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# **The Role of Job Rotation and Psychological Motivators on Occupational Expertise**

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by

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## Preface

I am grateful to Ida Wognum and Jan Kees Looise for their excellent supervision and useful feedback on my work. Whether it is a lack of experience or a lack of talent; expressing emotions in a written manner that evokes no laughter or some form of acute nausea is a great challenge to me. Therefore I shall try and provide you with a part of me by quoting a poem by Charles Baudelaire in *Les Fleurs du mal: L'Horloge*. I feel that this poem indirectly shows the beauty of science. Despite everyone's little time on earth, some scientists feel passionate about accumulating knowledge to humanity, mostly through inductive reasoning. I am not yet sure whether I am - or ever will be - one of these scientists myself, although I will be giving it a try.

### *L'Horloge*

*Horloge! dieu sinistre, effrayant, impassible,  
Dont le doigt nous menace et nous dit: «Souviens-toi!  
Les vibrantes Douleurs dans ton coeur plein d'effroi  
Se planteront bientôt comme dans une cible;*

*Le Plaisir vaporeux fuira vers l'horizon  
Ainsi qu'une sylphide au fond de la coulisse;  
Chaque instant te dévore un morceau du délice  
À chaque homme accordé pour toute sa saison.*

*Trois mille six cents fois par heure, la Seconde  
Chuchote: Souviens-toi! — Rapide, avec sa voix  
D'insecte, Maintenant dit: Je suis Autrefois,  
Et j'ai pompé ta vie avec ma trompe immonde!*

*Remember! Souviens-toi! prodigue! Esto memor!  
(Mon gosier de métal parle toutes les langues.)  
Les minutes, mortel folâtre, sont des gangues  
Qu'il ne faut pas lâcher sans en extraire l'or!*

*Souviens-toi que le Temps est un joueur avide  
Qui gagne sans tricher, à tout coup! c'est la loi.  
Le jour décroît; la nuit augmente; Souviens-toi!  
Le gouffre a toujours soif; la clepsydre se vide.*

*Tantôt sonnera l'heure où le divin Hasard,  
Où l'auguste Vertu, ton épouse encor vierge,  
Où le Repentir même (oh! la dernière auberge!),  
Où tout te dira Meurs, vieux lâche! il est trop tard!»  
— Charles Baudelaire*

### *The Clock*

*Impassive clock! Terrifying, sinister god,  
Whose finger threatens us and says: "Remember!  
The quivering Sorrows will soon be shot  
Into your fearful heart, as into a target;*

*Nebulous pleasure will flee toward the horizon  
Like an actress who disappears into the wings;  
Every instant devours a piece of the pleasure  
Granted to every man for his entire season.*

*Three thousand six hundred times an hour, Second  
Whispers: Remember! — Immediately  
With his insect voice, Now says: I am the Past  
And I have sucked out your life with my filthy trunk!*

*Remember! Souviens-toi, spendthrift! Esto memor!  
(My metal throat can speak all languages.)  
Minutes, blithesome mortal, are bits of ore  
That you must not release without extracting the gold!*

*Remember, Time is a greedy player  
Who wins without cheating, every round! It's the law.  
The daylight wanes; the night deepens; remember!  
The abyss thirsts always; the water-clock runs low.*

*Soon will sound the hour when divine Chance,  
When august Virtue, your still virgin wife,  
When even Repentance (the very last of inns!),  
When all will say: Die, old coward! it is too late!"  
— Translated by William Aggeler*

# **The role of job rotation and psychological motivators on occupational expertise**

**A.A.M. Wognum, J.C. Looise, & K.L. Cheung**

## **Abstract**

*Introduction:* Occupational expertise enables employees to cope with changing job requirements. This study investigates which psychological factors promote or impede occupational expertise of employees. Viewing occupational expertise as an outcome, psychological constructs may explain how an individual develops expertise needed to perform the various tasks and responsibilities of a job adequately. Our purpose has been to gain insight in the antecedents of occupational expertise in order to enhance strategies to develop employee's occupational expertise.

*Theoretical framework:* The conceptual model is framed using the Integrated Change Model, which assumes that individuals go through three different motivational phases before behaviour change is established. We tested the model and examined whether occupational expertise is positively predicted by motivation to learn, whether motivation to learn is positively predicted by self-efficacy, whether self-efficacy is positively predicted by job rotation, and whether age and tenure have moderating roles between self-efficacy and motivation to learn.

*Methods:* This study combined two datasets (2009 and 2011) of similar studies to test the conceptual model. Data in both studies were based on a cross-sectional survey with production employees of the textile firm. Variables of interest were matched in order to analyse data from both studies. Operationalisation differed in the two studies; therefore recoding was needed. The model was tested using structural equation modeling - path analysis - with AMOS.

*Results:* No support was found for the fit of the conceptual model. This may be due to insignificant results regarding tenure and job rotation. However, significant positive relations within the model were found for motivation to learn on occupational expertise and self-efficacy on motivation to learn and occupational expertise. Age was found to positively moderate the relation between self-efficacy and motivation to learn. Effect sizes were small to medium.

*Discussion:* This study contributes to the understanding of occupational expertise, by providing theoretical insight into the relationships among job rotation, self-efficacy, motivation to learn, age, tenure, and occupational expertise. Our findings are interesting for the human resources development policy in all organisations that employ people. Job rotation may not enhance occupational expertise through self-efficacy and motivation to learn. However, managers should create opportunities for the employee to develop higher levels of self-efficacy. This enhances the motivation to learn leading to higher levels of occupational expertise. Employers should keep the psychological contract positive in order to stimulate employees to participate in activities in which they learn and develop. It is important that employees receive positive feedback and that employees are stimulated to experiment with new activities. This creates opportunities for the employee to develop higher levels of self-efficacy. In turn this enhances the motivation to learn leading to higher levels of occupational expertise.

*Keywords:* occupational expertise, employability, psychological antecedents, I-Change Model, Dutch, textile firms, HR strategies, intention, motivation to learn, self-efficacy, job rotation, age, turnover, path analysis

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# 1. Introduction

In the Netherlands, the development of employees received a lot of media attention recently. In 2014, 20,000 job losses are expected in the care sector (e.g. TvV, 2014). The Dutch teaching sector is characterised by severe and increasing quantitative and qualitative teacher shortages (Commissie Leraren, 2007). This indicates a growing need to stimulate the professional development of employees (e.g. Runhaar, 2008). Since the 1990s, employability has been in the spotlight (Forrier & Sels, 2003) and is considered to be a critical requirement for organisations – adapting to the changing environment – as well as for individuals – aiming at career success (Fugate, Kinicki, & Ashforth, 2004; Van der Heijde & Van der Heijden, 2006). According to Van der Heijde and Van der Heijden (2006), employability refers to the “continuous fulfilling, acquiring, or creating of work through the optimal use of one’s competences” (p. 453). This enhances opportunities for organisations to meet fluctuating demands for new products and services, as highly employable employees are able to adopt new roles, modify behaviour, and acquire new skills (e.g. Pulakos, Arad, Donovan, & Plamondon, 2000).

Employability has been conceptualised from three different perspectives (i.e. the economic-social, the individual, and the organisational) (Van Dam, Van der Heijden, & Schyns, 2006). This paper investigates employability mainly on an individual level, but also on the organisational level. More and more employees need to be focused on their adaptability in attaining a job, within or outside their organisation. Thus, employability has been considered an alternative to job security for individuals (Forrier & Sels, 2003). There is still a lack of consensus on how to define employability, as definitions within the individual perspective are abundant (e.g. Forrier & Sels, 2003; McQuaid & Lindsay, 2005; Van der Heijde & Van der Heijden, 2006).

Employability is often defined in multiple dimensions and occupational expertise is found in multiple conceptualisations (Van der Heijde & Van der Heijden, 2006). Occupational expertise is arguably the most important dimension of employability, as described by Van der Heijde and Van der Heijden (2006). Thijssen (2010) indicated that occupational expertise enables the employee to be more employable. According to Van der Heijde and Van der Heijden (2006) occupational expertise is taken to be a prerequisite for employee’s positive career outcomes. Other authors also claim that occupational expertise forms a substantial part of employability (e.g. Boudreau, Boswell & Judge, 2001; Onstenk & Kessels, 1999). It is essential to employees in order to find and retain qualified job (Van der Heijde & Van der Heijden, 2006) and is associated with more inter-firm career opportunities (DeFillippi & Arthur, 1996). According to Van der Heijde and Van der Heijden (2006), one is

condemned to unskilled labour without occupational expertise. Therefore, it is practically and theoretically interesting what the antecedents are of occupational expertise of employees.

Despite a large volume of expertise research, little research is conducted on occupational expertise. Raemdonck (2011) mentioned that there is a lack of fundamental theoretical frameworks. Occupational expertise may prevent obsolescence, competition, and rivalry among employees (Raemdonck, 2011). Occupational expertise enables employees to cope with changing job requirements (Van der Heijde & Van der Heijden, 2006). Occupational expertise is described as an employability competence, which is “a set of observable performance dimensions, including individual knowledge, skills, attitudes, and behaviours that are linked to high performance, and provide the organisation with sustainable competitive advantage” (Van der Heijde & van der Heijden, 2006, p. 452). Van der Heijde and Van der Heijden (2006) described occupational expertise as the expertise needed to perform the various tasks and responsibilities of a job adequately. This highly suggests that psychological factors (e.g. individual knowledge and attitudes) are relevant in studying occupational expertise. There are large differences in levels of expertise among people from different sectors, indicating individual differences (De Grip, Van Loo & Sanders, 1998). Peeters, Cuyper, and De Witte (2014) argued that it is important to investigate antecedents of occupational expertise that are malleable, in view of identifying possibilities for employability-enhancement. Therefore, this study investigates which psychological factors promote or impede occupational expertise of employees.

Using psychological theories in order to occupationally expertise may be interesting in order to explore its underlying mechanisms. Viewing occupational expertise as an outcome, psychological constructs may explain how an individual develops expertise needed to perform the various tasks and responsibilities of a job adequately. In turn, this study may contribute to strategies to enhance occupational expertise. Understanding the underlying mechanisms of occupational expertise, one may understand how expertise is acquired, how it can be taught, and how fledgling employees can be presented with appropriate experience and management activities (e.g. job rotation) (Van der Heijden, 2003). Studies indicated several psychological antecedents of occupational expertise. One is the motivation to learn; Noa and Wilk (1993) found that the motivation to learn enhances knowledge development - and with it, occupational expertise as well. Self-efficacy may also enhance occupational expertise. Bossink (2011) found self-efficacy to be a positive predictor of employability and Nauta (2008) indicates that self-efficacy may positively influence an individual's occupational expertise. In addition, studies show that job rotation is positively related to employability (e.g. Campion, Cheraskin & Stevens, 1994). Research indicates that job rotation may also enhance the motivation to learn (Martens, 2004). It seems that these concepts are related to each other; it is therefore interesting to investigate what the role is of job rotation, self-efficacy, and motivation to learn on occupational expertise. As far as we know, this study is first to identify the psychological



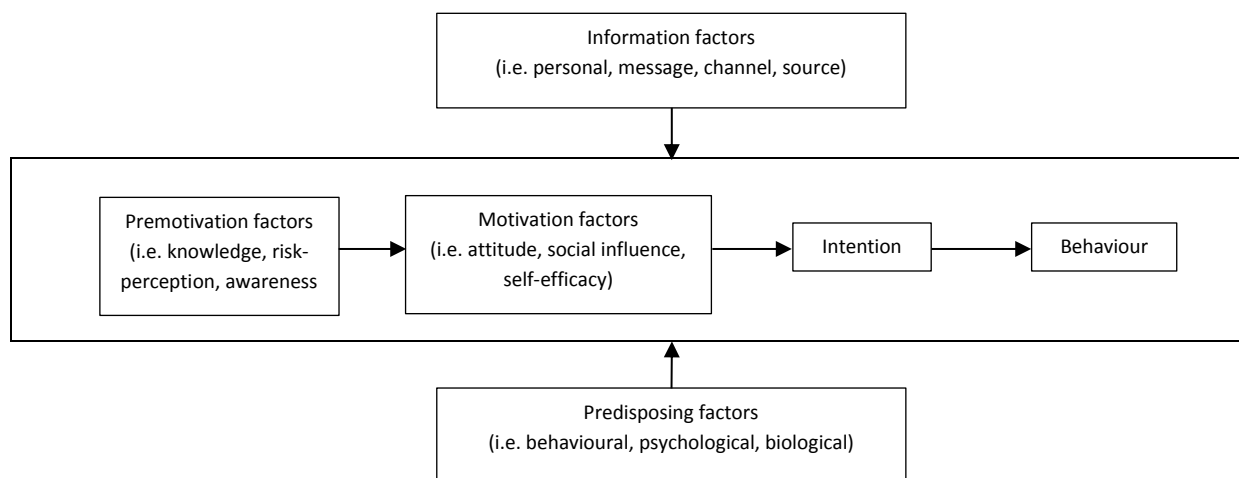
mechanism to occupational expertise. This may lead to enhancement in strategies to develop occupational expertise.

## **2. Theoretical framework**

Occupational expertise is used in the multi-dimensional operationalisation of employability, by Van der Heijde and Van der Heijden (2006). It is believed to be a prerequisite for positive career outcomes of workers and forms a substantial part of employability (e.g. Boudreau, Boswell & Judge, 2001). Based on Van der Heijden (2000, 2002) and Van der Heijde and Van der Heijden (2006), occupational expertise is an employee's competence and is conceptualised to consist of knowledge (inherent to a professional field), metacognitive knowledge, skills, and social recognition. Knowledge refers to declarative knowledge (knowing that), procedural knowledge (knowing how), and conditional knowledge (knowing when and where). Meta-cognitive knowledge refers to self-insight and self-consciousness. Skills refer to particular skills that are needed to perform well. Social recognition refers to being socially recognised by important key figures, as expertise can only exist by virtue of being respected by knowledgeable people in the organisation, making social skills and communicative skills important as well. In short, occupational expertise is the expertise needed to perform the various tasks and responsibilities of a job adequately. Viewing occupational expertise as an outcome, it is interesting to explore which mechanisms underlie the process to develop these forms of knowledge and skills, as well as the social recognition (i.e. occupational expertise).

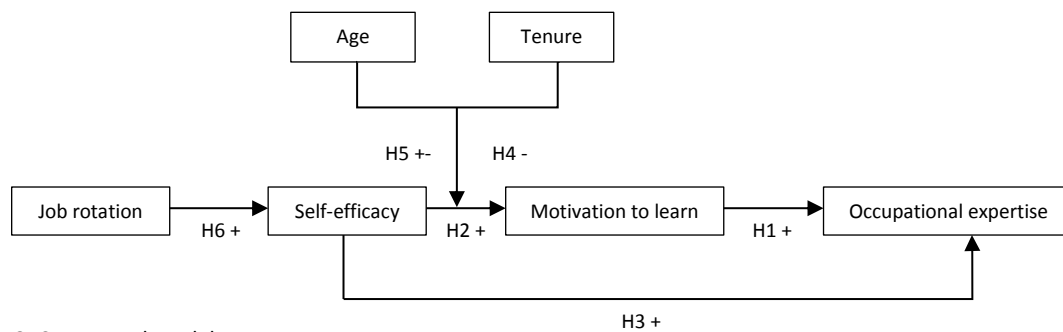
Various well-known socio-cognitive theories have been used to explain and change behaviours (e.g. Social Learning Theory (Bandura, 1977), the Health Belief Model (Janz & Becker, 1991), the Protection Motivation Theory (Rogers, 1975), the Theory of Planned Behavior (Ajzen, 1991), and the Transtheoretical Model (Prochaska & DiClemente, 1983). In this study, the conceptual model is framed using the Integrated Change Model [I-Change Model] (De Vries et al., 2003), which is a theoretical framework integrating concepts of the mentioned cognitive models (see figure 1). The I-Change Model assumes that individuals go through three different motivational phases before behaviour change is established: a pre-motivational, motivational, and post-motivational phase. The intention (i.e. the overall motivational end state) is assumed to be an immediate antecedent of behaviour (Ajzen, 1991). According to the I-Change model, the intention (to develop knowledge, skills, and social recognition) is determined by a few motivational factors (i.e. attitude, social influences, and self-efficacy). These motivational factors are in turn predicted by several distal - pre-motivational - factors (e.g. risk perception). The I-Change Model further posits that predisposing factors (e.g. behavioural factors, psychological factors, and biological factors) as well as information

factors (personal, message, channel, and source factors for enhanced information processing) have their influence on all of these three behavioural motivational phases.



**Figure 1.** I-Change Model (De Vries et al., 2003)

Using the I-Change Model, the mentioned related concepts (i.e. motivation to learn, self-efficacy, job rotation) can be framed in its chronological order. As intention is the most proximal antecedent of behaviour, we hypothesise that motivation to learn is the proximal predictor of occupational expertise. Intention is predicted by motivation factors, like self-efficacy. Therefore this study investigates whether self-efficacy influences this intention - in this context; the motivation to learn. Although the I-Change Model provides a helpful framework to identify determinants of behaviour, the model does not provide the underlying methods and strategies to change these determinants. Job rotation may be a strategy to enhance self-efficacy. Furthermore, this study investigates whether age and tenure in years moderate the relation between the intention and the motivational factor. Age and tenure are predisposing factors, which may have their influence on motivational processes and behaviour. Several studies have indicated that past behaviour (e.g. tenure) has its influence on attitude, self-efficacy (Albarracín & Wyer, 2000) and on actual behaviour (Aarts, Verplanken, & Van Knippenberg, 1998). Biological factors, such as age, may have influence on motivational processes as well (De Vries & Mudde, 1998). One key assumption regarding the impact of age is that the impact of age exists due to different age categories holding different beliefs about certain behaviours. The proposed model is depicted in figure 2 and is explained next.



**Figure 2.** Conceptual model.

Our purpose has been to gain insight in the antecedents of occupational expertise in order to enhance strategies to develop employee's occupational expertise. This paper proposes an integrative model, describing how an individual's occupational expertise develops. According to the I-Change model, intention is the most proximal antecedent of behaviour (De Vries et al., 2003). Intention itself accounts for approximately 30% of the variance in behaviour (McEachan, Conner, Taylor, & Lawton, 2011). In this study, it is assumed that the intended behaviour (i.e. developing knowledge, skills, and social recognition) leads to more occupational expertise. Some support for this assumption is found in studies on self-directedness (in working life). Raemdonck (2006) defined 'self-directedness in learning processes' as a characteristic adaptation to influence work-related learning processes in order to cope for oneself on the labour market. Learning process means a series of informal and formal work-related learning activities that result in the achievement of learning-related goals, such as mastering new tasks or updating skills and knowledge. Thus, it seems that 'self-directedness in learning processes' is closely related to behaviour towards developing occupational expertise. 'Self-directedness in learning processes' is expressed in behaviour and regulated by beliefs, attitudes, and intentions, congruent with the I-Change model. Interestingly, self-directedness may lead to improved employability and organisational performance (e.g. Raemdonck & Thijssen, 2005; Van Loo, 2002).

It seems - for this study - that the intention to learn (i.e. motivation to develop knowledge, skills, and social recognition) can almost be interchangeably used with 'motivation to learn', which is defined as the desire to engage in training and development activities, to learn training content, and to embrace development experiences (Carlson, Bozeman, Kacmar, Wright, & McMahan, 2000). Thus, it seems that individuals with a high motivation to learn are motivated to develop occupational expertise. In this paper, motivation to learn is considered closely related to mental fatigue, which is expressed in the operationalisation of the study. Bossink (2011) argued that mental fatigue and motivation to learn are closely related, as mental fatigue is negatively associated with the motivation to learn. As argued by Breukers (2010), motivation to learn may enhance knowledge development and therefore occupational expertise as well. Some studies found support that motivation to learn is

a predictor of course outcomes (e.g. Colquitt LePine, & Noe, 2000). Breukers (2010) indicated that motivation to learn is a positive predictor of occupational expertise. This leads to the first hypothesis (H1) that motivation to learn positively predicts occupational expertise within the proposed model.

Interestingly, self-efficacy is related to employability, as some researchers treat the constructs self-efficacy and employability as interchangeable (Daniels, D'Andrea, & Gaughen, 1998; Washington, 1999), and some argue that efficacy beliefs are an important dimension of employability (Knight & Yorke, 2002). Self-efficacy is a concept concerned with the "beliefs in one's capabilities to organise and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3). Van der Velde and Van den Berg (2003) indicate that employability is largely dependent on self-efficacy. Studies found that self-efficacy is positively related to job search behaviour and employment outcomes among unemployed (Kanfer, Wanberg, & Kantrowitz, 2001; Moynihan, Roehling, LePine, & Boswell, 2003) and students' subsequent employment outcomes (Pinquart, Juang, & Silbereisen, 2003). Maurer (2001) mentioned that individuals high on self-efficacy perceive less stress than individuals low on self-efficacy. Bossink (2011) argued that self-efficacy may therefore enhance the motivation to learn. Numerous studies have shown that people with high self-efficacy have a higher intention to perform the behaviour of interest (e.g., Godin & Kok, 1996; Armitage & Conner, 2001; McEachan et al., 2011). Employees with a high (role breadth) self-efficacy (Parker, 1998) report more learning and innovative behaviours (Van Dam & Seijts, 2007) and engage in more development activities (Bezuijen, 2005), compared to employees with a low (role breadth) self-efficacy. Thus, it is hypothesised that self-efficacy positively predict motivation to learn (H2) as well as the occupational expertise (H3).

According to the I-Change Model, predisposal factors like age and tenure may influence the relation between self-efficacy and motivation to learn. Age seems a theoretically and practically interesting construct to investigate in our model. Studies on workplace behaviour indicate that age is negatively associated with participation in training and development activities, creating a challenge for managers and executives (e.g. Cleveland & Shore, 1992; Rosen, Williams, & Foltman, 1965; Maurer, Weiss, & Barbeite, 2003). As described by Maurer (2001), a factor that might contribute to an age effect is a decline in older workers' self-efficacy, regarding their ability to learn and develop (e.g. Fossum, Arvey, Paradise, & Robbins, 1986; Knowles, 1973). However, if high aged employees have high levels of self-efficacy, their motivation to learn may enhance as well. According to the I-Change theory, this relation may be moderated by differences in age. Thus, it is hypothesised that age moderates the relation between self-efficacy and motivation to learn (H4). Research regarding tenure showed that employees with more tenure in years have fewer opportunities to develop knowledge and skills (Klomp, 2010; Koroglu, 2008). Bossink (2011) found that tenure in years (negatively) moderates the relation between self-efficacy and employability. Explaining this, Bossink

(2011) argued that tenure in years may negatively impact employees' expectations and beliefs to develop themselves, leading to decreased motivation to learn. Thus, we hypothesise that tenure negatively moderates the relation between self-efficacy and motivation to learn (H5).

Occupational expertise may be enhanced by job rotation through its influence on self-efficacy. Based on the I-Change model, we hypothesise that strategies to enhance self-efficacy contribute to the motivation to learn, which in turn positively predicts an employee's occupational expertise. Bandura (1977, 1986) described four sources to enhance self-efficacy: (1) mastery experience (learn through experience), (2) vicarious learning (modeling), (3) verbal persuasion, and (4) physiological information. Employees who rotate jobs are exposed to different situations and content, in which they develop experience (mastery experience). It is likely that during their job rotation, employees are exposed to different people who serve as a frame of reference, which leads to vicarious learning (Bandura, 1977, 1986). Madsen (1999) defined job rotation as a (temporary) change of tasks or jobs within an organisation or between organisations, in order to upgrade competencies of those who are already employed. Kuijer, Visser, and Kemper (1999) mentioned that these changes of tasks or jobs may positively influence the motivation of employees. Change of tasks or jobs enhances learning and working experiences. Job rotation broadens work tasks and stimulates the motivation of employees (Martens, 2004; Kamps & Vermeulen, 2006). It is likely that job rotation enhances feelings of experience, concerning tasks or jobs. Thus, job rotation may lead to mastery experience and vicarious learning (Bandura, 1977, 1986) and may increase self-efficacy. Therefore, it is hypothesised that the effect of job rotation on occupational expertise is explained by its positive influence on self-efficacy (H6).

### **3. Methods**

#### **3.1 Data collection**

In 2009 and 2011, data were collected at a Dutch-based textile firm. Both studies coped with limitations of cross-sectional designs, leading to mixed findings of exploring the relation between job rotation and occupational expertise (Breukers, 2010; Bossink, 2011). Therefore this study combined two datasets of similar studies to test our conceptual model. Data in both studies were based on a cross-sectional survey with production employees of the textile firm. Participants were recruited by stratified random sampling, using similar strata (e.g. business lines and age). Breukers and Bossink both divided age in three categories: '< 40', '40 – 55', and '> 55' years of age. Subsidiaries were categorised in eight subsidiaries in both studies.

Questionnaires were used; pen-and-paper based in 2009 and mainly electronically in 2011. It is unlikely that this biased the results, as previous research shows that results of electronic

questionnaires are comparable to identical paper and pencil questionnaires (Stanton, 1998; Pettit, 2002; Ritter, Lorig, Laurent, & Matthews, 2004; Mangunkusumo et al., 2005). Data from 2009 (Breukers, 2010) was gathered using paper and pencil questionnaires (n=225) with a response rate of 75%, which is considered very high (Baruch & Holtom, 2008). Data from 2011 (Bossink, 2011) was obtained from mainly digital questionnaires (n=130) with a response rate of 63%, which is also considered very high (Baruch & Holtom, 2008). Combining datasets from 2009 and 2011 provides us with a sample of 355 respondents (94.6% male) of production employees. The mean age of the sample was 47.7 years (SD = 9.2). Thus, the sample consists of Dutch production employees, most of whom are men over 40 years of age. All sample characteristics are depicted in table 1.

**Table 1.** Descriptive Statistics of the Sample

Measure	Mean (SD)	% of sample
Age	47.7 (9.21)	-
Gender <sup>a</sup>	-	94.6
Tenure <sup>b</sup>	23.3 (11.93)	-
Job rotation <sup>c</sup>	2.3 (1.95)	-
Self-efficacy <sup>d</sup>	3.7 (.68)	-
Motivation to learn		
Poor	-	4.2
Neutral	-	13.2
Great	-	46.5
Unknown	-	36.1
Occupational expertise <sup>e</sup>	3.8 (.49)	-

**a) Percentage male**

**b) Tenure in years**

**c) Total job rotations during tenure**

**d) Five-point Likert scale: (1) poor, (5) great**

**e) Five-point Likert scale: (1) poor, (5) great**

### 3.2 Measures

Variables of interest were matched, in order to analyse data from both studies (i.e. Breukers, 2010; Bossink, 2011). Operationalisations differed in the two studies; therefore recoding was needed. All measures are based on self-reports, which is indicated to be reliable for certain behaviour (O'Malley, Bachman, & Johnston, 1983; Needle, McCubbin, Lorence, & Hochhauser, 1983).

*Occupational expertise.* In 2009 occupational expertise was measured as part of the measurement instrument of employability, in which occupational expertise is the expertise needed to perform various tasks and responsibilities of a job adequately (Van der Heijde & Van der Heijden, 2006). Occupational expertise was measured with 15 items (e.g. 'I consider myself competent to indicate when my knowledge is insufficient to perform a task or solve a problem') and was calculated into a score from 1 to 6. Van der Heijde and Van der Heijden (2006) showed that the internal

consistency (Cronbach's alpha of .90) is good. This score was recoded into a five-point Likert scale (very poor – very good). In 2011, occupational expertise was defined as the employee's expertise within the field (Thijssen, 2010) and was measured as part of an instrument of employability, with a Cronbach's alpha of .60. Bossink (2011) argued that this is acceptable due to the novelty of the scale. Six items measured occupational expertise, three of which were recoded due to negations (e.g. 'I am not able to mentally handle my function as well as five years ago'). The mean score resulted into a five-point Likert scale (very poor – very good). Thus, in this study occupational expertise is operationalised as a five-point Likert scale, ranging from 'poor' to 'great'. Both operationalisations seem to reflect the expertise needed to perform the various tasks and responsibilities of a job adequately.

*Motivation to learn.* In 2009 motivation to learn was measured with three items based on a questionnaire by Nijman (2004) on a five-point Likert scale (e.g. 'Before I took part in this training program, I was strongly motivated to take part in it'). These items were calculated into one score from 1 to 6. Breukers (2010) showed that the internal consistency (Cronbach's alpha of .80) was good. For 2011, motivation to learn was operationalised into one item about mental fatigue (i.e. 'I feel mentally exhausted due to my job') on a six-point Likert scale (never – always). As mentioned, Bossink (2011) argued that mental fatigue is closely related to the motivation to learn. This item is part of a Dutch version of the Maslach Burnout Inventory in order to measure work-related mental fatigue (Schaufeli & Van Dierendonck, 1995). As this item is a negation, it needed recoding. For analytic purpose, these measures of motivation to learn were recoded into a three-point Likert scale ranging from 'poor' to 'great'.

*Self-efficacy.* Personal flexibility – which is a dimension of employability – refers to the capacity to easily adapt to all kinds of changes in the labour market that is broader than one's immediate job domain (Van der Heijde & Van der Heijden, 2006). This is closely related to self-efficacy, which refers to the beliefs in one's capabilities to behave in a certain way to produce given attainments, like adapting to changes (Bandura, 1997). In this study, self-efficacy is operationalised as personal flexibility for data gathered in 2009. This was measured with eight items on a six-point Likert scale (e.g. 'I adapt to developments within my organisation'). Van der Heijde and Van der Heijden (2006) showed the internal consistency to be acceptable (Cronbach's alpha of .79) For analytic purpose, the mean score was recoded into a five-point Likert scale, ranging from 'poor' to 'good'. In 2011, self-efficacy was operationalised using a scale of Warr and Birdi (1998). Warr and Birdi (1998) used four items on a five-point Likert scale to measure self-efficacy, ranging from 'strongly disagree' to 'strongly agree' (e.g. learning is not my strong point). Warr and Birdi (1998) showed that the internal consistency (Cronbach's alpha of .81) was good. These items were

negations and needed recoding. The mean score was used as the score for self-efficacy, ranging from 'poor' to 'great'.

*Job rotation.* Job rotation is a (temporary) change of tasks or jobs within an organisation, or between organisations, in order to upgrade competencies of those who are already employed (Madsen, 1999). This was operationalised with the number of self-reported job-rotations during tenure. In 2009, this was measured by asking respondents how many times they had rotated jobs during tenure (e.g. 'How many times have you rotated jobs without salary increase during your tenure at the firm?'). Two items were used; one measuring job rotation without salary increase and one measuring job rotation with salary increase. For the total of job rotations, these two were summed. Similarly, in 2011 two items measured how many times respondents had rotated jobs during tenure. However, one item measured voluntary job rotation, while the other measured mandatory job rotation. The sum results into the total number of job rotations. Both studies used items in which the sum is the total of rotated jobs. The sum of job rotations was used for analytic purpose.

*Age and tenure.* Predispositional factors, like age and tenure, were hypothesised as moderators between self-efficacy and motivation to learn. Age was measured by simply asking the respondents what their age was in years. Tenure was measured by asking respondents the total length of tenure at the firm in years. Operationalisations of age and tenure were the same in years 2009 and 2011.

### **3.1 Statistical analyses**

In this study, we are interested in the psychological mechanism of occupational expertise. It is therefore interesting to test the proposed relations within the model. The model (see figure 1) was tested using structural equation modeling [SEM] with AMOS (Arbuckle, 2006). The exogenous (independent) variable was job rotation. The three endogenous (dependent) variables were self-efficacy, motivation to learn, and occupational expertise. Self-efficacy was regarded as a distal and proximal factor, while motivation to learn was seen as a proximal factor only, for the explanation of occupational expertise. To test the moderated relations, age and tenure were standardised and interaction terms were computed for age and self-efficacy, and tenure and self-efficacy. These were regarded as endogenous variables.

The SEM model was tested with help of the maximum likelihood estimation method. We used two fit measures recommended by several authors: the comparative fit index [CFI] by Bentler (Marsh et al., 1996) and the root mean square error of approximation [RMSEA] (Byrne, 1998). In order to assess approximate fit, the RMSEA was used. Cudeck and Browne (1993) suggest that a RMSEA of .08 or less indicates an "acceptable fit" and a RMSEA of .05 or less indicates a "close fit".



Moreover, RMSEA values between .05 and .08 are also indicative of a fair fit (Kaplan, 2000). Employing "close fit", a P-value for test of close fit [PCLOSE] gives a test of close fit and should be higher than .50 to indicate good fit. CFI with values above .95 are preferred (Kaplan, 2000) and should not be lower than .90 (Kline, 1998).

## 4. Results

Pearson correlation coefficients were computed to summarise linear relationships among job rotation, self-efficacy, motivation to learn, and occupational expertise (see Table 2). Self-efficacy is positively correlated to motivation to learn and occupational expertise. Motivation to learn is positively correlated to occupational expertise. However, correlations between job rotation and self-efficacy, motivation to learn, and occupational expertise were not supported.

**Table 2.** Correlations for Job Rotation, Self-Efficacy, Motivation to Learn, and Occupational Expertise.

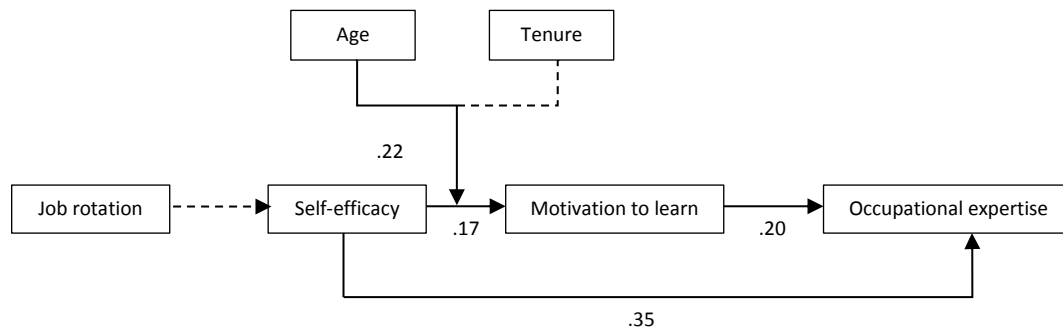
Measure	1	2	3	4	5	6
1 occupational expertise	1.00	-	-	-	-	-
2 motivation to learn	.27*	1.00	-	-	-	-
3 self-efficacy	.39*	.18*	1.00	-	-	-
4 job rotation	-.00	.06	.03	1.00	-	-
5 age	-.16*	-.08	-.20*	.09	1.00	-
6 tenure	-.14*	.07	-1.6*	.15	.78*	1.00

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

SEM was used to estimate the model explaining the role of job rotation and the psychological motivators on occupational expertise. The model was tested for all respondents. The fit indices were not satisfactory (RMSEA = .314, PCLOSE = .000, CFI = .1888). Correlations indicate that job rotation was not associated with other variables within the model. The unstandardised beta weights for the model are given in Table 3. Figure 3 shows the standardised results of the model. Only significant paths are shown, even though non-significant paths remained in the model. Model fit indices suggest that the conceptual model does not fit the data. Some relations were not supported. However within this model, motivation to learn is a positive predictor of occupational expertise. Self-efficacy is a positive predictor for motivation to learn as well as for occupational expertise. Thus, H1, H2, and H3 were supported. Job rotation was not found to be a predictor of self-efficacy. Therefore, H4 was rejected. Moreover, age was found to moderate the relation between self-efficacy and motivation to learn. No moderation effect was found for tenure on self-efficacy and motivation to learn. Therefore, support was found for H5, while H6 was rejected.

**Table 3.** Unstandardised Beta Weights for Significant Relations within the Model.

Relations within the model	Unstandardised beta weights
Motivation to learn to occupational expertise	.17
Self-efficacy to motivation to learn	.13
Self-efficacy to occupational expertise	.25
Age on self-efficacy to motivation to learn	.14

**Figure 3.** Structural Equation Modeling – Path Analysis: Age, Job Rotation, Self-Efficacy, Motivation to Learn, and Occupational Expertise. Path Coefficients (n = 355)

In conclusion, no support was found for the fit of the conceptual model. However, significant positive relations within the model were found for motivation to learn on occupational expertise and self-efficacy on motivation to learn and occupational expertise. Age was found to positively moderate the relation between self-efficacy and motivation to learn. This indicates that the positive effect from self-efficacy on motivation to learn is stronger for older employees. Standardised parameter estimates remove scaling from unstandardised estimates and can be used for comparisons of parameters throughout the model. Standardised estimates correspond to effect-size estimates in social sciences with absolute values less than .10 representing a “small” effect, around .30 representing a “medium” effect, and greater than .50 representing a “large” effect (Cohen, 1988). It seems that the relation of self-efficacy on motivation to learn is considered a small-medium effect and the relations of self-efficacy on occupational expertise, motivation to learn on occupational expertise, and the moderating effect of age are considered medium effects.

## 5. Discussion

In a Delphi study among human resource development [HRD] experts, McGuire and Cseh (2006) stressed the importance of understanding learning concepts, in applying the principles of HRD. However, little research is conducted on the antecedents of occupational expertise. There is a lack of fundamental theoretical frameworks (Raemdonck, 2011). The I-Change Model was useful as a starting-point from which to frame the psychological mechanism of occupational expertise (De Vries

et al., 2003). One model in literature comes close to ours, which is the model of involvement in work-related learning and development activity, by Maurer et al. (2003). The model by Maurer et al. (2003) - like the I-Change Model - indicates that attitudes, social support, and self-efficacy may influence the intention to learn, which in turn influences learning behaviour. However, Maurer et al. (2003) did not examine the link of behaviour to occupational expertise. Based on the I-Change Model we proposed that self-efficacy – as well as attitudes and social support – directly predicts the intention, while Maurer et al. (2003) argued for attitudes as mediator. Using the I-Change Model, our aim has been to gain insight in the psychological antecedents of occupational expertise, in order to enhance strategies to develop employee's occupational expertise. As cross-sectional studies may jeopardise the validity of results, this study tested the proposed model by combining two datasets that measured constructs of interest in different time points. This study contributes to the understanding of occupational expertise, by providing theoretical insight into the relationships among job rotation, self-efficacy, motivation to learn, age, tenure, and occupational expertise.

Firstly, the conceptual model did not fit the data. One explanation is that tenure and job rotation did not yield significant results, leading to decreased accuracy of the model. It seems that job rotations did not correlate with any other variable in the model. Secondly, we examined whether higher motivated employees were more likely to develop occupational expertise. Expectations that motivation to learn may enhance knowledge development - and therefore occupational expertise - as well were supported in this study (e.g. Breukers, 2010). It was found that motivation to learn positively predicts occupational expertise. Thirdly, self-efficacy was expected to positively predict the development of motivation to learn (as individuals high on self-efficacy perceive less stress than individuals low on self-efficacy (Maurer, 2001)) and occupational expertise (e.g., Godin & Kok, 1996; Armitage & Conner, 2001; McEachan et al., 2011, Bossink, 2011; Van Dam & Seijts, 2007; Bezuijen, 2005). This study found support that individuals high on self-efficacy may develop higher levels of occupational expertise directly and indirectly by enhancing the motivation to learn. This study also found that age moderates the positive relation between self-efficacy and motivation to learn. This means that the positive effect of self-efficacy on motivation to learn is stronger for older employees. Literature indicates that age is negatively associated with an employee's self-efficacy in their ability to learn and develop (e.g. Maurer, 2001). Our results showed that enhancing self-efficacy in relatively older employees may contribute to higher levels of motivation to learn, and that this effect is stronger for relatively older employees. Future research should shed light on this moderation. The I-Change theory provides the explanation that relatively older employees may perhaps have already favourable attitudes and perceived social support and are therefore more motivated to learn when the self-efficacy is enhanced. Effect sizes were moderate, indicating that investing in the

development of higher levels of self-efficacy and motivation to learn positively influences occupational expertise.

Contrary to expectations, no effects were found for job rotation on self-efficacy. One explanation is that job rotations in this firm were rather mandatory (Bossink, 2011; Breukers, 2010), which may lead to different results in comparison with voluntary job rotations. The effect of job rotation on self-efficacy may be more complex than expected. According to the theory of cognitive dissonance (Festinger, 1962), individuals have the tendency to behave consistently with their attitudes and vice versa. Perhaps only employees who decide to rotate jobs are motivated to actively gain learning experiences (through mastery experiences and learning through modeling) in order to hold their positive attitudes, leading to enhanced self-efficacy. Contrarily, employees who mandatory rotate jobs are not in need to hold positive attitudes regarding job rotations and may therefore not conduct activities that enhance their self-efficacy. Thus, employees engaging in voluntary job rotations may have strong positive attitudes to conducting self-efficacy enhancing behaviours due to their prior decision to rotate the job. Future research should shed light on this. Literature indicates that support for development is positively associated with self-efficacy. As described by Maurer et al. (2003), a situation that supports learning and development enhances self-confidence and beliefs that favourable outcomes will result from that supported behaviour. This indicates a positive relationship between support for development and self-efficacy, as supported by Maurer (2001). Furthermore, in contrast to expectations, no support was found for the moderation of tenure on self-efficacy and motivation to learn. Perhaps tenure is only important in the case of starters (20-43 years) (Van der Heijden, 2003) because of the fact that their expertise area still needs to be expanded. Therefore, starters with high self-efficacy to learn are more motivated to learn than older employees are, as starters feel that their expertise area still needs to be expanded. This is supported by a study of Van der Heijden (2003) in which middle-aged employees received less social support from near colleagues. According to the I-Change, this may influence the motivation to learn as well. In this study, participants were mostly middle-aged employees, which may explain the lack of effect of the moderating role of tenure between self-efficacy and motivation to learn. More research is needed to explore this phenomenon.

This study has several limitations. The combined data to jeopardise some limitations of cross-sectional designs also led to differences in operationalisation of the constructs. This may have led to more variety in the measurement of the constructs. We expect that this may underestimate our results, leading to poor model fit and smaller effects. Another limitation is that effect sizes were small to medium; relevance of the effects found in this study is therefore debatable. However, small effects may still have large implications in research, as the values of the effect size indices (e.g. .30, .50, and .80) may not be appropriate in this research context. McCartney and Rosenthal (2000)

argued that the move from effect size estimation to the assessment of practical importance is not straightforward. Many considerations of the context (e.g. measurement, method, and empirical literature) should be factored into assessments of practical importance. According to Prentice and Miller (1992) many studies in social sciences have important psychological variables or processes, despite the fact that many of them have yielded small effects. Within the context of large firms, even small effects in estimates due to malleable variables are impressive, as higher occupational expertise and employability of employees create opportunities to meet fluctuating demands for new products and services as highly employable employees are able to adopt new roles, modify behaviour, and acquire new skills (e.g. Pulakos, Arad, Donovan, & Plamondon, 2000). Moreover, in this study participants were recruited from a Dutch-based textile firm, in which most employees are middle-aged. This means that the external validity is debatable, as differences in geography, firm and age may lead to different results. Future studies should incorporate more demographic variables, in order to confirm results in other settings.

Furthermore, our findings are interesting for the HRD policy and human resources management in all organisations that employ people. Human resources officers should stimulate occupational expertise, by examining job design, review existing elements, and change where appropriate. Job rotations may not enhance occupational expertise through self-efficacy and motivation to learn, especially if rotations are mandatory. However, support for development may positively stimulate self-efficacy; support includes encouragement, coaxing, persuasion about the value of development, providing time, information, assistance, resources, and rewards for participation in development activities (Maurer et al., 2003). As indicated by Bal (2010), employers should keep the psychological contract positive, in order to stimulate employees to participate in activities in which they learn and develop. As described by Bossink (2011), this may enhance positive beliefs about one's capabilities, leading to higher levels of self-efficacy. Employee's occupational expertise may be enhanced with focus of attention from the supervisor. This attention should not be narrow, but rather aimed at broader development and professional growth. It is important that employees receive positive feedback and that employees are stimulated to experiment with new activities. Managers should be aware of providing negative feedback and should stimulate a working climate where mutual trust is prevalent, stemming from a lack of complaints, grumbling and negative attitudes. This creates opportunities for the employee to develop higher levels of self-efficacy. This, in turn, enhances the motivation to learn, leading to higher levels of occupational expertise. When the immediate supervisor notices that employees encounter problems in translating their motivation into behaviour (e.g., failing to get started or becoming distracted), they may strategically call on automatic processes, in an attempt to secure goal attainment (Gollwitzer, 1999). Gollwitzer (1999) argued that this can be achieved by plans in the form of implementation intentions that link

anticipated situations to goal-directed responses. Implementation intentions are goal-directed responses to anticipated situational cues (e.g. training opportunities), which elicit these responses automatically. Employees should be informed about development opportunities and educated about implementation intentions, in feedback meetings and informal activities. For example, the conceptual framework may be used to detect stimulating or hindering factors in the light of teachers' further development. Guided by this information, specific interventions and actions may be implemented in schools. If teachers lack self-efficacy, their self-efficacy may be enhanced by organising meetings to discuss new ideas and individual development, where every opinion counts and is appreciated. This may add to the motivation to learn, which in turn predicts occupational expertise leading to more high-quality teachers.

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