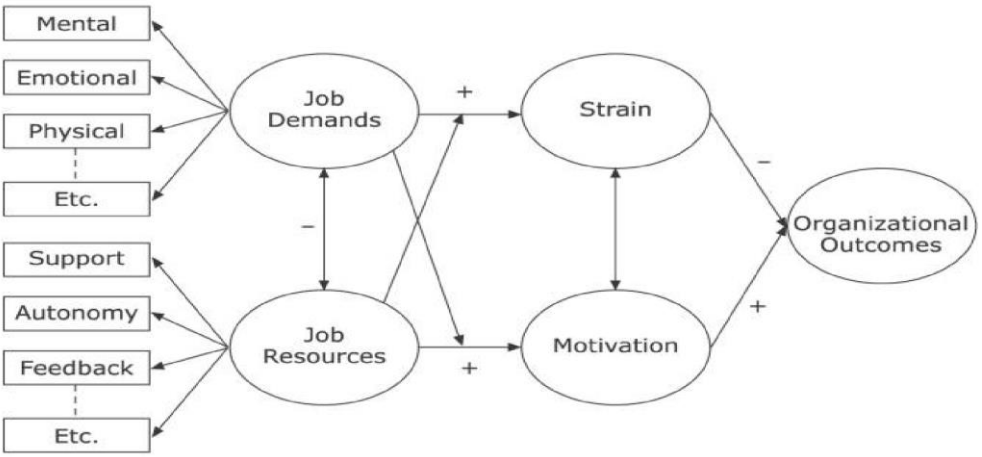

Figure 1. The Job Demands-Resources model. Reprinted from "The Job Demands-Resources model: state of the art" by A.B. Bakker and E. Demerouti, 2007, *Journal of Organizational Psychology, 22*, p. 313. Copyright 2007 by Emerald Group Publishing Limited.

3.2.2 The Effect of Total Turnover on Employee Engagement

As most studies focus on the effect of employee engagement on turnover instead of the other way around, very little is known about the way turnover influences employee engagement. For the formulation of the first hypothesis, both the JD-R model and the social exchange theory can be applied though. As explained above, turnover disrupts the informal interaction pattern since unit members must constantly adjust to losing friends plus meeting and working with their replacements (Price, 1977). As this negatively affects the social aspect of the job, a low level of turnover is treated as a job resource. The JD-R model illustrates that such job resources lead to motivation, which in turn leads to positive organizational outcomes such as employee engagement. Secondly, social exchange theory can be applied. Social exchange theory states that "obligations are generated through a series of interactions between parties who are in a state of reciprocal interdependence" (Saks, 2006, p. 603). When individuals receive economic and socioemotional resources from their organization, they feel obliged to respond in kind and repay the organization. As employee engagement includes involvement with and enthusiasm for work, components that are beneficial for the organization, employee engagement can be seen as a response in kind and a form of repay to the organization. This argument finds support in Robinson, Perryman, and Hayday's (2004) description of engagement as a two-way relationship between the employer and employee. In other words, high turnover decreases the amount of job resources, reducing one's feeling of obligation to respond in kind and repay the organization leading to less employee engagement.

The findings of May, Gilson, and Harter's cross-sectional study (2004) support the idea that turnover reduces employee engagement due to a reduced level of integration. Their findings suggest that job resources have a positive effect on psychological availability, which in turn positively affects employee engagement. They also found that co-worker relations, which is here viewed as a job resource, leads to psychological safety, which in turn increases employee engagement. Additionally, they found that relationships in the workplace have a significant impact on meaningfulness, which is one of the predictors of engagement. The latter has been confirmed by Locke and Taylor (1990) who state that individuals who have more positive interpersonal interactions with their co-workers should also experience greater meaning in their work. Maslach et al.'s longitudinal study (2001) does not only support the premise that job resources are related to employee engagement, it also argues for a positive effect of community and social support on employee engagement. Additionally Kahn's qualitative study (1990) on psychological conditions of engagement suggests that interpersonal relationships promote employee engagement. Furthermore, Schaufeli and Bakker's cross-sectional study (2004) found that a job resource that includes support from colleagues predicts engagement. Anitha's causal study (2014) also showed that team and co-workers relationships emphasize the interpersonal harmony of employee engagement. Finally, as mentioned before, Price (1977) argues that turnover will decrease one's job satisfaction. Although this does not relate to employee engagement directly, it can be expected that it will also lead to reduced employee engagement since a positive correlation between job satisfaction and employee engagement has been established (Abraham, 2012).

All in all, if a low level of turnover is treated as a job resource, a negative relationship is expected between turnover and engagement. The reasoning behind this is that job resources lead to positive organizational outcomes and a feeling of obligation on the side of the employee to respond in kind and repay the organization in the form of engagement. Furthermore, turnover causes a lack of integration and therefore negatively affects the interpersonal and social aspects of one's job. Many studies with different designs supported the idea that job resources and these interpersonal and social aspects of the job have a positive affect employee engagement. Consequently, the following hypothesis was developed:

Hypothesis 1: Turnover has a negative effect on employee engagement.

3.2.3 The Effect of Sickness Absenteeism on Employee Engagement

Most studies focus on the effect of employee engagement on sickness absenteeism instead of the other way around, resulting in the fact that also very little is known about the way

sickness absenteeism influences employee engagement. For the formulation of the second hypothesis, both the JD-R model and the social exchange theory can be applied as well. The reasoning is the same: sickness absenteeism disrupts the informal interaction pattern since unit members must constantly adjust to missing friends (Price, 1977). This again, negatively affects the social aspect of the job. A low level of sickness absenteeism is therefore also treated as a job resource. As can be seen above, the JD-R model illustrates that job resources lead to motivation, which in turn leads to positive organizational outcomes such as employee engagement. Secondly, social exchange theory can be applied again, which states that obligations are generated through a series of interactions between parties who are in a state of reciprocal interdependence (Saks, 2006). The receival of economic and socioemotional resources make employees feel obliged to respond in kind and repay the organization with, for instance, engagement. In other words, high sickness absenteeism decreases the amount of job resources, reducing one's feeling of obligation to respond in kind and repay the organization leading to less employee engagement.

This line of thought is supported by the same empirical studies as the first hypothesis. As mentioned, May et al.'s cross-sectional study (2004) found that job resources have a positive effect on psychological availability, which in turn positively affects employee engagement; that co-worker relations, which is here viewed as a job resource, leads to psychological safety, which in turn increases employee engagement; and that relationships in the workplace have a significant impact on meaningfulness – one of the predictors of engagement, something that has been confirmed by Locke and Taylor (1990). These findings therefore support the idea that sickness absenteeism reduces employee engagement due to a reduced level of integration. Additionally, Maslach et al.'s longitudinal study (2001) supports the premise that job resources are related to employee engagement and argues that community and social support have a positive effect on employee engagement. Kahn's qualitative study (1990) has also shown that interpersonal relationships promote employee engagement and Schaufeli and Bakker's cross-sectional study (2004) found that a job resource that includes support from colleagues predicts employee engagement. Anitha's causal study (2014) consistently shows that team and co-worker relationships emphasize the interpersonal harmony of employee engagement. Finally, Price (1977) argues that a lack of integration will decrease one's job satisfaction. As Abraham (2012) found a positive correlation between job satisfaction and employee engagement, one can expect that this lack of integration, in this case caused by sickness absenteeism, will also lead to reduced employee engagement.

All in all, if a low level of sickness absenteeism is treated as a job resource, a negative relationship is expected between sickness absenteeism and engagement. The reasoning behind this is that job resources lead to positive organizational outcomes and a feeling of obligation on the side of the employee to respond in kind and repay the organization in the form of engagement. Furthermore, sickness absenteeism causes a lack of integration and therefore negatively affects the interpersonal and social aspects of one's job. Many studies with different designs supported the idea that job resources and these interpersonal and social aspects of the job have a positive effect on employee engagement. Consequently, the following hypothesis was developed:

Hypothesis 2: Sickness absenteeism frequency has a negative effect on employee engagement.

3.2.4 The Effect of Employee Engagement on Voluntary Turnover

According to Halbesleben and Wheeler (2008), the link between engagement and turnover stems from high levels of investment in and dedication to work. An employee who is highly engaged may find it difficult to detach from the job, in large part because they have high levels of identification with the work that they do. Since the work has provided so many resources to the employee, he/she may be hesitant to leave the job (de Lange, de Witte, & Notelaers, 2008). In line with the conservation of resources (COR) theory, which states that individuals tend to take steps to protect their current resources and are quite careful in their investment of resources (Hobfoll, 2001), Halbesleben and Wheeler (2008) argue that leaving a job requires an investment of resources that the employee considers too risky. Engaged employees have invested a lot into their current employer and job that they will become more hesitant to invest them elsewhere. Moreover, Schaufeli and Bakker (2004) argue that engaged employees are likely to have a greater attachment to their organization and a lower tendency to leave the organization. Although turnover intention is not the same as actual turnover, the assumption is that attrition is high. Attrition refers to "people who turned intention to leave into actual turnover" (Halbesleben & Wheeler, 2008, p. 252). The JD-R model by Bakker and Demerouti (2007) could also provide an explanation for this effect. As mentioned before, the model distinguishes between a motivational process and a health impairment process. It is to be assumed that employee engagement is a motivational process and will therefore lead to positive organizational outcomes, i.e. less voluntary turnover.

Although Halbesleben and Wheeler's longitudinal study (2008) did not find a significant effect of engagement on turnover intention, numerous other (cross-sectional) studies did (Van

den Heuvel, Freese, Schalk, & Van Assen, 2017; Saks, 2006; Schaufeli & Bakker, 2004; Shemueli, Dolan, Ceretti, & Del Prad, 2016; Memon, Salleh, & Baharom, 2016; Wan, Li, Zhou, & Shang, 2018; Shuck, Reio, & Rocco, 2011; Jones & Harter, 2005). Additionally, several other (cross-sectional) studies found a significant relationship between employee engagement and turnover (Harter et al., 2002; Collini, Guidroz, & Perez, 2015).

In conclusion, from the COR theory it can be derived that engaged employees have invested and received so many resources in and from the job, that they are more hesitant to leave the organization, i.e. lower turnover intentions. The JD-R model also assumes engagement to be a motivational process, therefore leading to less voluntary turnover. A huge number of cross-sectional studies have found significant negative effects between employee engagement and turnover (intentions). Consequently, the following is expected:

Hypothesis 3: Employee engagement has a negative effect on voluntary turnover.

3.2.5 The Effect of Employee Engagement on Sickness Absenteeism

Applying the same logic as above, the JD-R model by Bakker and Demerouti (2007) could explain the negative relationship between employee engagement and sickness absenteeism. The motivational process in which sufficient job resources foster employee motivation, may produce work engagement and reduce "voluntary" sickness absence (Schaufeli et al., 2009). Additionally, Johns (1997) argued that voluntary, as opposed to involuntary absence is best explained by models that focus on psychological job attitudes like employee engagement. Furthermore, engaged employees are self-determined to accomplish tasks despite perceived obstacles (Shantz & Alfes, 2015). Considering setbacks at work, engaged employees are less likely to be voluntarily absent, and instead, they relish in challenges presented to them at work (Shantz & Alfes, 2015). Consistently, engaged employees find their work stimulating, which draws them to spend more time at work. Finally, being engrossed in one's work also contributes to lower absence rates, as employees who are fully absorbed in work experience flow (who find their work intrinsically enjoyable and difficult to detach from) (Csikszentmihalyi, 1990).

As mentioned before, Abraham (2012) found a positive correlation between job satisfaction and employee engagement, and Brayfield and Crockett (1995) and Kraut (1975) suggest that dissatisfaction can lead to different kinds of withdrawal, one of which is absenteeism. Consequently, we can assume it is possible that employee engagement leads to more job satisfaction, and more job satisfaction leads to less sickness absenteeism. Moreover, Schaufeli et al.'s longitudinal study (2009) in which the effect of work engagement on the

frequency of sickness absenteeism was studied, showed that employee engagement positively predicted registered sickness frequency. Although they subcategorized employee engagement differently, Rongen et al.'s longitudinal study (2014) found that the vigour dimension of employee engagement was significantly negatively related to short-term sickness absenteeism. Though short-term absenteeism is not the same as absenteeism frequency, short-term absenteeism is assumed to be more closely related to it than long-term or total absenteeism as voluntary absenteeism, which is best reflected by frequency, will be very short. Finally, Shantz and Alfes' cross-sectional study (2015) also showed that employee engagement was negatively related to voluntary absence.

Shortly, using the motivational process of the JD-R model, employee engagement is expected to lead to the positive organizational outcome of low sickness absenteeism. Many cross-sectional and longitudinal studies have found support for this negative relationship between employee engagement and sickness absenteeism. This lead to the following hypothesis:

Hypothesis 4: Employee engagement has a negative effect on sickness absenteeism frequency.

4 METHOD

4.1 RESPONDENTS

Innogy is an energy company working towards a sustainable future by generating energy from renewable energy sources like the sun and wind. It also provides individuals and organizations with electricity and gas. The company is divided into Innogy NL, located in 's-Hertogenbosch, the Netherlands, and Innogy SE, located in Essen, Germany. The desired research population included all employees of Innogy NL. However, the study sample for employee engagement includes only those employees willing to fill out the employee engagement questionnaire, which was set out thrice. In total, 1711 employees filled in the first employee engagement questionnaire, 1445 employees filled in the second employee engagement questionnaire, and 1387 employees filled in the third employee engagement questionnaire, adding up to a total of 4543 responses in the three periods. Compared to the total number of employees the questionnaire was distributed to, this results in the response rates 58%; 49% and 48%, respectively. The questionnaire was sent out to roughly 2.950 employees divided over 45 departments from Innogy, after grouping departments with fewer than five

employees. The employees had an average age of the employees was 37,75 (*SD* = 10.91), 14.21% male (as measured on 30-09-2017). The average FTE was .86 (*SD* = .21). Department size ranged from 5 to 545 (*M* = 47.84, *SD* = 91.23).

4.2 PROCEDURE

The aforementioned employee engagement questionnaire was set out thrice, resulting in three different periods. Period one represents the months January, February and March of 2017; period two represents the months April, May and June of 2017; period three represents the months July, August and September of 2017. This allowed for an examination of the effects within time periods (cross-sectional) and between time periods (longitudinal). All data were gathered and stored on the individual level, but due to the fact that the survey data were anonymous and the other data were not, they were not compatible at this level. The study was therefore done on the department-level. In constructing the final data set, departments with fewer than five employees were grouped together in order to be representable and to ensure the validity of the research. Employees that did not belong to a specific department, only to a business unit, were not taken into account.

Study 1 examined the effects of turnover and sickness absenteeism on employee engagement, while study 2 examined the effects of employee engagement on voluntary turnover and sickness absenteeism. The hypotheses of each study were tested with both a cross-sectional approach (all measures in period 1, 2 and 3) as well as a longitudinal approach (independent measures in period 1 and 2, dependent measures in period 2 and 3).

Afterwards, the results were discussed with employees from Innogy to find out to what extent the results were relatable and how the organization can anticipate on these outcomes. Summaries of these interviews can be found in the Appendix.

4.3 INSTRUMENTS

4.3.1 Variable Measures

Employee engagement. Employee engagement data were available for 45 departments from a questionnaire developed by the organization itself. The items in the questionnaire included ten or eleven response options (0 = *I am insufficiently familiar with the brand*, 1 = *completely disagree*, 10 = *completely agree*). Examples of these items are “I experience sufficient opportunities to develop and grow”, “I am well-informed about the course of the

organization", "my supervisor motivates me to learn new things" and "I am appreciated for the work that I do".

In order to find possible underlying components in the employee engagement questionnaire, a factor analysis was conducted. The 23 items of the employee engagement questionnaire were subjected to principal component analysis (PCA) using SPSS version 23. Prior to performing PCA, the suitability of data for factor analysis was assessed. An inspection of the correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Meyer-Olkin value was .951, exceeding the recommended value of .6 (Kaiser, 1970; 1974) and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance, supporting the factorability of the correlation matrix.

Principal component analysis revealed the presence of three components with eigenvalues exceeding 1, explaining 52%, 8% and 5% of the variance respectively. An inspection of the screeplot revealed a clear break after the third component (see Appendix) (Pallant, 2013). Using Cattell's (1966) scree test, it was decided to retain three components for further investigation. The three-component solution explained a total of 64% of the variance, with Component 1 contributing 52%, Component 2 contributing 8% and Component 3 contributing 5%. To aid in the interpretation of these three components, oblimin rotation was performed (see Appendix). The rotated solution revealed the presence of simple structure (Thurstone, 1947), with all components showing a number of strong loadings and all variables loading substantially on only one component (see Appendix). There was a moderate positive correlation between factor 1 and 2 (r = .50), a weak positive correlation between factor 2 and 3 (r = .44), and a moderate positive correlation between factor 1 and 3 (r = .63). Component 1 included questions about development, recognition and the employees' perception of their supervisor. Examples are "I am provided with sufficient opportunities to develop myself", "I am appreciated for the work that I do" and "my supervisor is genuinely interested in how I am doing". Component 2 included questions about the extent to which the employees are proud of and involved with the organization. Examples are "I will proudly tell others about the brand Innogy" and "I am well-aware of the current developments within this organization". Finally, Component 3 included questions about internal communication, knowledge sharing and coordination. Examples are "I am stimulated to share my knowledge and experience with others" and "My department and other departments collaborate well".

However, as can be seen in Table 1, the factors are not in line with the components of engagement as specified by Macey and Schneider (2008) and many items were not categorizable into either one of these components. Now, two explanations are possible for this

incongruence. First, it is possible that Macey and Schneider's (2008) division is not applicable to all situations. A more likely explanation however, is that the employee engagement questionnaire as set out by Innogy, does not entirely represent the concept of employee engagement, meaning that construct validity is lacking. This is deemed more likely because the questionnaire was not based on scientific research, but developed from scratch. As the three factors were also very hard to interpret and link to a concept within the field, it was decided to use the questionnaire as it is, and to provide recommendations for Innogy regarding the development of a suitable questionnaire.

The reliability of the questionnaire was also checked. The Cronbach alpha coefficient of this employee engagement questionnaire (as measured in the third period) was .955. The Lambda-2 coefficient was .957. These are considered acceptable levels of reliability (Cortina, 1993; Guttman, 1945).

Turnover. Turnover was measured in two different ways. Study 1 included all turnover and Study 2 concerned only voluntary turnover. The data were collected via Innogy on the individual level and were converted to the department-level by taking the sum of all individual scores. The turnover measure was the number of turnover cases (i.e. people that left Innogy) in the 3-month period corresponding to the periods of the employee engagement questionnaires. Both voluntary turnover and total turnover are represented by the number of people who left Innogy in the three periods divided by the number of employees in the department (as measured in the end of the period) times 100. The measure is therefore relative to the size of the department. It thus shows the percentage of employees of a certain department that left in in the three periods.

Table 1

Comparison items employee engagement questionnaire, employee engagement components and factors

Item	Suitable component (trait engagement / state engagement / behavioural engagement)	Factor
My supervisor is genuinely interested in how I am doing	-	1
My supervisor stimulates to learn new things	-	1
My supervisor inspires me to do my best	-	1
My supervisor initiates improvements based on this questionnaire	-	1
I am appreciated for the work that I do	-	1
I am provided with sufficient opportunities to develop myself	-	1
I experience room for mistakes and to learn from them	-	1
I get the opportunity to do what I do best	-	1
All in all, I am satisfied with my job	Trait engagement	1
My job provides me with challenges without overloading me	-	1
There is open communication between employees and the management	-	1
I have got a plan for my career	Trait engagement	1
I will proudly tell others about Innogy	State engagement	2
I will proudly tell others about Powerhouse	State engagement	2
I will proudly tell others about Energiedirect.nl	State engagement	2
I will proudly tell others about Essent	State engagement	2
I know the vision of this organization	State engagement	2
I am well-aware of the current developments within this organization	State engagement	2
I will proudly tell others that I work at Essent	State engagement	2
We quickly get things done here	Trait engagement	3
I use all digital resources relevant for me	Behavioural engagement	3
My department and other departments collaborate well	-	3
I am stimulated to share my knowledge and experience with others	-	3

Sickness absenteeism. Sickness absenteeism was collected on the department-level. Data were available for all internal employees, and the payrollers of the business units "Consumer Operations" and "Essent Zakelijk". Hereby, the assumption was made that all external employees were payrollers and that all these payrollers worked at "Consumer Operations" or "Essent Zakelijk". The measure is represented by the frequency of sickness absenteeism reported in a certain department divided by the number of employees in the department times 100. The measure of frequency instead of duration was chosen as frequency is more relevant for work-related sickness because absenteeism frequency is considered to be an indicator of "voluntary absenteeism" and a function of employees' motivation (Bakker et al., 2003).

Control variables. Several control variables were included in this study in order to make sure variance in the dependent variable was not caused by these control variables. Three control variables were included: FTE (fulltime-equivalent), age and gender. These were all represented by the averages of the department. For FTE, this is the average fulltime-equivalent for the employees within the department. For gender, this is the male/female ratio within a certain department (male = 0, female = 1). In the longitudinal studies, the averages of control variables of periods 1 and 2, and those of 2 and 3 were used to correspond to the number of cases.

FTE was controlled for because it seems likely that employees who work more hours and spend more time at the company or doing tasks for to the company, are more involved with the company. They might therefore be more engaged, less inclined to leave the organization and less inclined to report work-related sickness. Richman, Civian, Shannon, Hill, and Brennan (2008) indeed found that working 50 or more hours was associated with greater employee engagement. Hom and Kinicki (2001) indeed found a significant negative effect between working hours and turnover intentions, and, though not significant, they also found a negative correlation between working hours and sickness absenteeism.

Additionally, age was controlled for as older employees are expected to have worked at the organization longer than younger employees, and will therefore be more engaged and less prone to report sick. Richman et al. (2008) indeed found a significantly higher level of engagement for the employees in the highest age categories, as compared to employees in the lowest age category. Although the study included both short- and long-term sickness absenteeism, Fried, Melamed and Ben-David (2002) found that age was significantly negatively correlated to sickness absenteeism. Older employees might also be less inclined to leave the organization for two reasons: because of their higher age, they have limited possibilities for new jobs, and they are more likely to have already found and be in the job they desire. This

expectation is also supported by the findings of Richman et al. (2008) who found that age was a significant predictor of retention.

Finally, gender was controlled for as it is assumed that men and women perceive and value certain aspects of life differently, including their work life. Richman et al. (2008) found that women report significantly higher levels of engagement than men. Though there are some indications that women are less inclined to leave the organization (Hom & Griffith, 1995), most studies did not find a significant difference between men and women (Mangione, 1973; Price, 1977). Lastly, Väänänen et al. (2003) and Fried et al. (2002) also found that women reported significantly more sickness absenteeism than men.

4.4 ANALYSES

First of all, the intra-class correlation coefficient (ICC) score was calculated in order to make sure the variance between the departments was bigger than the variance within the departments. However, the ICC score for this dataset was 0.12. As this value is positive, we can conclude that the within-group variance is bigger than the between group variance (Klein & Kozlowski, 2000). This is unfortunate as the study implies that the between group variance should be bigger than the within group variance. The study was conducted anyway due to a lack of alternatives and the fact that the ICC was not high either.

Second of all, several analyses were conducted in order to test the hypotheses. After the initial factor and reliability analyses, and after having checked the assumptions (Pallant, 2013), multiple regression analysis and multivariate analysis of covariance (MANCOVA) were performed. The latter is a test that allows for "comparing groups on a range of different characteristics". It is "an extension of analysis of variance for use when you have more than one dependent variable" (Pallant, 2013, p. 293), and one or more covariates. For this, the departments were split into two groups (high engagement and low engagement) as this analysis requires a categorical independent measures. Departments that scored > 1 *SD* lower than the mean were labelled low engagement, departments that scored > 1 *SD* higher than the mean were labelled high engagement. In this study, the covariates were FTE, age and gender. Each hypothesis was tested twice, as the study design allowed for both a cross-sectional and a longitudinal approach.

5 RESULTS

5.1 DESCRIPTIVE STATISTICS

Table 2 below shows the minimum, maximum, mean, standard deviation and intercorrelations for each of the variables in this study. The table shows that engagement scores varied from 5.23 to 8.05, and that the average score was 6.84 (*SD* = .59). Furthermore, on average, the employees within the departments worked .91 FTE (*SD* = .07), and the average age was 39.89 (*SD* = 4.50). On average, the female-male ratio within the departments is 42:100 (*SD* = .20). Significant correlations are those between total turnover and voluntary turnover (*r* = .395), between FTE and total turnover (*r* = -.263), between age and FTE (*r* = .348) and between gender and FTE (*r* = -.356). These significant effects lead to several conclusions. First of all, the higher the average FTE within a department, the lower that department's total turnover. Secondly, older employees generally work more FTE's. And finally, men generally work more FTE's than women.

Table 2

Descriptive Statistics and Intercorrelations

	Min.	Max.	*M*	*SD*	1.	2.	3.	4.	5.	6.
1. Engagement	5.23	8.05	6.84	.59						
2. Voluntary Turnover	.00	20.00	1.99	4.02	-.072					
3. Total Turnover	.00	57.69	6.30	8.94	.024	.395**				
4. Sickness Absenteeism	.00	.60	.14	.14	-.066	-.071	-.099			
5. FTE	.59	1.00	.91	.07	-.005	.066	-.263**	-.052		
6. Age	26.59	55.43	39.89	4.50	.026	.005	-.167	-.152	.348**	
7. Gender	.09	1.00	.42	.20	.077	-.016	-.044	-.003	-.356**	.030

N = 135

0 = male, 1 = female.

5.2 STUDY 1

Study 1 tested the effects of turnover and sickness absenteeism on employee engagement. Hypothesis 1 stated that turnover had a significant negative effect on employee engagement, hypothesis 2 stated that sickness absenteeism had a significant negative effect on employee engagement. As the data allowed for a cross-sectional design as well as a longitudinal design, the model was tested twice: once with the effect of the independent variables in periods 1, 2 and 3 on the dependent variable in periods 1, 2 and 3; and once with the effect of the independent variables in periods 1 and 2 on the dependent variable in periods 2 and 3.

For both these analyses, hierarchical multiple regression was used to assess the ability of two independent measures (total turnover and sickness absenteeism) to predict engagement levels, after controlling for the influence of FTE, age and gender. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity.

For the first analysis, all 45 departments in period 1, 2 and 3 were included resulting in $N = 135$. Gender, age and FTE were entered at step 1, explaining .7% of the variance in engagement. Next, total turnover was entered at step 2, explaining an additional .1% of the variance in engagement. After entry of the sickness absenteeism scale at step 3 the total variance explained by the model as a whole was 1.1%, $F(5, 129) = .3$, $p > .05$. The independent measure total turnover explained an additional .1% of the variance in engagement, after controlling for gender, age and FTE, *R* squared change = .001, *F* change (1, 130) = .177, $p > .05$ and the independent measure sickness absenteeism explained an additional .3% of the variance in engagement, after controlling for gender, age and FTE, *R* squared change = .003, *F* change (1, 129) = .445, $p > .05$. In the final model, none of the control or independent measures were statistically significant. As the *R* squared change was not significant for the additions of both independent variables, hypothesis 1 and 2 were not supported in this cross-sectional design. The results can be found in Table 3 below.

Table 3

Coefficients[a] in the Cross-Sectional Study

Model		Unstandardized Coefficients				
		B	Std. Error	Beta	t	Sig.
1	(Constant)	6.502	.816		7.971	.000
	FTE	.163	.891	.018	.183	.855
	Age	.002	.012	.018	.186	.853
	Gender	.237	.271	.083	.875	.383
2	(Constant)	6.375	.872		7.313	.000
	FTE	.263	.925	.030	.285	.776
	Age	.003	.012	.020	.209	.835
	Gender	.253	.274	.089	.923	.358
	Total Turnover	.003	.006	.039	.420	.675
3	(Constant)	6.482	.888		7.298	.000
	FTE	.244	.928	.028	.263	.793
	Age	.001	.012	.010	.106	.916
	Gender	.250	.275	.087	.910	.365
	Total Turnover	.002	.006	.030	.328	.743
	Sickness Absenteeism	-.250	.375	-.060	-.667	.506

N = 135

Note. 0 = male, 1 = female.

a. Dependent Variable: Engagement

For the second analysis, the 45 departments in period 1 and 2 were included for the independent variable measures and the 45 departments in period 2 and 3 were included for the dependent variable measures resulting in *N* = 90. Gender, age and FTE were entered at step 1, explaining .8% of the variance in engagement. Next, total turnover was entered at step 2, explaining no additional variance in engagement. After entry of the sickness absenteeism scale at step 3 the total variance explained by the model as a whole was 9.5%, $F(5, 84) = 1.76$, $p >$

.05. The independent measure total turnover explained no additional variance in engagement, after controlling for gender, age and FTE, *R* squared change = .00, *F* change (1, 85) = .025, $p > .05$ and the independent measure sickness absenteeism explained an additional 8.7% of the variance in engagement, after controlling for gender, age and FTE, *R* squared change = .087, *F* change (1, 84) = 8.06, $p < .05$. In the final model, only the independent measure sickness absenteeism was statistically significant (*beta* = -.298, $p < .05$). As the *R* squared change for the addition of the independent variable turnover was not significant, hypothesis 1 was not supported in this longitudinal design. However, the *R* squared change for the addition of the independent variable sickness absenteeism was significant, hypothesis 2 was supported in this longitudinal design. The results can be found in Table 4 below.

Table 4

Coefficients[a] in the Longitudinal Study

		Unstandardized Coefficients				
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	7.174	.992		7.230	.000
	FTE	-.149	1.095	-.017	-.136	.892
	Age	-.006	.015	-.051	-.434	.666
	Gender	.173	.329	.062	.527	.600
2	(Constant)	7.215	1.032		6.994	.000
	FTE	-.189	1.131	-.022	-.168	.867
	Age	-.006	.015	-.050	-.426	.671
	Gender	.173	.331	.062	.523	.602
	Total Turnover	-.001	.008	-.017	-.157	.876
3	(Constant)	7.591	1.000		7.590	.000
	FTE	-.223	1.087	-.026	-.205	.838
	Age	-.010	.015	-.077	-.673	.503
	Gender	.187	.318	.067	.588	.558
	Total Turnover	-.004	.008	-.053	-.494	.623
	Sickness Absenteeism	-.1.163	.410	-.298	-2.838	.006

N = 90

Note. 0 = male, 1 = female.

a. Dependent Variable: Engagement

5.3 STUDY 2

Study 2 tested the effect of employee engagement on voluntary turnover and sickness absenteeism. Hypothesis 3 stated that employee engagement had a significant negative effect on voluntary turnover, hypothesis 4 stated that employee engagement had a significant negative effect on sickness absenteeism. This model was also tested twice: once with the effect of the

independent variable in periods 1, 2 and 3 on the dependent variables in periods 1, 2 and 3; and once with the effect of the independent variable in periods 1 and 2 on the dependent variable voluntary turnover in periods 2 and 3 and sickness absenteeism in periods 1 and 2. The latter is only semi-longitudinal as the expectation was that engagement immediately influences a person's sickness absenteeism.

For both these analyses, a one-way between-groups MANCOVA was performed to investigate engagement differences in the two dependent variables voluntary turnover and sickness absenteeism, after controlling for the influence of FTE, age and gender. In order to do this analysis, the departments were grouped on the independent variable engagement, scoring either low (more than 1 *SD* lower than the average) or high (more than 1 *SD* higher than the average). Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, with no serious violations noted.

In the first analysis, the departments in period 1, 2 and 3 that had an engagement score that deviated > 1 *SD* from the mean were included resulting in $N = 34$. There was no statistically significant difference between those departments that scored lower on engagement and those that scored higher on engagement on the combined dependent variables, F (2, 28) = .81, p = .454; Wilks' Lambda = .95; partial eta squared = .06. There was no statistically significant effect of the control variables FTE and gender on the combined dependent variables either. However, there was a statistically significant effect of the control variable age on the combined dependent variables, F (2, 28) = 5.586, p = .009; Wilks' Lambda = .715. When the results for the dependent variables were considered separately, the only difference to reach statistical significance, using a Bonferroni adjusted alpha level of .013, was the effect of age on sickness absenteeism, F (1, 29) = 11.377, p = .002, partial eta squared = .282. An inspection of the mean scores indicated that departments that scored lower on engagement reported lower levels of voluntary turnover (M = 3.588, SD = 1.443) and sickness absenteeism (M = .139, SD = .037) than departments that scored higher on engagement (M = 3.630, SD = 1.532) (M = .209, SD = .039). As both F-values for voluntary turnover and sickness absenteeism were not significant, hypothesis 3 and 4 were not supported in this cross-sectional design. However, the F-value for age was significant for the dependent variable sickness absenteeism, meaning that age had a significant effect on sickness absenteeism. Looking at the descriptive statistics and intercorrelations (Table 2), it can be concluded that this effect is negative. The results can be found in Table 5 below.

Table 5

Test of Between-Subjects Effects in the Cross-Sectional Study

Source	Dependent variable	Type III Sum of Squares	df	Mean Square	*F*	Sig.	Partial Eta Squared
Corrected	Voluntary turnover	32.605[a]	4	8.151	.222	.924	.030
Model	Sickness absenteeism	.349[b]	4	.087	3.688	.015	.337
Intercept	Voluntary turnover	9.740	1	9.740	.265	.611	.009
	Sickness absenteeism	.000	1	.000	.010	.920	.000
FTE	Voluntary turnover	19.299	1	19.299	.525	.474	.018
	Sickness absenteeism	.131	1	.131	5.555	.025	.161
Age	Voluntary turnover	1.276	1	1.276	.035	.854	.001
	Sickness absenteeism	.269	1	.269	11.377	.002	.282
Gender	Voluntary turnover	26.145	1	26.145	.711	.406	.024
	Sickness absenteeism	.006	1	.006	.266	.610	.009
Engagement	Voluntary turnover	.014	1	.014	.000	.984	.000
	Sickness absenteeism	.039	1	.039	1.668	.207	.054
Error	Voluntary turnover	1065.801	29	36.752			
	Sickness absenteeism	.685	29	.024			
Total	Voluntary turnover	1540.978	34				
	Sickness absenteeism	2.039	34				
Corrected	Voluntary turnover	1098.406	33				
Total	Sickness absenteeism	1.034	33				

N = 34

Note. 0 = male, 1 = female.

a. R Squared = .030 (Adjusted R Squared = -.104)

b. R Squared = .337 (Adjusted R Squared = .246)

In the second analysis, the departments in period 1 and 2 that had an engagement score that deviated > 1 *SD* from the mean were included for the independent variable measures and the departments in period 2 and 3 that had an engagement score that deviated > 1 *SD* from the

mean were included for the dependent measures, resulting in $N = 26$. There was no statistically significant difference between those departments that scored lower on engagement and those that scored higher on engagement on the combined dependent variables, F (2, 20) = 1.81, p = .189; Wilks' Lambda = .85; partial eta squared = .15, nor for all three control variables on the combined dependent variables. Considering the results for the dependent variables separately was therefore unnecessary. An inspection of the mean scores indicated that departments that scored lower on engagement reported slightly lower levels of voluntary turnover (M = 3.091, SD = 1.582) and sickness absenteeism (M = .160, SD = .045) than departments that scored higher on engagement (M = 3.794, SD = 1.717) (M = .293, SD = .048). As both F-values for voluntary turnover and sickness absenteeism were not significant, hypothesis 3 and 4 were not supported in this longitudinal design.

Figure 2 below shows the final conceptual model.

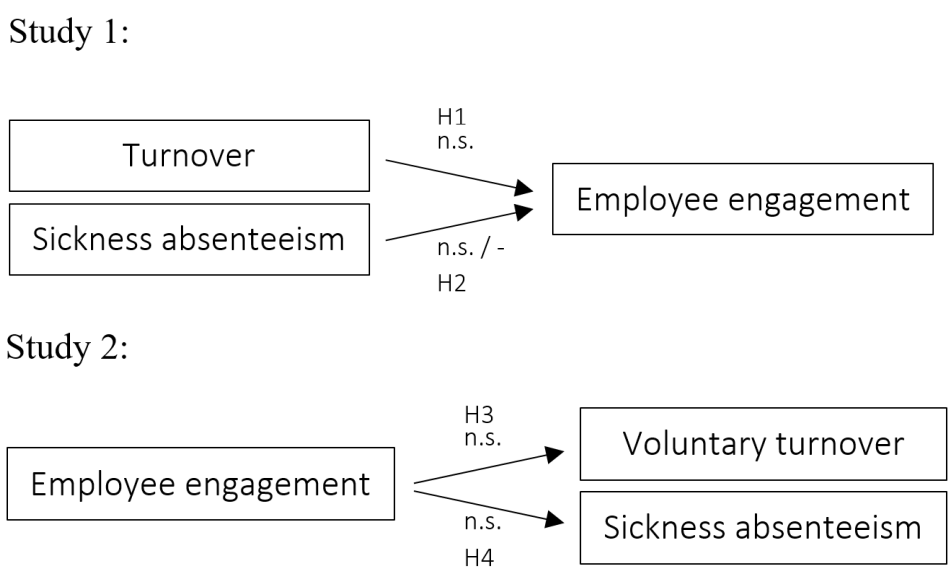

Figure 2. Conceptual model.

6 DISCUSSION

The goal of this research was to find an answer to the following research question: "To what extent do turnover and sickness absenteeism influence employee engagement, and to what extent are voluntary turnover and sickness absenteeism influenced by employee engagement?".

First of all, no support was found for hypothesis 1 representing the effect of total turnover on employee engagement. This means that the all turnover within a department does not significantly affect the average engagement level of that department, not immediately (cross-sectional) nor on the long term (longitudinal). Secondly, support for hypothesis 2 about the

effect of sickness absenteeism on employee engagement was only found in the longitudinal study, not the cross-sectional study. This means that all sickness absenteeism within a department significantly impacts the average engagement level of that department in the long-run. Furthermore, hypothesis 3 illustrating the effect of employee engagement on voluntary turnover was not supported, meaning that the average engagement level of a department does not significantly predict the level of voluntary turnover within that department. Moreover, hypothesis 4 was not supported either. This hypothesis assumed that the average engagement level of a department significantly predicts the level sickness absenteeism within that department. This turned out not to be the case. Finally, only one of the control variables significantly influenced the dependent variable. This was the case for age and sickness absenteeism, which means that the higher the average age within a department, the lower the level of sickness absenteeism within that department.

As the results only partially supported one of the four hypotheses, it is important to consider what might have caused these unexpected results. For all unexpected results the fact that the findings might be sample-dependent holds up.

Based on the JD-R model and the social exchange theory, hypothesis 1 entailed that turnover was expected to have a negative effect on employee engagement as turnover disrupts the social structure within an organization and therefore hinders people in maintaining close relationships with co-workers. The employees from the interview also expected the relationship because of a lack of continuity in the team. However, the fact that this hypothesis was not supported does not necessarily undermine the value of those theories or the arguments of Kahn (1990), Schaufeli and Bakker (2004), Maslach et al. (2001) and Locke and Taylor (1990) that community, social support and positive interpersonal interactions lead to employee engagement. There are two explanations for this lack of support. First, the JD-R model is a very broad model. Many things can be categorized as job demands or job resources, but do they really represent the concept? In other words, can integration due to a low level of turnover really be seen as a job resource? If this is indeed not the case, social exchange theory would also not be applicable anymore either as it argues that obtained resources create a feeling of need for reciprocity. Second, based on May et al.'s (2004) findings, it is possible that psychological availability (fully) mediates the relationship between turnover and employee engagement, causing a lack of direct effect. The same could hold for job satisfaction (Price, 1977; Abraham, 2012) and meaningfulness (May et al., 2004; Locke & Taylor, 1990).

Hypothesis 2 stated a significant negative effect of sickness absenteeism on employee engagement. The relationship was expected by the employees of the interviews due to an increased workload resulting from high sickness absenteeism. Support for the hypothesis was only found in the longitudinal design, not the cross-sectional design. Lack of support for the cross-sectional design can be understood through the same alternative explanations as used for the lack of support for hypothesis 1. If integration cannot actually be seen as a job resource, both the JD-R model and social exchange theory would not be applicable anymore. Secondly, it is possible that the same mediators are at play (May et al., 2004; Price, 1997; Abraham, 2012; Locke & Taylor, 1990). This therefore does not undermine the validity of the JD-R model or the social exchange model.

Hypothesis 3 stated that employee engagement would significantly negatively influence voluntary turnover. The interviewed employees expected the relationship through a lack of happiness at work. However, this hypothesis was not supported either. There is a few possible explanations for this lack of support. First, it is debatable whether employee engagement can be seen as a motivational process or not. It is also possible that employee engagement is a positive organizational outcome, meaning that employee engagement and voluntary turnover would co-exist, instead of cause one another. It is also important to keep in mind that the lack of support for the longitudinal study is consistent with the findings of Halbesleben and Wheeler (2008).

Finally, hypothesis 4 entailed that employee engagement would have a significantly negative effect on sickness absenteeism. This relationship was expected by the interviewed employees through a lack of happiness at work or a lack of affiliation with the organization. However, no support was found for this hypothesis. It is again possible that job satisfaction is a mediator in this relationship, causing a lack of direct effect (Abraham, 2012; Brayfield & Crockett, 1995; Kraut, 1975). Keeping in mind the findings of Rongen et al.' longitudinal study (2014), it is also possible that only certain dimensions of engagement significantly relate to sickness absenteeism, not the concept in its entirety.

Regarding the control variables, only age was significantly negatively related to sickness absenteeism frequency.

6.1 LIMITATIONS

A strength of this study is that it allowed for cross-sectional as well as longitudinal research. This contributes to the theory, as longitudinal research is scarce. However, this study also had a few limitations.

An investigation in the components as defined by Macey and Schneider (2008) and the factor analysis indicated that the employee engagement questionnaire did not accurately represent the construct. Though some of the items included in the employee engagement questionnaire represented the different components of employee engagement as distinguished by Macey and Schneider (2008), many items could not be categorized in either one of these components (see Table 1). However, as it was very difficult to link the factors from the factor analysis to theoretical concepts, the choice was made to use the questionnaire as it was.

Secondly, as mentioned before, the JD-R model is very broad. It is therefore questionable whether or not integration can be considered a job resource and whether employee engagement can be considered a motivational process. If not, then the JD-R model and the social exchange theory would not be applicable anymore.

Moreover, in the research process, certain assumptions were made. Not only was the engagement questionnaire assumed to measure engagement, assumptions were also made regarding the sickness absenteeism data. Sickness absenteeism data were only collected for internal employees and for payrollers in the business units "Consumer Operations" and "Essent Zakelijk". In order to acquire the full population (internal and external), the assumption had to be made that all external employees were payrollers, and that all these payrollers worked at either "Consumer Operations" or "Essent Zakelijk". In fact, by doing this, only a very small part of the external employees was excluded: of the 34803 employees (as reported in 2017), 13426 were external. Of those 13426, 10427 were payrollers and 9660 of those payrollers worked at "Consumer Operations" or "Essent Zakelijk".

Finally, certain differences between the departments were disregarded. For instance, some departments, like "Consumer Operations", include more temporary employees than other departments. However, due to cost and time constraints, not all of these differences between the departments were taken into account.

6.2 FUTURE RESEARCH

Based on the results and limitations of this study, several suggestions for future research can be made.

First of all, several studies have indicated that there could be some mediators at play in the relationship between turnover and employee engagement (May et al., 2004; Price, 1997; Abraham, 2012; Locke & Taylor, 1990). The current conceptual model could therefore be expanded with the variables job satisfaction, psychological availability and meaningfulness to see to which extent the relationship between turnover and employee engagement is direct, and

to what extent it is mediated by either one or more of these variables. This requires longitudinal research, something which currently is also lacking in this field of study.

Second of all, research on a department level should overcome the present limitation of disregarding differences between these departments. Future research should include more control variables to hold the composition of the departments constant.

Also, as mentioned in the beginning, this is one of the very few studies that examined the effects of turnover and sickness absenteeism on employee engagement, as opposed to traditional research that examined these effects only in the other direction. Future research could therefore further investigate these directions, especially since the results of this study found support for the premise that high sickness absenteeism has a significantly negative impact on a department's employee engagement levels.

Additionally, the employees from the interviews expected that high levels of sickness absenteeism caused lower levels of engagement due to an increased workload. However, workload was not considered in this study. Perhaps future research could also consider the possible mediating role of workload in this relationship.

Finally, another theoretical contribution of this study is that it adds to the lacking amount of research about the effect of engagement on sustainable employability (Rongen et al., 2014). Future research should further add to this field of research.

6.3 PRACTICAL IMPLICATIONS

The results of the analyses allow for several recommendations for Innogy.

First of all, due to the fact that the construct validity of the engagement questionnaire is questionable, Innogy should invest in constructing a questionnaire that accurately measures the topic of interest. This can be done by looking at the existing literature. From this, different examples questions and dimensions can be derived, simplifying the process of operationalization. Table 2 can be used to see which questions in the current questionnaire do, to some extent, already measure employee engagement, and which should definitely be replaced by more suitable ones.

Second of all, when wanting to increase engagement among employees, Innogy should lower its sickness absenteeism frequencies since, in the long run, high sickness absenteeism results in less engagement. The focus should hereby be mainly on younger employees as the results show that departments with older employees report less sickness absenteeism.

Moreover, the positive ICC score indicated that employee engagement should not be measured at a department level as the scores within the departments differed more than the

scores between the departments. Innogy should therefore consider adjusting the collection of data in such a way that analyses can be done at the individual level.

As stated by one of the employees with whom an interview was done, it is interesting for Innogy to find out what the other predictors of employee engagement are, besides sickness absenteeism. He also stated that it would be insightful to report the exact reason for leaving for all turnover cases, as opposed to the broad categories that are now used.

Given the nature of the study, several recommendations can be made for future researchers wanting to base their study on data provided by a company. First of all, make sure you have a research question before you start. This enables you to purposely look and ask for certain data sets. Second of all, make sure that you are in possession of the datasets available within the company before you start the actual research. In that way, you prevent being surprised with for instance the fact that the different datasets represent different populations. This immediately relates to the next remark: check for control variables included in the datasets like internal/external, male/female, etc. This not only allows you to align the populations of the datasets, it also allows you to include control variables in your study. Of course you are limited to the data available within the company, but you can make sure you are prepared.

6.4 CONCLUSION

In the study, the following research question was answered: "To what extent do turnover and sickness absenteeism influence employee engagement, and to what extent are voluntary turnover and sickness absenteeism influenced by employee engagement?".

The data allowed for both a longitudinal and a cross-sectional approach. Hence, two different studies were conducted: one testing the effects of total turnover and sickness absenteeism on engagement, and one testing the effects of engagement on voluntary turnover and sickness absenteeism.

The results showed only partial support for hypothesis 2. From the regression analyses and MANCOVA's several conclusions can be drawn. First of all, sickness absenteeism was significantly negatively related to engagement in the longitudinal study. This means that, over time, high sickness absenteeism leads to less engagement. Second of all, age was significantly negatively related to sickness absenteeism in the cross-sectional study, meaning that departments with older employees report less sickness absenteeism.

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8 APPENDICES

8.1 TABLES & FIGURES

Figure 3. Scree plot employee engagement questionnaire.

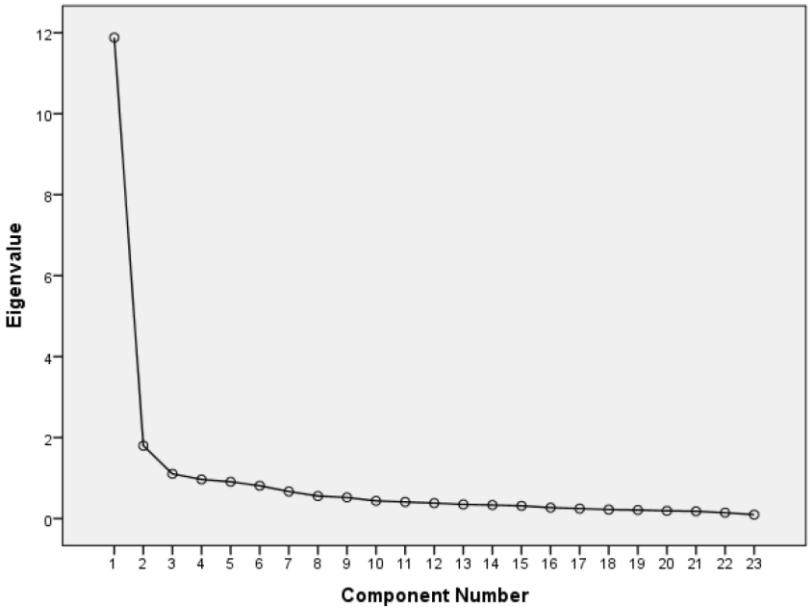

Table 6

Component matrix employee engagement questionnaire.

Item	Component		
	1	2	3
Mijn leidinggevende inspireert mij om het beste van mijzelf te geven	.825	-.314	
Mijn leidinggevende stimuleert mij om nieuwe dingen te leren	.818	-.316	
Ik ben al met al tevreden met mijn werk	.808		
Ik word gewaardeerd voor het werk wat ik doe	.805		
Ik vertel met trots aan anderen dat ik bij Essent werk	.802		
Ik krijg de kans om te doen waar ik goed in ben	.802		
Ik heb voldoende mogelijkheden om mijzelf te kunnen ontwikkelen	.792		
Er is open communicatie tussen medewerkers en het management	.778		
Mijn werk geeft me uitdagingen zonder me te overladen	.760		
Ik word gestimuleerd om mijn kennis en ervaring te delen met anderen	.759		
Mijn leidinggevende initieert verbeteringen naar aanleiding van de Teambarometer	.751		
Mijn leidinggevende is oprecht geïnteresseerd in hoe het met mij gaat	.738	-.344	-.310
Ik vertel met trots aan anderen over het merk Essent	.735		
Ik ervaar ruimte om fouten te maken en hiervan te leren	.719		
Ik ben op de hoogte van de actuele ontwikkelingen binnen onze organisatie	.711		
Er is een goede samenwerking tussen mijn afdeling en de andere afdelingen	.705		.385
Ik ken de koers van onze organisatie	.663		
We krijgen hier zaken snel voor elkaar	.647		.524
Ik heb een plan voor mijn loopbaan	.602		
Ik gebruik alle digitale hulpmiddelen die voor mij relevant zijn	.579		.531
Ik vertel met trots aan anderen over het merk Energiedirect.nl	.579	.528	
Ik vertel met trots aan anderen over het merk innogy	.536	.635	
Ik vertel met trots aan anderen over het merk Powerhouse	.457	.598	

Table 7

Pattern and structure matrix for PCA with oblimin rotation employee engagement questionnaire

Item	Pattern coefficients			Structure coefficients		
	Component 1	Component 2	Component 3	Component 1	Component 2	Component 3
Mijn leidinggevende is oprecht geïnteresseerd in hoe het met mij gaat	1.009			.855	.333	.421
Mijn leidinggevende stimuleert mij om nieuwe dingen te leren	.966			.904	.399	.528
Mijn leidinggevende inspireert mij om het beste van mijzelf te geven	.962			.909	.405	.539
Mijn leidinggevende initieert verbeteringen naar aanleiding van de Teambarometer	.786			.803	.380	.533
Ik word gewaardeerd voor het werk wat ik doe	.773			.833	.493	.543
Ik heb voldoende mogelijkheden om mijzelf te kunnen ontwikkelen	.659			.790	.513	.570
Ik ervaar ruimte om fouten te maken en hiervan te leren	.613			.729	.390	.569
Ik krijg de kans om te doen waar ik goed in ben	.595			.783	.499	.635
Ik ben al met al tevreden met mijn werk	.532			.764	.576	.621
Mijn werk geeft me uitdagingen zonder me te overladen	.504			.718	.552	.574
Er is open communicatie tussen medewerkers en het management	.485			.731	.524	.636
Ik heb een plan voor mijn loopbaan	.401	.312		.561	.515	.392
Ik vertel met trots aan anderen over het merk innogy		.904		.357	.842	
Ik vertel met trots aan anderen over het merk Powerhouse		.831			.755	
Ik vertel met trots aan anderen over het merk Energiedirect.nl		.774		.406	.787	.366
Ik vertel met trots aan anderen over het merk Essent		.506		.589	.709	.604
Ik ken de koers van onze organisatie		.488		.521	.659	.547
Ik ben op de hoogte van de actuele ontwikkelingen binnen onze organisatie		.478		.587	.678	.554
Ik vertel met trots aan anderen dat ik bij Essent werk		.405	.310	.683	.684	.666
We krijgen hier zaken snel voor elkaar			.851	.505	.359	.834
Ik gebruik alle digitale hulpmiddelen die voor mij relevant zijn			.843	.450		.788
Er is een goede samenwerking tussen mijn afdeling en de andere afdelingen			.690	.593	.410	.796
Ik word gestimuleerd om mijn kennis en ervaring te delen met anderen	.388		.494	.702	.420	.741

Note. Extraction method: Principal Component Analysis. Rotation method: Oblimin with Kaiser Normalization.

8.2 SUMMARY OF INTERVIEWS

In order to find the link between the theoretically acquired knowledge and practice, two interviews were held with HR professionals within Innogy. In these interviews, the professionals were presented the research question and results of the study, and asked to what extent they could relate to these outcomes. They were also asked about possible HR interventions, i.e. what is currently being done about these topics of interest, and how could, in this case Innogy, anticipate on these outcomes in the future? The summaries of both interviews are presented below[1].

The first interview was held with Margriet Klein, an employee at Innogy specialized in HR control and analytics. Her job is to report HR to the business so that they can make the appropriate decisions. After she was presented the research question, she was asked to share her expectations regarding the relationships in the research question. To start with, regarding the effect of sickness absenteeism on engagement, she responded "It depends on how it is dealt with. If it is dealt with in a way like someone is sick, you are now responsible for the work, that puts a burden on those working, and will therefore hamper their engagement". She also expected an effect the other way around: "if engagement is low, I expect that sickness absenteeism will be high" "when you are less engaged, you have less affiliation with the organization, and therefore you would be more inclined to report sick". When asked about the effect of turnover on engagement she said "if, in a certain department, many people leave the organization, then the engagement in that department will be lower". The other way around is also possible: "if engagement is low, I expect high turnover because when you are not engaged, I would personally make sure I get out of there". After she was asked about her own expectations, she was shown the actual results of the study. In the longitudinal study, sickness absenteeism was significantly negatively related to engagement. As this was according to expectations, no further comments were made on this. When asked how Innogy could anticipate on these outcomes, the most important remark concerned the negative relationship between sickness absenteeism and engagement. In order to increase engagement, the interviewee said "Sickness absenteeism should be dealt with correctly". "If someone reports sick and co-workers have to take over their duties for a day, that is not such a big problem. But if this happens consistently for 2 years, this will create a work overload". "If you correctly manage sickness absenteeism, though, engagement will be enhanced.". In other words, Innogy should work out

[1] Sentences between quotation marks are quotes translated from Dutch to English.

a plan on how to deal with sickness absenteeism in a way that it does not have a negative impact on those present at work.

The second interview was held Walter Minderhout, manager Compensation & Benefits at Innogy. Given the research question, his expectation regarding the effect of engagement on sickness absenteeism and turnover was as follows: “If, for whatever reason, your engagement is low, you will be more inclined to leave the organization and you will also become sick more often because of your happiness at work. When you are not happy at work, you will either become sick more often or report sick sooner”. Especially regarding the relationship between engagement and sickness absenteeism, his explanation was quite extensive: “If I have low engagement levels, which hampers me feeling confident at work, I will experience more stress, I will enjoy my work less, and I think stress and liking your job, I think those are important factors in determining your health.”. He also deemed it plausible that the relationship between engagement and turnover was the other way around: “It is possible that, because of a lack of continuity in the team, you experience less coherence”. Finally, he expected a negative effect of sickness absenteeism on engagement because of the following reasoning: “If someone is sick and I have to take over some tasks… One time is fine, but if that happens a lot, causing you to get too busy, or if they are things that are not your strengths, that will definitely influence your engagement levels.”. As mentioned, in the longitudinal study, sickness absenteeism was significantly negatively related to engagement. This finding was in line with the expectations of the professional, which were based on having to take over the tasks of the person who reported sick. First, he was asked to what extent he could relate to the outcomes. He responded “I do recognize that if you look at engagement, and seriously talk about it, that it has a positive influence on that people want to keep working here.” “If I look at the people around me, and those who left the organization, I see a connection. They generally also had lower engagement levels”. “Hence, in my direct environment I can see that the connection exists.”. He was also asked how he thought Innogy could and/or should anticipate on the findings of this study. He answered that the study showed that it is important that management continues to improve employees’ engagement levels. As turnover findings were not significant, he mentioned he would like to see the causes for both voluntary and total turnover further investigated in, especially since the exact reason for leaving the organization is not (yet) noted. He said “It’s a pity that we do not have that yet, because if we would, you would know from everyone leaving why they leave.”. “Does low engagement, in the long run, lead to involuntary turnover?” “I think that many of those who leave involuntary, are people who perform badly which may be

due to a lack of engagement.". Finally, he said "It would be interesting to know which other elements influence engagement." "I would also be interested in the results when engagement was measured over, for example, 5 years.