Should I stay or should I go?

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Many knowledge-intensive organizations are experiencing difficulties retaining talented graduate recruits, as young engineers tend to change jobs frequently at the expense of employers’ seeking to keep their competitive edge. The current study examined the predictive strength of numerous work related employee attitudes on turnover intentions and behaviors. A survey based on well-established measures was distributed to employees of two technically oriented companies. The investigation identified opportunities for mental work and stimulation, possibilities to discern one’s own work performance, feelings of being locked-in, and job offers as predictors of employee turnover intentions and behaviors. The results indicated that young engineers act different than other occupational groups with regards to turnover, highlighting a need for between-groups comparisons.

Keywords: Turnover, engineers, job satisfaction, commitment, employability.

Introduction

As the transition from an industrial to a knowledge-based and innovation driven economy continues, companies are becoming increasingly dependent on their ability to attract a highly qualified and talented workforce (Lee & Maurer, 1997; Niederman, Sumner & Maertz Jr. 2007). It was not too long ago that the production process itself was the center of attention, but growing demands concerning quality, competitiveness and flexibility have brought with them an acute awareness of the human capital and its importance for any company’s future survival (Rousseau & Arthur, 1999; Pfeffer, 2005). From this point of view it comes as no surprise that many companies experience a workforce shortage, or perhaps shortcoming. Nowhere is this more apparent than in the knowledge-intensive industry sector, where the scarcity of well-educated, talented staff has been a growing source of dismay for quite some time. The lack of technically well-educated and talented staff, combined with the fact that many employers seek to insure the regeneration of their organizations by bringing in ‘new blood’, has helped make young talented engineers one of the most wanted groups of employees in the labor market of today. (Paré & Tremblay, 2000; Niederman et al., 2007).

The recruitment of young and well-educated staff is undoubtedly one of the single largest problems employers face today. However, an aspect often overlooked is that of how companies can act to secure the talent they have already obtained. After all, recruiting talented employees is of no real use if said employees cannot be retained. The growing lack of well-educated potential employees is disturbing, but so is the fact that this sought after group of employees change jobs and employers more and more frequently. Perhaps their disinclination to stay with an employer over a longer period of time is a result of a more open labor market; perhaps it has become a necessity as demands on employees are escalating in terms of continuous self-development. Whatever the reason, employers have to deal with the problems they are faced with if they are to have any chance of keeping their competitive edge.
What is turnover, and why is it a big deal?

Turnover has been defined by *The American Heritage Dictionary of the English Language* (2000) as “the number of workers hired by an establishment to replace those who have left in a given period of time”. High turnover can thus be seen as synonymous with employees of a specific company or occupational sector having a short organizational tenure when compared to employees of other companies or occupational sectors. A high turnover rate is expensive for any organization, and considerable benefits can be gained from understanding and managing it; especially if the turnover involves employees who are difficult to replace (e.g. Sigler, 1999; Buck & Watson, 2002). The retention of talent is increasingly important in a world where a company’s human resources are regarded as key to their competitive advantage (e.g., Pfeffer, 2005). The resignation of highly trained knowledge workers poses additional threats to employers due to the fact that they often possess substantial professional knowledge, creating a risk for loss of intellectual property (Lee & Maurer, 1997). In recent research regarding the retention of valuable technical professionals, Kowtha (2008) stated that “the issue takes on particular significance with respect to new technical hires because organizations make significant investments in their training and integration with the express purpose of harnessing their knowledge for innovative work” (p. 67).

Shaw, Delery, Jenkins Jr. and Gupta (1998) discussed the importance of differentiating between voluntary turnover initiated by choice of the employee, and involuntary turnover where the employee has no choice. Buck and Watson (2002) concluded that the main interest of turnover research had been on the conscious choices made by employees. The reason for this lies in the assumption that voluntary turnover, as opposed to involuntary turnover, is avoidable and controllable through different strategies put into practice by the employer. By understanding and managing voluntary and undesirable turnover, an employer would be able to instead pay more attention to activities directly related to the company’s operation thus gaining a competitive advantage.

A common way to assess the risk of employee turnover is to measure employees’ turnover intentions, which are some of the strongest and most frequently recognized predictors of turnover (Griffeth, Hom & Gaertner, 2000). While a wide array of turnover models treats turnover intention as a direct antecedent of turnover, there may still be reason to expand on the construct. Maertz Jr., Griffeth, Campbell and Allen (2007) argued, for instance, that focusing on the predictors of turnover is not comparable to focusing on actual turnover behavior, as causal relationships may exist directly between other antecedents and turnover. Their findings showed that turnover behavior was directly related to several aspects, supporting their argument that it may be important to include not only measures of turnover intentions but also of actual turnover behaviors.

Steers and Mowday (1981) suggested a model of the processes leading up to voluntary turnover that, although somewhat dated, make for an excellent conceptualization. The model describes voluntary turnover as a three-step sequential process, suggesting that employees follow a causal pathway towards turnover. According to the model, initial job expectations generate employee attitudes regarding their job. These job attitudes influence several aspects of employee behaviors and perceptions, including work performance and views of the company. Poor job attitudes may also result in an intention to leave, which in turn influences turnover in at least two ways: It may lead to actual turnover without any consideration of available alternatives, or it may lead to employees searching for alternative employment. If employees perceive few available alternatives they will be less likely to leave the organization. Conversely, if they wish to leave and are able to do so through alternative employment the probability of turnover is noticeably increased (Steers & Mowday, 1981).
Young engineers – A population of extremes?

In the field of turnover research, the age and organizational tenure of employees are widely used as predictors or moderators (Van Breukelen, Van Der Vlist, & Steensma, 2004). A growing body of research suggests that these two demographical variables are negatively correlated with voluntary turnover (see Van Breukelen et al.; Labatmediene, Endriulaitiene & Gustainiene, 2007). This translates to older employees being less prone to voluntary turnover than younger employees, and employees with a long length of service being less prone to voluntary turnover than employees with a short length of service. Several studies (e.g. Sturges & Guest, 2001; Allen, 2006) have focused specifically on the problem of elevated turnover among new employees, and their results suggested that the first years of employment are crucial if organizations are to retain their recruits for any substantial length of time. This makes it important to ensure that new recruits are satisfied with work-related aspects.

When discussing the turnover intentions and behaviors of young engineers, it must also be taken into account that engineers may be subject to a rather atypical occupational situation, and that they may be somewhat unique as they do not appear to follow the same path toward turnover as other occupational groups (Rouse 2001). Niederman et al. (2007) examined turnover in the case of information technology professionals, drawing attention to two aspects that may have an effect on their behavior. First, they pointed out that information technology professionals often use online tools to search for jobs and to network with potential employers, resulting in an efficient job search with very low effort. The authors also stressed that the labor market was very favorable during the time of their investigation and that this in turn greatly affects turnover. This claim is in line with the findings of other recent studies in different cultural settings (See for example Bashir and Ramay, 2008). These two factors combined may influence information technology professionals to behave in ways not typically expected. Niederman et al. (2007) concluded that:

Theoretically, this implies that a significant number of these [turnover] decisions are likely to involve some consideration of alternatives even without dissatisfaction. Thus, we propose that satisfied IT professionals... regularly scan the labor market for even better jobs in terms of career opportunities, compensation, and other attributes. Then, when such jobs are found or otherwise present themselves, many professionals will often compare and accept the new job if it is judged better. (p. 336)

Factors influencing employees’ turnover intentions and behaviors

So what can be done to retain young talented engineers? Answering that question is no easy task, taking into account the extensive number of aspects that could be expected to somehow influence employees in their choice between staying with and leaving an employer. High turnover can be seen as the result of employees being dissatisfied with some aspect of the work or the organization. Many psychological and management theories have tried to uncover the factors influencing these perceptions, and several studies (e.g. Boxall, Macky, & Rasmussen, 2003; Paré, & Tremblay, 2007) have highlighted the fact that motivation for job change is seemingly multidimensional, and that no one factor will explain the reasons for employee turnover. Consequently, it is necessary to present the areas of interest in this study.
Job satisfaction – Predictors and outcomes

Whether or not an individual is satisfied with their job has long been known to have an impact on their attitudes and behaviors, and there is no denying that job satisfaction appears to be important in the explanation of turnover as well. Because of the wide conceptual nature of the construct, however, accounting for the factors creating this satisfaction is not entirely unproblematic. Job satisfaction is one of the most frequently evaluated variables in the research of employee turnover. Nevertheless, or perhaps because of that, it is necessary to explicitly define the term. Oshagbemi (1999) proposed that:

In general…, job satisfaction refers to an individual's positive emotional reactions to a particular job. It is an affective reaction to a job that results from the person's comparison of actual outcomes with those that are desired, anticipated or deserved. (p. 388)

In the literature job satisfaction has been analyzed from several perspectives. As implied by Oshagbemi’s (1999) definition, job satisfaction is often regarded as an attitudinal outcome of numerous antecedents. In this line of research, several constructs have been demonstrated to influence the satisfaction of employees. Group culture for example was found to positively correlate with job satisfaction (Moynihan & Pandey, 2007). Ting (1997) stated that relationships with co-workers and supervisors are positively correlated with job satisfaction, and Kim (2002), showed a positive relationship between participatory management styles and job satisfaction. Ellickson (2002) provided evidence for the notion that departmental pride significantly and positively predicts job satisfaction, while Steijn (2004) in turn found that the organizational climate was important for predicting job satisfaction. Whether or not employees perceive that what they are doing is worthwhile, sometimes dubbed as their ‘sense of organizational purpose’, was recognized by Moynihan and Pandey (2007) as important for job satisfaction. On a closely related note, employee feelings of role or task clarity, generated by their organization making it clear to them what they are expected to do, is suggested to be linked to both employee job satisfaction and turnover (Allen, 2006; Kowtha, 2008). Åteg, Hedlund and Pontén (2004) also established that employees find a job to be more attractive if they are able to discern their own work performance and results. Maynard, Joseph and Maynard (2006) suggested that employee’ perceptions of under-utilization of their skills are negatively correlated with job satisfaction and positively correlated with turnover intentions. Åteg et al. (2004) similarly found that possibilities for mentally stimulating tasks appear to be important for employee perceptions of their jobs.

Demographic variables such as age and organizational tenure have been frequently examined as well. Ting (1997) found a positive relationship between age and job satisfaction. A similar conclusion was drawn in a study of state government health and human service managers, where the researchers declared that “Age has a positive and significant relationship with job satisfaction…. these results do suggest something of a generation gap for the public sector, with older employees more likely to be satisfied with, and involved in, their work” (Moynihan & Pandey, 2007, p 820). The length of organizational membership, or tenure, was in a similar way as age found to positively correlate with job satisfaction (Kim, 2002).

A large amount of occupational and organizational research across different groups of employees have throughout the last decade on the other hand also treated job satisfaction as a strong predictor of turnover intentions and turnover. Several meta-analyses of studies reporting predictor-turnover relationships showed significant and negative relationships between job satisfaction and turnover intentions (Hellman, 1997; Griffeth et al., 2000). Hom and Kinicki (2001) explored the area of employee job dissatisfaction, and found a causal sequence in which dissatisfaction triggers turnover through a set of mediating factors such as
turnover cognitions. Further evidence of the association between job satisfaction and turnover was provided by Van Breukelen et al. (2004) through their survey of professionals in the Royal Netherlands Navy, and by Chou (2007) who in a study of accountant professionals showed job satisfaction to be the most important factor in determining employees’ tendencies to leave. Furthermore, research has shown job satisfaction to mediate relationships with turnover intentions and turnover. Perhaps most notable are the numerous assessments of job satisfaction as a mediator in the relationship between perceived organizational support and turnover (Allen, Shore & Griffeth, 2003; Maertz Jr. et al., 2007).

Macdonald and MacIntyre (1997) maintained that many instruments used to measure job satisfaction were based on studies of specific groups of workers. Since most of these studies included only one specific group of workers, the scales developed tend to measure aspects of interest only within that particular group. This makes it difficult to generalize the results to a wider population and to use any of the developed scales in a different occupational setting. Their solution to this problem was to combine earlier research to create the Generic Job Satisfaction Scale (GJSS). The GJSS is a scale that, instead of measuring aspects found only in certain occupations, evaluates generic aspects of job satisfaction found in all occupational settings. This is achieved by focusing on the respondents’ psychological reactions to their job (such as feelings of social acceptance, job security, skill utilization and received appreciation), instead of their perceptions of ‘objective’ job characteristics. The GJSS was showed to yield consistent results across a wide variety of occupational groups, between males and females and between employees of different ages. (Macdonald & MacIntyre, 1997).

**Supervisor communication, Organizational support and Employee commitment**

A well-functioning relationship with supervisors is essential for the well-being of employees. Several studies showed supervisor behaviors to have an effect on the personal outcomes and behaviors of subordinates in general, and on turnover in particular (e.g. O’driscoll & Beehr, 1994; Allen et al., 2003). According to O’driscoll and Beehr (1994), supervisor behaviors also have indirect effects on employee outcomes by impacting the employees’ sense of clarity and role ambiguity, which in turn is a strong predictor of employee job satisfaction. The authors asserted that: “When supervisors were perceived to initiate structure, set goals, assist with problem solving, provide social and material support, and give feedback on job performance, their subordinates experienced lower ambiguity and uncertainty, and hence greater satisfaction with their job” (O’driscoll & Beehr, 1994, p. 152). In accordance with these findings, an important aspect of the supervisor-subordinate relationship is to what extent supervisors are able to communicate to the employees a sense of clarity or uncertainty in the work environment. This view is supported by more recent findings by van Vuuren, de Jong and Seydel (2007) which affirmed that communication, especially when it comes to employee satisfaction with feedback and the manager as a listener, is important in the employee-supervisor relationship. Supervisor communication also strengthens employee commitment “via a clear view of which values are important, which goals are to be achieved, and how efficacious the organization has been in the past” (van Vuuren et al., 2007, p. 124).

Supervisor related perceptions and attitudes can have a direct impact on employee turnover regardless of their perceptions of and attitudes related to the organization itself, accentuating the importance of separately considering employees’ relationships with their supervisors (e.g. Maertz Jr. et al., 2007). However, the effects and consequences of supervisor communication are not limited to employee attitudes towards a specific supervisor. Since supervisors are often seen by employees as representatives of the organization their behaviors can influence the employees’ perceptions of the organization as a whole. (van Vuuren et al., 2007).
Employees have been found to form global beliefs about to what extent the organization values their contributions and cares about their well-being. These beliefs are commonly referred to as the employees’ perceived organizational support (POS) (Eisenberger, Huntington, Hutchison, & Sowa, 1986). According to organizational support theory, employees develop POS to meet socio-emotional needs and to determine to what extent the organization rewards increased employee efforts (Eisenberger et al., 1986; Rhoades & Eisenberger, 2002). Organizational support theory also assumes that the relationship between an employee and an organization is made stronger through an exchange of positive outcomes. This means that an employee who receives favorable treatment from the organization will feel obligated to repay this by avoiding behaviors that would harm the organization. In other words, employees high in POS will view behaviors that are potentially harmful to the organization as a violation of their relationship with the organization. Such employees will instead try to meet their exchange obligations by remaining engaged in their work responsibilities. (Eisenberger et al., 1986).

Eisenberger and associates (1986) found a negative relationship between POS and voluntary withdrawal behaviors such as absenteeism and tardiness. In a more recent study, Eder and Eisenberger (2008) concluded that “When employees perceive that their organization cares about their well-being and values their contributions, they are less likely to withdraw from their usual work responsibilities, even when such behaviors are encouraged through the high levels of withdrawal displayed by coworkers” (Eder & Eisenberger, 2008, p. 66-67). Employees’ perceptions of support from the organization are vital not only for inducing or reducing general withdrawal behavior, but also with regards to turnover. Many recent studies have found significant relationships between POS and turnover intentions (e.g. Bishop, 1998; Allen et al., 2003) or actual turnover (e.g. Eisenberger, Stinglhamber, Vandenberghe, Sucharski & Rhoades, 2002; Maertz Jr. et al., 2007). These findings demonstrate that POS may have a more extensive effect on turnover than previously thought, as highlighted by Maertz Jr. et al. (2007) who pointed out that:

POS can influence turnover cognitions and behavior through other mechanisms besides improving global affect-loaded work attitudes. Specifically, POS can create obligations in the employee to reciprocate through remaining with the organization. These obligations to stay may cause an employee to have fewer turnover cognitions and dismiss them more quickly. (p. 1070)

Employees’ perceptions of organizational and supervisory support and communication influence numerous other attitudes and outcomes apart from withdrawal behaviors and turnover. One of these other outcomes is organizational commitment. This term is lacking a uniform definition, but generally “organizational commitment can be defined generally as a psychological link between the employee and his or her organization that makes it less likely that the employee will voluntarily leave the organization” (Allen & Meyer, 1996).

Early organizational behavior literature (e.g. Reichers, 1985) recognizes two components of commitment. One is attitudinal commitment, which focuses on acceptance of organizational goals and values and a strong desire to be a part of the organization. The individual is thus in some way attached to the organization or occupation. The other component is behavioral commitment which instead focuses on continuing membership and compliance to organizational rules. According to this view the individual is committed to some course of action rather than to the organization itself (Reichers, 1985). Organizational research has often focused on either one of these two schools of thought, but Brown (1996) attempted to merge the two approaches by simplifying the concept into a singular concept of commitment as follows: “Commitment to a particular entity is a distinct phenomenon, albeit a
complex one, that may differ depending upon how certain factors, pertinent to all
commitments, are perceived and evaluated by an individual” (Brown 1996, p.232)

It is today well recognized that organizational commitment appears to be a
multidimensional construct and that antecedents, correlates, and consequences of commitment
may vary across these interrelated dimensions. Because of this, other models of commitment
have received attention. A widely used multidimensional construct of organizational
commitment was provided by Allen and Meyer (1990) who identified three general attitudinal
topics within the concept of organizational commitment. These are desire (or affective
attachment), perceived costs, and obligation. Each of these topics corresponds to a
‘component’ in a three-dimensional model of commitment. The model contains the following
components: Affective commitment refers to an employee’s positive emotional attachment to,
identification with, and involvement in the organization. The affectively committed individual
identifies with the goals of the organization, and desires to remain a part of the organization.
Employees with strong affective commitment remain with an organization because they want
to, and because they like the organization. Continuance commitment is based on the costs that
the employee associates with leaving the organization. An individual thus have strong
continuance commitment if they perceive that high economic or social costs would result
from losing organizational membership. These employees remain with an organization
because they feel that they would not be able to get a better job elsewhere. Finally, normative
commitment refers to the employee’s feelings of obligation to remain with the organization.
The normatively committed individual remains with an organization because of feelings of

Besides from knowing what organizational commitment means as a construct, it is
important to discuss its predictors. Eisenberger et al. (1986) declared that if organizations
want their employees to be affectively committed they must themselves express commitment
by providing a supportive work environment. This is consistent with Rousseau (1998) who
suggested that in order to strengthen employees’ psychological attachment to their workplace
employers must reinforce employee perceptions of organizational membership and
demonstrate organizational care, support and concern over employee well-being (Rousseau,
1998). Empirical research confirmed that the existence of widespread and well-functioning
supervisory support and communication can assist in promoting a sense of organizational
commitment among employees (Gaertner, 1999; van Vuuren et al., 2007). Other findings
suggested that employee perceptions of organizational support have a similar effect; showing
strong positive correlations between POS and organizational commitment (Meyer, Stanley,
Herscovitch, & Topolnytsky, 2002). Rhoades and Eisenberger (2002) noted in a large review
of POS research that employees with high levels of POS were not only reported as being more
invested in their organization and demonstrating increased affective organizational
commitment; they were also reported to view their jobs more optimistically and to
demonstrate increased levels of job satisfaction.

Organizational commitment has throughout the past decades been analyzed not only as a
dependent variable, but also as a predictor of outcomes such as turnover, intention to leave,
absenteeism, job satisfaction, job involvement, work motivation and performance
(Labatmediene et al., 2007). Employee turnover in particular is one of the most studied of
these outcomes. Earlier research consistently show that individuals highly committed to their
organization are less likely to leave it, implying that it is possible for employers to retain
employees by increasing levels of organizational commitment. (e.g. Paré, & Tremblay, 2000;
Buck & Watson, 2002; Vandenbergh & Tremblay, 2008). The impact of organizational
commitment on turnover intentions is suggested to be stronger among employees in the early
years of their careers, while their commitment is still being developed (Sturges & Guest,
2001).
On the importance of keeping your promises

The relationship between an organization and its employees has undergone drastic changes in the past decades. Globalization has brought with it international mergers, reorganizations, layoffs and in many cases an ever-present sense of continuous organizational change. This has resulted in a new employment situation for many workers, with organizations no longer being able to guarantee a stable long-term employment. (McLean Parks & Kidder, 1994; Hiltrop, 1995). The fact that an employee can no longer expect lifetime employment simply because he or she does a good job has made it all but necessary to redefine the so-called psychological contract that constitute the foundation of employment relationships.

A psychological contract consists of employee perceptions of mutual obligations between themselves and their organizations. This agreement is comprised of what the employee believe they owe the employer (e.g. hard work, loyalty, sacrifices), and of what the employee believe the employer owes them in return (e.g. high pay, job security). (Rousseau, 1990). According to Hiltrop (1995), the psychological contract was traditionally characterized by the exchange of loyalty and hard work for job security and an organizational career, but this is no longer necessarily the case. The author notes that "the psychological contract that gave security, stability and predictability to the relationship between employees and employers has dramatically altered in the past two decades" (Hiltrop, 1995, p. 286). The ‘new’ psychological contract instead reflects the need for flexible employees who are willing to trade traditional job security in exchange for being marketable externally. The term boundaryless career is often used to describe how employees handle the changes in the psychological contract (Rousseau & Arthur, 1999), referring to the notion of “… employment and careers unfolding over time across multiple employment opportunities and employer firms.” (Rousseau & Arthur, 1999, p. 8). Individuals have become increasingly responsible for developing their own human capital and as a result they constantly act to ensure their future marketability, perceiving organizations merely as instruments for their careers (Fernandez & Enache, 2008).

Regardless of whether a psychological contract can be described as ‘old’ or ‘new’, it is paramount that the contract is honored. A violation of the psychological contract occurs when one party perceives that the other fails to fulfill one or more of the obligations covered by the contract. Such breaches can lead to serious consequences for the parties involved, since contracts are founded on mutual reliance. (Robinson & Rousseau, 1994). The violation of a psychological contract has a profound influence on key employee outcomes such as job satisfaction, organizational commitment and turnover (Robinsson & Rousseau, 1994; Kickul, 2001; Bal, De Lange, Jansen, & Van Der Velde, 2007).

Employers should also consider possible future psychological contract violations when recruiting new staff. Rousseau (1990) showed that employees begin forming a psychological contract regarding what each party owes the other prior to beginning employment; for example in the process of recruitment. As stated earlier, Sturges and Guest (2001) suggested that organizational commitment may have a stronger impact on turnover intentions among employees in the early years of their careers, as their commitment is not yet fully developed. In combining these two points of view it becomes apparent that it is important for employers to live up to promises and obligations given to employees in the recruitment process, or else they run the risk of employees perceiving violations of the psychological contract. This was confirmed by Sturges and Guest (2001) who, based on empirical findings, stated that:

If organisations wish to maximise the retention of their graduate recruits, it is in their best interests to be as honest as possible both in recruitment literature and in face-to-face contact about what kind of roles they want them to fill, the content of the training programme they offer, and how graduates’ careers will be managed. (Sturges & Guest, 2001, p. 460)
Does it even matter what the employer does?

Whether or not employees wish to stay with employers is affected by additional aspects apart from how they perceive the organization, the supervisors and the general working situation. Maertz Jr. and Griffeth (2004) discussed different motivational mechanisms involved in turnover decisions, including *calculative forces* which are described as:

> Rational calculation of the probability of attaining important values and goals in the future through continued membership. Favorable calculation of future value/goal attainment at the current organization motivates staying. Unfavorable calculation of future value/goal attainment motivates quitting. (Maertz Jr. & Griffeth, 2004, p. 669)

These calculative forces are based on rational self-interest, and can be the result of many different types of goals. An employee may for example wish to spend more time with his or her family, therefore taking a job with an employer closer to their residence (Maertz Jr. & Griffeth, 2004). An individual’s short- and long-term goals can also fuel a desire to work with different assignments or to change profession altogether (Aronsson, Dallner, & Gustafsson, 2000). Because of the possibility of such goals, an employee’s disinclination to remain with his or her employer does not depend solely upon the qualities of the employing organization: Situations may exist in which an employee would not wish to remain with his or her employer regardless of any actions taken by said employer.

Aronsson and colleagues (2000) performed a study covering a wide array of occupational sectors revealing that 27 percent of Swedish workers with permanent posts are not in their preferred occupations, a situation labeled as being *locked-in*. There were large differences between occupational groups reflecting the respondents’ social standing and educational background, with occupations associated with longer professional training showing lower numbers of employees being in non-preferred occupations. However, the numbers of locked-in employees were alarmingly large for all occupations. Employees who were locked-in with respect to their occupation as well as to their work place suffered the most severe consequences, reporting small opportunities for development as well as weak support from their superior. They also reported more symptoms like stomach related problems, discomfort and fatigue than the other employment groups. (Aronsson et al., 2000).

In this context, Aronsson et al. (2000) argued that locked-in employees remain in an unwanted employment because of circumstances beyond their control, and emphasize the significance of a weak labor market. This is in accordance with Maertz Jr. and Griffeth (2004) who used the term *alternative forces* to describe the turnover motivating mechanism that concerns an employee’s self-efficacy beliefs about alternative jobs or roles. These beliefs are commonly referred to as an individual’s *employability* which, in close resemblance to the views of Maertz Jr. and Griffeth (2004), was defined by Berntson (2008) as “… An individual’s perception of his or her possibilities of getting new, equal, or better employment” (Berntson, 2008, p. 15).

Berntson (2008) found several aspects to be positively associated with perceived employability; such as work environment, living/working in metropolitan areas, formal education, competency development, and national economic prosperity. Employability is thus not only a matter of an individual’s evaluation of their own abilities, but the product of a combination of situational and individual factors. If employability is indeed the result of a combination of internal and external attributes it will greatly affect the employee behaviors, as Berntson concludes:

> Consequently, if the labour market continues to change, people will have to be able to obtain new employment on a regular basis. For the individual, this means that in order to have control, and maintain a feeling of general well-being, a sense of employability
will be advantageous. It also implies that it would be possible for the individual to affect his or her employability to a degree, although external influences such as the structure of the labour market would continue to have an effect. (Berntson, 2008 p. 58)

Rationale and hypothesis

The present study began with the notion that technically oriented companies experience a growing difficulty to retain talented young recruits. This difficulty causes problems not only because of the need to capitalize on employee knowledge and on investments made in these employees, but also because many companies are experiencing a disconcerting age-distribution within their ranks that creates a need for young employees. It was also inferred that the problem of retaining talented young engineers in part originated in a perceived nationwide shortage of young engineers, effectively enabling the individual to pick and choose between offers from different employers. The problem was however thought of as also being caused by recent recruits’ views on their jobs and their employer. The aim of the investigation was to study the turnover intentions and behaviors of a group of young, recently employed engineers in relation to a number of aspects characterizing their work and employing organization. First, the relationships between turnover intentions and behaviors and different work-related factors were investigated. Secondly, it was explored whether these work-related factors predicted turnover intentions and behaviors.

Given these points, the following was hypothesized (See Appendix A for an overview of the hypotheses): that employee turnover intentions and behaviors would be negatively affected by job satisfaction (H1a), opportunities for mental work and stimulation (H1b), possibilities to discern own work performance (H1c), social relations (H1d), supervisor communication (H1e), perceived organizational support (H1f), affective organizational commitment (H1g), normative organizational commitment (H1h), and being satisfied with the use of one’s talents and skills (H1i). Conversely, it was also hypothesized that turnover intentions and behaviors would be positively affected by perceived psychological contract violation (H2a), feelings of being locked-in (H2b), perceived employability (H2c), job offers (H2d), and feeling frustrated or disappointed with (H2e) or treated unfairly by (H2f) co-workers.

In line with earlier research, several of the different aspects treated in this study as independent variables were expected to be interrelated. Special attention was therefore paid to a few aspects vital to the field of turnover research. It was thus hypothesized that employee job satisfaction would be directly and positively affected by perceived organizational support (H3a), social relations (H3b), work performance (H3c), mental work and stimulation (H3d), and satisfaction with use of talents and skills (H3e); while negatively affected by perceived psychological contract violation (H3f) and feelings of being locked-in (H3g). It was also hypothesized that affective organizational commitment would be positively affected by social relations (H4a) and job satisfaction (H4b). Furthermore, both affective and normative commitment was expected to be positively affected by perceived organizational support (H4c), while negatively affected by perceived psychological contract violation (H4d).
Method

Design

This study aimed to examine proposed associations between different aspects of the work environment and employees’ turnover intentions and turnover behaviors. The participants were dealt with as members of a single population, and the study did not contain any recurring longitudinal observations. Consequently, the design was that of an observational, cross-sectional survey study. The employees’ participation in this study was voluntary, and invitations were sent to all employees of suitable age and employment tenure. In other words, access to respondents was determined by their availability and by their willingness to participate. Because of this, the resulting sample is self-selected rather than random, resulting in a ‘stratified convenience sample’ of sorts.

Participants

The participants were employees of two Swedish companies mainly focused on data- and telecommunication systems. The population of interest was young, newly employed engineers. To ensure that participants corresponded with the required profile, questionnaires were distributed only to employees who were both relatively young and recently employed. Even though the total number of employees within the two companies was substantial it soon became apparent that the amount of young, recent recruits was significantly smaller. The questionnaire was distributed to 194 employees, and 67 chose to participate resulting in a response rate of 34.7 percent. Responses from employees above the age of 32 and from those who had worked more than 36 months for their current employer were excluded from the sample. In addition, several respondents were rejected due to missing information regarding age and employment tenure. These steps resulted in a total of 50 cases eligible for analysis. The data from the two companies were combined for analytical purposes.

The final sample contained 10.0 % women, and 90.0 % men. The age of the participants ranged from 24 to 32 years ($M = 27.22$, $SD = 1.99$), and employment tenure ranged from 1 to 36 months ($M = 11.32$, $SD = 7.81$). Yearly income levels were recorded in categories, and distributed as follows: 0.0 % had an income of up to 250 000 SEK, 10.0 % had between 250 000 and 300 000 SEK, 64.0 % had between 300 000 and 350 000 SEK, 18.0 % had between 350 000 and 400 000 SEK, and 8.0 % had over 400 000 SEK. 46.0 % of the participants were employed by Company A, and 54.0 % were employed by Company B. 52.0 % were placed within the employing company, and 48.0 % were placed within a company other than the employing company. The participants’ employment statuses were distributed as follows: 98.0 % had permanent employment, 0.0 % had a temporary employment (including specific project employment) and 2.0 % had other forms of employment.

Instruments and measures

Data were collected using a questionnaire composed of demographic variables, and of measures covering the variables of interest in this study. In total, the questionnaire contained 82 questions and statements. Some of the items and scales used were specifically created for this survey, but the majority of them came from previously established and validated scales. The independent variables measured were: a) job satisfaction, b) mental work and stimulation,
c) work performance, d) social relations, feelings of being locked-in, e) perceived employability, f) affective organizational commitment, g) normative organizational commitment, h) perceived organizational support, i) supervisor communication, and j) psychological contract violation. Cronbach’s alpha (Cronbach, 1951) was calculated as an estimate of the internal consistency reliability for each scale. The resulting alpha scores can be found in Table 1. Unless noted, all items used a five point Likert-type scale ranging from 1 (“Strongly disagree”) to 5 (“Strongly agree”).

Control variables

There are a number of different demographic variables identified by researchers as somehow correlated with turnover intentions. Three variables shown to have a negative effect on voluntary turnover are age and organizational tenure (Griffeth et al., 2000) along with pay level (e.g. Griffeth et al., 2000; Vandenberghe & Tremblay, 2008). Previous research also showed that demographic characteristics can influence perceptions of psychological contract violation (Restubog, Bordia & Tang, 2006), which in the present study in turn is hypothesized to correlate with turnover intentions. Several different studies, although somewhat inconsistent in their findings, have shown the importance of taking into consideration possible systematic differences in organizational commitment and voluntary turnover between different forms of employment (Felfe, Schmook, Schyns, & Six, 2008; De Cuyper & De Witte, 2007). Furthermore, the number of job offers has been demonstrated to positively correlate with turnover intentions (Paré and Tremblay, 2000). In accordance with all of the above mentioned findings, participants pay level, form of employment and number of job offers were assessed and statistically controlled in the present study. In addition, gender and placement were also used as control variables. Since variations in age and organizational tenure were limited as a result of the stratified sampling method used, the sample was very homogenous with respect to those variables. Because of this, age and tenure were not used as control in the analysis. Besides from above mentioned demographic items, two more control items were added with the purpose of detecting potential questionnaire fatigue or general reluctance towards questionnaires.

Age (years) and organizational tenure (months) were continuous variables, each measured by a single-item scale. The pay level measure was based on the respondents’ annual salary, with categories ranging from 1 (up to 250 000 SEK) to 5 (over 400 000 SEK). Gender (1 = female; 2 = male), placement (1 = within the employing company; 2 = at a different company) and form of employment (1 = permanent post; 2 = temporary employment, including specific project employment; 3 = other) were dichotomous variables. The number of job offers was measured using a Likert-type scale ranging from 1 (“no job offers”) to 5 (“several job offers”). The two control items introduced with the purpose of detecting potential questionnaire fatigue or general reluctance towards questionnaires read: “I am tired of filling out questionnaires” and “I generally feel that questionnaires are interesting to fill out” (reversed). They were each measured using a Likert-type scale ranging from 1 (“Strongly disagree”) to 5 (“Strongly agree”).

Independent variables

Job satisfaction. Macdonald and MacIntyre’s (1997) efforts to develop a scale on job satisfaction which could be used in a wide range of occupational groups resulted in a 10-item measurement called the Generic Job Satisfaction Scale (GJSS). The scale suited the purposes
of this study not only because of its generic construct, but also because of its short format. The scale included items such as: “I receive recognition for a job well done” and “I feel good about working at this company”.

*Mental work and stimulation.* To measure the participants’ perceptions of to what extent their work offered them mental work and stimulation, four items were adapted from two separate but overlapping measures suggested by Åteg’s et al. (2004) Attractive Work Model. A sample item was: “I get to learn new things through my work”. The measure was further expanded with the item “I get to work on exciting, cutting-edge products”.

*Work performance.* Participants perceptions of their own work efforts was measured using the item “I can see concrete results of my work” adapted from Åteg’s et al. (2004) Attractive Work model. The two items “I am satisfied with the quality of my work performance” and “I think what I do is important for the company” were also added.

*Social relations.* Three items from Åteg’s et al. (2004) model were utilized in order to measure perceptions of relations between co-workers. The items read: “Overall, there’s a good team-spirit in my workplace”, “I feel that the people in my workplace are honest to each other” and “I feel that the people in my workplace support and help each other”.

*Supervisor communication.* Employees’ perception of supervisor communication was measured using a 12-item scale developed by Van Vuuren et al. (2007). Their scale partly stems from a modified version of the Survey of Perceived Organizational Support scale, that is often used to measure Perceived Supervisor Support (Yoon & Lim, 1999; Rhodes et al., 2001; Eisenberger et al., 2002; Rhoades & Eisenberger, 2002), however it also adds a range of topics such as two-way communication and feed-back. A sample item was: “My manager keeps me informed about important issues in the organization”.

*Perceived organizational support.* Perceived organizational support was measured using the eight-item short form of the Survey of Perceived Organizational Support (SPOS) constructed by Eisenberger et al. (1986). The decision to use the eight-item short form of the SPOS was made after careful consideration and based on the fact that prior studies across a wide array of organizations provided evidence for the high internal validity of short forms of the SPOS. In a review of over 70 studies, Rhoades and Eisenberger (2002) found that several studies had successfully used shorter forms of the SPOS and came to the conclusion that “because the original scale is unidimensional and has high internal reliability, the use of shorter versions does not appear problematic” (Rhoades & Eisenberger, 2002, p. 699). Hellman, Fuqua and Worley (2006) stated a somewhat different opinion following an effort to determine the reliability of the SPOS by comparing a total of 62 studies that had used the measure. Their results suggested caution when using extreme reduction in the number of SPOS items, since reliability might be reduced. Their recommendations should however be taken into consideration bearing in mind that their review included studies using as few as three items from the SPOS. Their results showed that the 11 studies in the evaluation that used eight-item forms of the SPOS averaged high levels of reported alpha scores. (a = 0.90). The scale used includes items such as: “The company values my contribution to its well-being” and “The company takes pride in my accomplishments at work”.

*Organizational commitment.* Employee levels of organizational commitment were assessed using the well-accepted six-factor Affective Commitment Scale (ACS) and six-factor Normative Commitment Scale (NCS) fashioned by Meyer, Allen and Smith (1993).
Representative items for the two scales included “This company has a great deal of personal meaning for me” and “I would feel guilty if I left my company now”, respectively.

**Psychological contract violation.** The overall level of perceived psychological contract violation experienced by the participants was measured with a single-item measure adapted from earlier research (Robinson & Rousseau, 1994). This single-item measure was further validated by Turnley and Feldman (2000) who successfully used it to assess the validity of their multi-item measure of perceived psychological contract violation. In more recent research, Addae, Praveen Parboteeah and Davis (2006) used a similar single-item measure of psychological contract violation. The item used read: “Overall, how well has your employer fulfilled the promised obligations that they owed you?” The respondents were asked to indicate on a 5-point Likert scale (1 = “Very poorly fulfilled”; 5 = “Very well fulfilled”) to what extent they felt that their employer had fulfilled promised obligations. The variable was reversed to provide a measure of contract violation.

**Locked-in.** To measure to what extent individuals feel locked-in at their workplaces two items were adapted, with modification, from Aronsson’s et al. (2000) measure used to assess whether or not individuals felt as if they were in their preferred occupations and in their preferred workplaces. The items read: “My current workplace is the workplace I desire for the future” and “My current profession is the profession I desire for the future”. The additional item “My current job assignments and tasks are those which I desire for the future” was created as a complement. All items were reversed before being included in the scale.

**Employability.** Perceived employability was measured using a scale consisting of four items. Three of the items, “My competence is sought after in the labor market”, “I would easily be able to find a new (equivalent or better) job in another company/organization” and “I have a social network which I can use in order to get a new (equivalent or better) job”, were adapted with modification from a scale used in earlier research to measure employability (Berntson, Näswall & Sverke, as cited in Berntson, 2008). In addition, the reversed item “If I left this company, it would be difficult for me to find another job” was added.

**Supplementary independent variables.** Besides from the various scales, three categorical independent variable items were used to which the respondents could only give a ‘yes’ or ‘no’ response. These items read: “I am satisfied with using as much of my talents and skills as I currently do”, “Have you in the past 12 months felt frustrated or disappointed with a co-worker?” and “Have you in the past 12 months felt as if treated unfairly by a co-worker? The first item was intended to relate to mental work and stimulation and to job satisfaction, while the following two items were intended to relate to social relations and to perceived psychological contract violation. The first of the three items was also followed by the open answer question “If not, why?” in order to give the respondents a possibility to state in what way they were dissatisfied.

**Dependent variables**

**Turnover intentions and behaviors.** Employee turnover intentions were measured using items from O’Driscoll and Beehr (1994) and Boyar, Maertz Jr, Pearson and Keough (2003). The items used were: “I have thought about leaving this company”, “I intend to quit this company within the next 12 months” and “I think about quitting all the time”. The reversed item, “I plan to remain with this company”, was also added to the scale. In order to assess the
employees’ turnover behaviors the two items “I am looking for job openings outside of this company” and “I have applied for a job outside of this company” were used.

**Procedure**

As this study focused on young newly employed engineers, the survey needed to take place within organizations containing large numbers of employees fitting this profile. Through earlier established contacts an agreement was made with a large telecom company (Company A) to carry out the survey within one of their research and development sites in the Stockholm region. This agreement subsequently led to the involvement of one of Company A’s suppliers (Company B), which also employed a large number of young engineers.

Potential problems regarding ‘questionnaire fatigue’ among employees were highlighted in an early stage of the study. Therefore, and to ensure adequate response rates, several actions were taken. Two control items were introduced with the purpose of detecting questionnaire fatigue as well as general reluctance towards questionnaires. Efforts were made to ensure that the questionnaire design was distinct yet easily understood. Finally, it was stressed that the questionnaire was being distributed by an independent researcher, and not by the employer.

The questionnaire was distributed in digital format via e-mail. An invitation to participate in the study was presented to the participants via e-mail sent either directly to them or through administrative personnel at their company. The subjects also received a follow-up e-mail encouraging them to participate in the survey. The distributed packages included the questionnaire, a plain language statement describing the purpose of the study, and an assurance of participant confidentiality. To guarantee said confidentiality, each package also contained instructions on how to return the completed questionnaire by e-mail directly to the researcher, without involving any managerial or administrative personnel. In order to offer the participants a way to be informed of the results of the study, they were given the option to include their e-mail address in the completed questionnaire. Apart from this opportunity, no other form of reimbursement was given to participants.

To further ensure that the questionnaire would be taken to heart by the employees, a pilot study was conducted within Company A to evaluate the instrument to be used in the main study. This pilot consisted of distributing the questionnaire to five employees who were told to fill out, scrutinize and comment on the questionnaire itself. Since the main area of interest for the pilot study was the questionnaire as an instrument, the respondents’ answers to specific questions were not avidly examined. The assessment instead focused on how the respondents had perceived the questionnaire: Whether or not they had found it comprehensible, and relevant with regards to the circumstances in their workplace.

Overall, pilot respondents conveyed a positive experience of the questionnaire. Some critique could not be taken in to account due to the fact that the changes suggested might have compromised the construct integrity of the questionnaire (for example, not using reversed items). Other comments were quite useful, as described in the following. Several participants pointed out that Company A was organized around technical platforms. Because of these ‘sub-organizations’ the participants had difficulties discerning whether the term *organization*, which was used in many questionnaire items, referred to the company as a whole or to a specific platform-organization. Changes were made to the items of concern, replacing the word organization with the word *company*. It was also pointed out that the questionnaire did not utilize mutually excluding options, which might lead to respondents filling out multiple check-boxes per statement. This led to the use of check-boxes that only allowed one response per statement. Minor grammatical changes of the text were also made.
Results

Descriptive statistics were calculated for all ordinal variables. These statistics along with internal consistencies and number of items in each scale are presented in Table 1. Secondly, the three categorical independent variables were analyzed. The statement “I am satisfied with using as much of my talents and skills as I currently do” obtained 24 (50 percent) ‘yes’ answers, 25 (48 percent) ‘no’ answers and one missing answer. The question “Have you in the past 12 months felt frustrated or disappointed with a co-worker?” yielded 32 (64 percent) ‘yes’ answers and 18 (36 percent) ‘no’ answers. Finally, the question “Have you in the past 12 months felt as if treated unfairly by a co-worker?” resulted in 15 (30 percent) ‘yes’ answers and 35 (70 percent) ‘no’ answers. The first categorical variable was followed by the open answer question “If not, why?”. Out of the 25 respondents who answered ‘no’ to the primary statement, five chose not to expand on their answer. The remaining 20 answers revealed two major causes of dissatisfaction: Ten respondents perceived a misuse of their talents and skills, and sample responses included “At the moment I feel more like an administrator than an engineer” and “I would like to do things closer to my university degree”. Eight respondents perceived an underutilization of their talents and skills, and sample responses were: “I need harder and more challenging assignments so I can keep and improve my talents and skills” and “Don't get to use all of them, don't get to use them enough”. Two responses were deemed unrelated. No respondents reported an overutilization of their talents and skills.

Table 1
Means, standard deviations, internal consistencies and number of scale items for variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>α</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Job satisfaction</td>
<td>3.70</td>
<td>0.53</td>
<td>0.81</td>
<td>10</td>
</tr>
<tr>
<td>2. Mental work and stimulation</td>
<td>3.89</td>
<td>0.61</td>
<td>0.79</td>
<td>5</td>
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<tr>
<td>3. Work performance</td>
<td>3.76</td>
<td>0.70</td>
<td>0.71</td>
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<tr>
<td>4. Social relations</td>
<td>4.03</td>
<td>0.80</td>
<td>0.81</td>
<td>3</td>
</tr>
<tr>
<td>5. Supervisor Communication</td>
<td>3.67</td>
<td>0.66</td>
<td>0.90</td>
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<td>6. Perceived organizational support</td>
<td>3.49</td>
<td>0.64</td>
<td>0.78</td>
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<tr>
<td>7. Affective commitment</td>
<td>3.03</td>
<td>0.75</td>
<td>0.82</td>
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<tr>
<td>8. Normative commitment</td>
<td>2.76</td>
<td>0.72</td>
<td>0.77</td>
<td>6</td>
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<tr>
<td>9. Perceived psychological contract violation</td>
<td>2.41</td>
<td>0.76</td>
<td>--</td>
<td>1</td>
</tr>
<tr>
<td>10. Locked-in</td>
<td>2.77</td>
<td>0.88</td>
<td>0.73</td>
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<tr>
<td>11. Employability</td>
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<td>4</td>
</tr>
<tr>
<td>12. Job offers</td>
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<td>1.25</td>
<td>--</td>
<td>1</td>
</tr>
<tr>
<td>13. Turnover intentions and behaviors</td>
<td>2.13</td>
<td>0.80</td>
<td>0.85</td>
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</table>

Correlations between all of the variables were subsequently calculated. A matrix of these correlations can be found in Table 2. Several of the independent variables were significantly correlated with one another, but not so highly as to suggest that they were not distinct (r < 0.7). Turnover intentions and behaviors was significantly negatively correlated with job satisfaction, mental work and stimulation, normative commitment, and satisfaction with use of skill; while positively correlated with perceived psychological contract violation, locked-in, employability, and job offers. Worth noting is that the dependant variable was not significantly correlated with either work performance, social relations, supervisor communication, perceived organizational support, affective commitment, frustrated or disappointed with co-workers, or treated unfairly by co-workers.
<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
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<th>3</th>
<th>4</th>
<th>5</th>
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<th>12</th>
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<td>1. Job satisfaction</td>
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<td>2. Mental work/stimulation</td>
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<td>3. Work performance</td>
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<td>.53**</td>
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<td>4. Social relations</td>
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<td>.50**</td>
<td>.42**</td>
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<tr>
<td>5. Supervisor communication</td>
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<td>.24</td>
<td>.45**</td>
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<td>7. Affective commitment</td>
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<td>.21</td>
<td>.45**</td>
<td>.40**</td>
<td>.28*</td>
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<td>8. Normative commitment</td>
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<td>.34*</td>
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<td>9. Psych. contract violation</td>
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<td>-.30*</td>
<td>-.26</td>
<td>-.38**</td>
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<td>-.36**</td>
<td>.40**</td>
<td>-.22</td>
<td>-.29*</td>
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<td>.06</td>
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<td>.09</td>
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<td>13. Use of skill</td>
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<td>.07</td>
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<td>15. Unfairly treated</td>
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<td>-.30*</td>
<td>-.33*</td>
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<td>16. TIB</td>
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<td>-.27</td>
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<td>.37**</td>
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</table>

*Note.* 1 = Job satisfaction, 2 = Mental work and stimulation, 3 = Work performance, 4 = Social relations, 5 = Supervisor communication, 6 = Perceived organizational support, 7 = Affective commitment, 8 = Normative commitment, 9 = Perceived psychological contract violation, 10 = Locked-in, 11 = Employability, 12 = Job offers, 13 = Satisfied with use of talents and skills, 14 = Frustrated or disappointed with co-workers, 15 = Treated unfairly by co-workers, 16 = Turnover intentions and behaviors. *p < .05, **p < .01.
Establishing predictive relationships between independent variables. The direction of the already established relationships between independent variables was determined by the use of several multiple regressions that included all of the independent variables, and in which all variables were consecutively treated as dependent variables. All of these multiple regressions were executed using the enter method. Job satisfaction ($F_{df/14,33} = 8.51, \ p < 0.001$). Adjusted $R^2 = 0.69$ was significantly negatively related to being locked-in ($\beta = -0.24, \ p < 0.05$), while significantly positively related with social relations ($\beta = 0.34, \ p < 0.01$), perceived organizational support ($\beta = 0.34, \ p < 0.01$), and satisfied with use of talents and skills ($\beta = 0.25, \ p < 0.05$). Mental work and stimulation ($F_{df/14,33} = 4.53, \ p < 0.001$). Adjusted $R^2 = 0.51$ was significantly positively related to work performance ($\beta = 0.38, \ p < 0.05$), social relations ($\beta = 0.37, \ p < 0.05$), perceived organizational support ($\beta = 0.39, \ p < 0.05$), job offers ($\beta = 0.30, \ p < 0.05$), and satisfied with use of talents and skills ($\beta = 0.39, \ p < 0.01$). Work performance ($F_{df/14,33} = 3.60, \ p < 0.01$). Adjusted $R^2 = 0.44$ was significantly positively related to mental work and stimulation ($\beta = 0.43, \ p < 0.05$). Social relations ($F_{df/14,33} = 4.07, \ p < 0.001$). Adjusted $R^2 = 0.48$ was significantly negatively related to job offers ($\beta = -0.27, \ p < 0.05$), while significantly positively related to job satisfaction ($\beta = 0.58, \ p < 0.01$), and mental work and stimulation ($\beta = 0.40, \ p < 0.05$). Supervisor communication ($F_{df/14,33} = 3.12, \ p < 0.01$). Adjusted $R^2 = 0.39$) was not significantly related to any independent variable. Perceived organizational support ($F_{df/14,33} = 3.70, \ p < 0.001$). Adjusted $R^2 = 0.45$) was significantly positively related to job satisfaction ($\beta = 0.61, \ p < 0.01$), mental work and stimulation ($\beta = 0.45, \ p < 0.05$), and employability ($\beta = 0.36, \ p < 0.05$). When regressed on affective commitment, the model constituted a very poor fit with an insignificant overall relationship ($F_{df/14,33} = 1.19, \ p = 0.33$). Adjusted $R^2 = 0.05$). Affective commitment was however significantly and positively related to normative commitment ($\beta = 0.46, \ p < 0.05$). Normative commitment ($F_{df/14,33} = 3.02, \ p < 0.01$). Adjusted $R^2 = 0.38$) was significantly negatively related to employability ($\beta = -0.34, \ p < 0.05$), while significantly positively related to affective commitment ($\beta = 0.30, \ p < 0.05$). Psychological contract violation ($F_{df/14,33} = 1.36, \ p = 0.23$). Adjusted $R^2 = 0.10$) was not significantly related to any independent variable. When regressed on being locked-in, the model constituted a very poor fit with an insignificant overall relationship ($F_{df/14,33} = 1.75, \ p = 0.09$). Adjusted $R^2 = 0.18$). Locked-in was however significantly and negatively related to job satisfaction ($\beta = -0.63, \ p < 0.05$). Employability ($F_{df/14,33} = 2.31, \ p < 0.05$). Adjusted $R^2 = 0.28$) was significantly negatively related to normative commitment ($\beta = -0.39, \ p < 0.05$), while significantly positively related to perceived organizational support ($\beta = 0.47, \ p < 0.05$). When regressed on job offers, the model constituted a very poor fit with an insignificant overall relationship ($F_{df/14,33} = 1.53, \ p = 0.15$). Adjusted $R^2 = 0.14$). Job offers was however significantly negatively related to social relations ($\beta = -0.45, \ p < 0.05$), and satisfied with use of talents and skills ($\beta = -0.45, \ p < 0.05$), while significantly positively related to mental work and stimulation ($\beta = 0.53, \ p < 0.05$). The categorical variables were not subject to analysis, due to their dichotomous nature.

Establishing predictors of turnover intentions and behaviors. The purpose of this study was to establish predictors of turnover intentions and behaviors. In order to assess the direction of previously established relationships between independent and dependent variables, as well as the relative predictive strength of each independent variable on turnover intentions and behaviors, a multiple regression analysis was performed where turnover intentions and behaviors were regressed on all independent variables using the enter method. The regression was a good fit (adjusted $R^2 = 0.59$), and a significant model emerged ($F_{df/15,32} = 5.52, \ p < 0.001$). With other variables held constant, turnover intentions and behaviors scores was significantly negatively related to mental work and stimulation, while significantly positively related to work performance, job offers and being locked-in (see Figure 1).
Collinearity diagnostics were used to detect eventual multicollinearity between variables. The tolerance values measuring correlation between the predictor variables were all between 0.22 and 0.66 (VIF = 1.50-4.61), indicating that the model upheld the assumption of no multicollinearity. Background variables were controlled for by including pay level, gender, placement, and form of employment in regression analyses. All previously established associations were still found to be significant when controlling for these variables. However, when controlling for gender, normative commitment emerged as a significant negative predictor of turnover intentions and behaviors ($\beta = -0.33; p < 0.05$). Furthermore, when controlling for form of employment, treated unfairly by co-workers emerged as a significant positive predictor of turnover intentions and behaviors ($\beta = 0.25; p < 0.05$).

The predictive relationships revealed by the multiple regression analysis are illustrated in Figure 1. Since the purpose of the analysis was to identify predictors of turnover intentions and behaviors, the illustration includes only the direct predictors of turnover intentions and behaviors as well as the variables that in turn predict them. The other variables, as well as all other interrelations between independent variables, were excluded.

![Figure 1](image.png)

Figure 1. Direct and indirect predictors of turnover intentions and behaviors, including standardized beta coefficients ($\beta$) and significance levels. ** = $p < 0.01$, * = $p < 0.05$.

Two more analyses were performed to examine alternative predictive models. First, turnover intentions and behaviors were regressed on the earlier established predictors mental work and stimulation, work performance, locked-in, and job offers. While a significant model emerged ($F_{df 4,45} = 11.51, p < 0.001$) and while all variables significantly predicted turnover intentions and behaviors, this regression model accounted for a smaller proportion of the variation in the dependent variable (adjusted $R^2 = 0.46$). Turnover intentions and behaviors were then regressed on all eight independent variables shown in Figure 1. This model was also significant ($F_{df 8,40} = 6.01, p < 0.001$), but it too accounted for a smaller proportion of the variation in the dependent variable than the complete model (adjusted $R^2 = 0.45$).
Discussion

This study began with the supposition that young engineers are prone to turnover, but the acquired mean of 2.13 for turnover intentions and behaviors does seem to indicate that this is not the case. Putting these findings into perspective is somewhat problematic due to the fact that earlier studies typically include only turnover intent, preventing accurate between-studies comparisons. The mean does however appear relatively low when compared to, for example, O’driscoll and Beehr (1994) who reported an acquired mean of 3.1 when using a measure of turnover intentions partly incorporated in the current study. The current study also used parts of a measure of turnover intentions developed by Boyar et al. (2003), who in their study received a mean turnover intentions score of 2.51. Both of these studies utilized five-point likert scales similar to those used in the current study.

The present study was also based on the assumption that employee turnover intentions and behaviors would be affected by all of the independent variables under investigation. While turnover intentions and behaviors did prove to be significantly correlated with many of the independent variables, only four of these emerged as significant predictors in the multiple regression analysis. The four predictors of turnover intentions and turnover behaviors were employee opportunities for mental work and stimulation (H1b), possibilities to discern their own work performance (H1c), feelings of being locked-in (H2b), and job offers (H2d). However, work performance did not affect the dependent variable in the hypothesized direction. Instead it was found to positively predict turnover intentions and behaviors. Hypothesis 1 can therefore be said to be partly supported through hypothesis H1b, H2b and H2d. The other parts constituting the first and second hypotheses (H1a, H1c – H1i; H2a, H2c, H2e, H2f) were however not supported.

Employee turnover intentions and behaviors are thus, as hypothesized, reduced by opportunities for mental work and stimulation. In other words, employees are less inclined to leave if they feel as if they get to learn new things through their work, that they have to think in order to accomplish their tasks, that their work is challenging, that they have interesting job assignments, and that they get to work on exciting, cutting-edge products. These results are similar to those of Maynard et al. (2006) who in a study of so called ‘underemployment’ in terms of suboptimal skill utilization found perceived over-qualification to be related to turnover intentions. As was also hypothesized, turnover intentions and behaviors were increased by feelings of being locked-in and job offers. Employees are in other words more inclined to leave if they do not view their current job, job assignments and tasks, or profession as those they desire for the future. They are also more inclined to leave if they receive job offers from outside of the company, a finding supported by a substantial amount of research suggesting the presence of a relationship between job alternatives and intentions to quit (e.g. Griffeth et al., 2000; Addae et al., 2006). The fact that both of these aspects affected turnover intentions and behaviors is consistent with Aronsson’s et al. (2000) suggestion that locked-in employees will not remain in unwanted employment in the presence of a strong labor market.

In contradiction to what was hypothesized however, turnover intentions and behaviors were also increased by employees’ possibilities to discern their own work performance. Employees are in other words more prone to leave the company if they are able to see concrete results of their work, if they are satisfied with the quality of their work performance, and if they think what they do is important for the company. This seems counter-intuitive as it could be assumed that these aspects would create positive attitudes towards the company. A possible explanation has to do with the fact that turnover intentions and behaviors were reduced by opportunities for mental work and stimulation. Since mental work and stimulation appear to be so important for the employees, their yearning for increasingly difficult and challenging tasks may be stronger than the need to discern their own work performance. They
may thus need a certain level of ambiguity in order to experience possibilities for improvement and progress, and if they do not perceive these possibilities they become more inclined to leave the organization. Another possible explanation is that the employees’ possibilities to discern their own work performance may act to enhance their self-confidence, thereby making them feel more secure in the venture of leaving an employment.

The third and fourth hypotheses expressed expected interrelations between independent variables. Attention was given to employee job satisfaction and organizational commitment as both of these aspects are vital to the field of turnover research. However, neither of these factors predicted turnover intentions and behaviors and they were therefore not included in the explanatory model (Figure 1). Nevertheless, employee job satisfaction was predicted and positively affected by perceived organizational support, social relations, and satisfaction with use of talents and skills, while negatively affected by feeling of being locked-in. The third hypothesis was thus partly confirmed through hypotheses H3a, H3b, H3e and H3g (H3c, H3d and H3f were unsupported). The fourth hypothesis was not supported, with affective and normative commitment not being predicted by any of the suggested independent variables. Both types of commitment were however predicted by one another, which is consistent with Allen and Meyer (1990) who noted an interrelation between the two constructs. Normative commitment was also predicted by employability, possibly suggesting that employees feelings of obligation to remain with their employer is in fact affected by available alternatives. This is similar to findings by Meyer et al. (2002) suggesting employment alternatives to in fact correlate with all three dimensions of organizational commitment.

Finally, it should be recognized that the fact that turnover intentions and behaviors was not predicted by either job satisfaction or by organizational commitment is in sharp contrast with a growing mass of research across other occupational groups (e.g. Hellman, 1997; Griffeth et al., 2000; Paré, & Tremblay, 2000; Buck & Watson, 2002; Chou 2007; Vandenberghe & Tremblay, 2008). One explanation to this inconsistency may be found in the often proposed uniqueness of the information technology workers when compared to other groups (e.g. Rouse, 2001), but empirical findings to support this supposition are lacking.

**Limitations and methodological considerations**

Several sample characteristics must be taken into account when interpreting above results. The first and most important is the small sample size. The limited amount of participants, especially in combination with the substantial number of study variables, possibly (and probably) affected the results of the statistical analysis. Secondly, even though invitations were sent to all employees of suitable age and employment tenure their participation in this study was voluntary. In other words, access to respondents was determined by availability and by willingness to participate. The sample is thus self-selected rather than random, resulting in a ‘stratified convenience sample’ of sorts. This could be argued to make for a non-probability sample, which raises concerns especially when considering the low response frequency. The sample is assumed to be close enough to random to be treated as such, but there are no guarantees for this. For example, employees with larger work-loads might not have felt as if they could spare the time needed to participate. This might have led to the involuntary exclusion of a population stratum more prone to negative attitudes towards their employer. It is important though to recognize that the study was not done under the control of the organizations surveyed, and while their participation is much appreciated the organizations did not order any of the employees to participate. Finally, it should be noted that the skewed gender distribution, even though perhaps correctly reflecting the gender distribution of the population, may have affected the results.
Another methodological consideration involves the instruments used. Since the questionnaire for the most part included well established measures, the reliability is considered rather high. As with any survey though, certain limitations are a result of the research design itself. These limitations include possible misinterpretation of statements, combined with respondents not being able to ask for clarifications. The limitations also include individual differences in the motivation to participate, and other differences in predispositions. Another issue is that the participants’ understanding of the questionnaire may have varied since it was written in English, which was not the first language of most of the participants. Thirdly, the study utilized self-reports as its only data source. Even though reversed items were used in order to control for eventual response patterns (e.g. participants giving responses invariably on the high or the low end of all scales) this still produces a risk for measurement bias, as the correlations among constructs may be a result of their common data source. Finally, the construct validity of the measurements should also be discussed. As this study focused on subjective phenomena such as job satisfaction, the use of self-reports was preferred and perhaps unavoidable. However, it is worth mentioning that self-reports of turnover intentions and behaviors are not necessarily the same as actual turnover, and that no objective measure (i.e. actual turnover rates) was included in the study.

Regarding the external validity of this study it must be kept in mind that the data were obtained in an occupational environment of telecommunication and data communication systems, and that the participants were both young and recently employed. It is possible that some of the results, for instance the negative correlation between mental work and stimulation and turnover intentions and behaviors, are due to this specific sample. Another result possibly unique to the sample is that organizational commitment was not significantly correlated to almost any other variables, a finding that might have been considered anomalous in a different occupational or age group. Because the study focused on such a distinctive population the results are not easily applied to other groups of employees, and generalizations should consequently be made with caution.

**Importance of the study, and suggestions for future research**

As much research as there may be on the subject of employee turnover, very few prior studies have attempted to include all aspects involved. Instead, most of them have measured the correlations between a small set of predictors and turnover which, while it surely provides important information on those specific predictors, does not even remotely determine the cause of turnover. The current study thus provides contributions to the field as it involves an unusually large number of variables. When using such a large predictive model, it is possible to establish relationships that cannot be found when analyzing predictors separately.

Due to the questions raised by this study, as well as its limitations, future research should incorporate several aspects. As previously suggested, the validity of the findings could be strengthened by replications using other data collecting methods, for example interviews; and secondly, collecting other types of data, such as objectively measured data of turnover (i.e. actual turnover rates). Moreover, in order to give an answer to the lacking relationship in the present study between job satisfaction and organizational commitment on the one hand and turnover intentions and behaviors on the other, future research should compare young engineers to young employees across other occupational groups. And finally, since one of the most important issues when discussing turnover is that of what can be done to reduce it, future research should utilize longitudinal study designs to focus on companies human resource management strategies and their affect on turnover intentions, behaviors and actual turnover.


Appendix A: An overview of the hypotheses of the study

H3a Perceived organizational support
H3b Social relations
H3c Work performance
H3d Mental work and stimulation
H3e Satisfied with use of talents and skills
H3f Psychological contract violation
H3g Locked in

H1a Job satisfaction
H1b Mental work and stimulation
H1c Work performance
H1d Social relations
H1e Supervisor communication
H1f Organizational support
H1g Affective commitment
H1i Satisfied with use of talents and skills
H1h Normative commitment
H1j Treated unfairly by co-workers

H2a Psychological contract violation
H2b Locked-in
H2c Employability
H2d Job offers
H2e Frustrated or dissappointed with co-workers
H2f Treated unfairly by co-workers

Turnover intentions and behaviors