To transfer or not to transfer: examining the transfer of skills within lateral entrants in the technical sector

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Preface

You are about to read the result of a study I conducted to achieve my Master of Science degree in Psychology at the university of Leiden, The Netherlands. The past months were very difficult, especially due to the covid-19 restrictions and its effects. I can look back at a very challenging period. Yet, it was pleasant to find two supervisors who gave me the support I needed. Therefore, my compliments as well as my gratitude to Guido Band, my first supervisor from the university of Leiden, and Wouter Kersten, my second supervisor from Platform 31.

I will not thank all the participants personally for their contributions to this experiment; nonetheless, without you, there would be no experiment and no thesis. A big compliment to my friends, family and to my wife Selena for their support and critical input.

Cors van Zomeren

Abstract

The purpose of this research was to look at how lateral entrants in the technical sector transfer their abilities. Many new employments in this industry are necessary as a result of the energy transition, but they can't be filled with the current workforce. Therefore, this study focused on researching the perceived relevance of lateral entrants and employers regarding transferable skills within the technical sector, and expanding on skill transfer theory by researching differences of skills within lateral entrants in the technical sector. The main hypothesis was to test if soft skills are perceived as more important than hard skills by employers and lateral entrants. Moreover, if lateral entrants score higher on average on soft skills than on hard skills. The general design of this study was both a between, and within-subject design. In this study, a single data collection approach (questionnaires) was used, and observatory explanations were established. The results of the study identified soft skills as the most transferable skills among technical lateral entrants. The findings show that, when it comes to skills, both lateral entrants and employers perceive soft skills to be the most relevant. Furthermore, the research indicates that, on average, lateral entrants scored substantially higher on soft skills than on hard abilities. Due to limitations regarding the acquisition of participants, the number of respondents was low (N=13). In relation to the procedure of this study, there may also be some possible constraints regarding the time and timing of the data acquisition. To better understand the implications of these results, future studies could focus on a bigger sample size and include ‘earlier employment sector’ as a control variable.

Lateral entrants - Employers – Transferability - Employability - Hard skills - Soft skills - Technical sector - Energy transition

Introduction

Over the last century the average temperature has risen, the volume and intensity of precipitation has grown, and extremely hot days have become more common. To limit future global warming and its repercussions as much as feasible, it is critical to achieve the Paris climate targets. The Netherlands must transition away from fossil fuels and toward renewable energy sources such as solar and wind to meet the Paris agreements (Van Til et al., 2021).

To achieve the climate goals set in the summer of 2019, a so-called energy transition is necessary. This transition, amongst other reasons which will not be further elaborated in this study, will create many new jobs, yet the supply of qualified professionals is not large enough to meet the future demand. Hundreds of thousands more workers are needed in the manufacturing industry, network operations, the energy firms, the installation and maintenance sector, the chemical industry, and building enterprises. All these sectors are essential in contribution to achieve the Climate Agreement (Koning et al., 2016). Many existing jobs are changing in nature, necessitating the acquisition of new skills and, as a result, future-oriented growth. Simultaneously, the Netherlands has been grappling for some years with a low influx of people into technical professions, implying that the demand for skilled technical individuals in a variety of fields cannot be met. This produces a labour market that is tense for the industries that are critical to the energy transition (Ligtvoet et al., 2016). Therefore, the goal of this study is to examine the transfer of skills within lateral entrants in the technical sector

While the demand for personnel in the sectors related to the energy transition will continue to grow, other sectors are also undergoing a change (Kersten, Dural, & Dorenbos, 2021). For example, due to the digitization and automation of processes, far less employees are needed in the financial sector (banks). Moreover, the culture, hospitality, and aviation sector are also experiencing changes, and a decline in jobs due to the covid-19 pandemic. Where one sector is forced to lay off its employee, another sector raises the demand for one (SER, 2018). The sector currently raising the demand for personal the most, is the technical sector. This sector entails jobs such as an electrician, service engineer, machine operator, installer etc.

The technical sector is always seen as an industry where hard ‘technical’ skills are the most important and deemed relevant, yet Olesen et al. (2020) emphasize that soft skills are also becoming more and more important every day and are seen as an important learning outcome. Soft skills are skills that are usually not specific to any job or acquired through

formal education and entail behavioural and interpersonal skills. Hard skills are the quantitative abilities that employees must possess in order to do a certain profession successfully (Soft Skills, 2021). Research by Klaus (2010) has estimated that job success in general, depends for 75% on soft skills and 25% on hard skills. Although these numbers are not specific requirements for working in technical sector, they still relate as they apply for a job in general. It is therefore important to state that there is an increased need for soft skills among technicians (SER, 2018). In addition, transferring knowledge and skills across settings is recognized as a difficult topic that needs more empirical investigation. Importantly, past learning does not necessarily improve new learning and may sometimes even have a detrimental impact (Jackson et al., 2019).

As described, due to laid offs in sectors such as banking and finance, people are forced to switch between sectors (Kersten, Dural, & Dorenbos, 2021). Therefore, lateral entrants are currently the most available to fill up the gap. In short, lateral entrants are employees who followed a side intake trajectory: a relatively short basic education that focuses on retraining job seekers for a new sector. It is relevant to realize that according to a recruitment director in the technical sector ,employers are sometimes reluctant to hire lateral entrants because of too little certainty about the acquired soft skills, amongst other things (personal communication, 2021). It is often unknown what the state is of lateral entrants regarding soft skills and the transfer of it. This is noteworthy as, according to literature, there is an increasing demand among employers for people with soft skills (SER, 2018).

Theoretical overview of the transfer of skills

Lateral entrants

A lateral entrant is someone who moves from one job to another. This position is often in a field where he or she has no prior expertise or training yet is interested in learning and practicing this career. Dealing with previously acquired competencies is tough for both lateral entrants, and supervisors and trainers. Bolhuis and Simons (2011) conducted an inventory of initial lateral entrance trajectories and concluded that the superficial part usually goes well, but that the training is still insufficient in terms of taking into account the lateral entrant's life and work experience. Because of the previously acquired competencies and experiences that this set of students brings, lateral entrants demand special attention. Tigchelaar et al. (2010) for example, emphasizes the significance of transferring previously acquired skills and being conscious of one's own limitations.

Employability

Employability, as well as the factors that influence it, and its role in building and reshaping individual careers, has emerged as a significant goal for people looking for long-term satisfying work (Forrier & Sels, 2003). Simultaneously, careers, or the longer-term effects of work chances, are undergoing a significant paradigm shift. Employment and having a career are increasingly viewed more in terms of individual employability across relevant labour markets, than in terms of job security within a single organization (Newell and Dopson, 1996). It appears that employability is becoming a crucial criterion for professional success (Carbery & Garavan, 2005).

Employability is defined by Hillage and Pollard (1998, p. 2) as "the ability to move self-sufficiently within the labour market to realize potential through sustainable employment". Capabilities which are realized as a result of individual's assets, are amongst others; skills, qualifications, and personal attributes, as well as how those assets are used and presented to an employer, and contextual factors, such as current labour market conditions.

Transferability

There has been an increasing trend in people working in different work settings throughout their career in the last couple of decades. Therefore, the transfer of skills is more important than ever, and successful transfer of competencies across different contexts is needed. However, the transfer of skills and knowledge is a complex area of learning theory that shortfalls meaningful empirical evidence (Jackson et al., 2019).

There are multiple definitions regarding the transfer of skills. According to Bennet et al. (1999), transferable skills are skills that can support learning in any subject, and potentially be transferred to various environments in the workplace or higher education. Drummond et al. (1998) define transferable skills as skills that can be transferred to a context outside the study field. According to Nägele & Stalder (2016), the transfer of skills is regulated by contextual, individual, and social factors.

Yet, since the 60’s there has been doubt about whether skills can be transferred at all. According to Leberman and Mcdonald (2018), transfer can occur in the range from simple to complex, defined by the difficulty of transferring tasks between contexts. Some transfer seems to be automatic, whereas mindful transfer requires more effort. Kirwan and Birchall (2006), stated that the similarity between settings, and characteristics of the learner, have an

abundant impact on transfer.

There are a lot of different definitions regarding the subject of transfer. Yet, they all have in common that the skills learned, need to be skills that can be used in different situations in life. Most of the time they are divided into non-technical (soft skills) and technical skills (hard skills). For years already, transferable skills are seen to be important in the recruitment of new employees. Individuals with a lot of transferable skills are ought to be quickly skilled in new work situations (Mulder, 2016)).

The concept and content of transfer stays rather vague, impeding actual learning and teaching of transferable skills (Olesen et al., 2020). Yet, it is assumed in many studies that transfer is defined by applying skills in different contexts.

The skill model of Heckman et al.

Hard skills

Even though soft skills are becoming increasingly relevant in businesses, hard skills remain critical. Hard skills are the technical abilities required to complete a task (Rainsbury et al., 2002). These capabilities are impacted by an individual's cognitive ability and intelligence quotient and are often acquired through formal and informal schooling. Moreover, hard skills can be characterized in broad terms, but they are also dependent on the situation in which they are utilized (Maduko & Puche, 2020).

Task experience

The best indicators of the acquired hard skills regarding a specific job, is task experience. On the job, knowledge is gathered, and the level of hard skills heightened. Moreover, any technical understanding of the field happens through years of work experience (Maduko & Puche, 2020).

The ability to use specialized tools applications and tools:

The capability to use equipment, applications, professional tools, and software related to any job gives an indication of the level of hard skills someone has (Maduko & Puche, 2020).

Knowledge of technical language

Through education and work experience, technical language skills usually develop. Each field has a related technical language, and the degree in which technical language is mastered, is positively correlated to the level of hard skills of the employee (Maduko & Puche, 2020).

Soft skills

Soft skills are usually not specific to any job or acquired through formal education and entail behavioural and interpersonal skills. According to Hendarman et al. (2018, p.4), soft skills are "largely intangible, not associated with a deliverable or a real output, and they are employed without the use of tools or templates". Aasheim et al. (2009) found that soft skills are higher valued by IT managers than hard skills and are important for success in that specific industry. In addition, Abu Jbara et al. (2018) explained that cultural diversity, globalization, and technology are factors influencing the need to improve soft skills in the workplace.

Multiple researchers investigated and discussed several theoretical perspectives on soft skills. In the current literature there are a lot of debates about the state of the soft/transferable skills of students. There would be a lack of soft skills among the students, according to Succi and Canovi (2019), which is problematic because these are skills that are necessary in the labour market for increasing employability (Crossman and Clarke, 2009). It is important to note that the last couple of years little research has been done towards soft/transferable skills, whereas technical/hard skills have been getting a lot of attention in literature. This is rather odd, looking at the importance of soft skills for employees.

Interpersonal skills

With cultural diversity and the increasing globalization on the workplace, interpersonal skills (see figure 1) have become more important (DuBrin, 2013). Interpersonal skills are often typified by the ability to build relationships, as these skills improve the ability to build relationships with people and work

Through interpersonal skills synergy can be established within a company, thereby improving organizational performance. Interpersonal skills include understanding, self-control, a sense of humour and empathy (Robles, 2012).

Communication skills

At all levels of an organization, communication is important, both verbal and non-verbal. Good communication skills can prevent conflicts and misinterpretations. This skill can help people to know how and when to communicate, and well developed, create an environment that encourages innovation and creativity in teams.

Strategic influencing skills.

This skill has a lot in common with interpersonal skill yet is still slightly different. Strategic skills go further than just being personable, being able to influence others is key

when innovation and strategic ideas must be sold within the organization. Successful leaders are masters of influencing art, and this skill is often seen as a leadership skill (DuBrin, 2013).

Problem-solving skills

Resolving problems appropriately and quick is an important soft skill that is often very valuable within an organisation. Ranging from external conflicts with customers, to internal conflicts with the organisation, all must be properly resolved. Problem solving also includes good judgment and decision (DuBrin, 2013), and according to Rao (2018), analytical and critical thinking skills are also part of problem-solving skills.

Several studies have found a direct correlation between individual performance and social skills in the workplace (Heckman et al., 2006; Hendarman et al., 2018). People are usually educated in specific fields, such as science and literature, while interpersonal communication and leadership skills are not included in regular education.

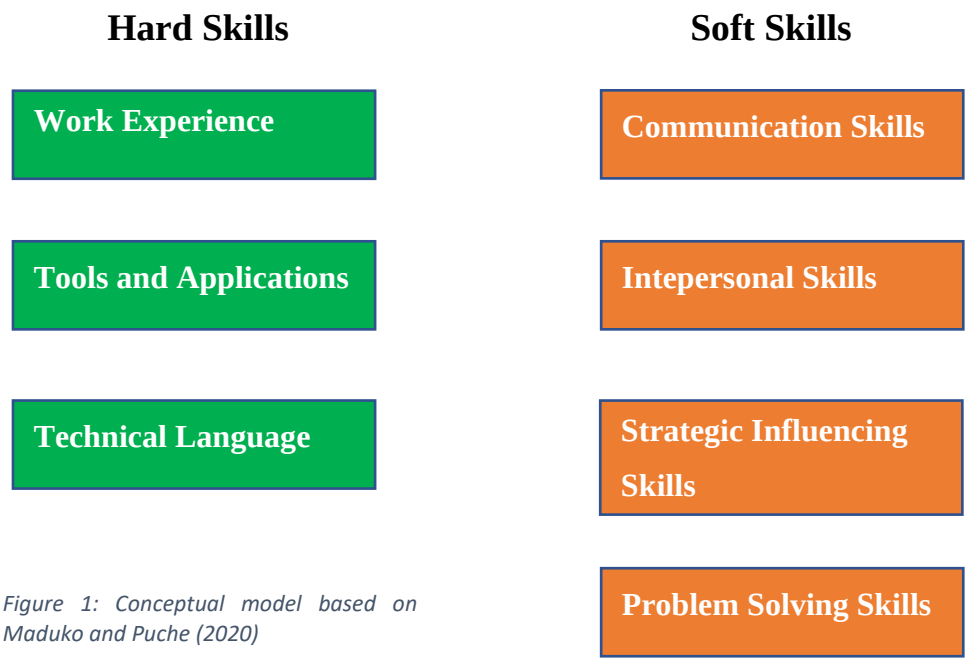

Figure 1: Conceptual model based on Maduko and Puche (2020)

Research topic

The results of a qualitative interview with Damsma (personal communication, July 3, 2021), showed that it is likely that lateral entrants will have gathered and developed soft skills through previous work in other sectors. Nonetheless, results on transferring skills are contradictory and often dependent on many factors. Switching between different jobs can be challenging, even in areas with many common characteristics (Foundation for Young Australians, 2016). Moreover, consistent with experiential learning theory, and social learning theory, Ettington and Camp (2002) suggested that perceived relevance is one of the most important factors regarding the transfer of skills. In addition, Succi and Canovi (2019) showed that employers perceive soft skills as more relevant in a job than students do, resulting in a uniquely balance. Therefore, the aim of this study is to give more insight into the specific state of hard and soft skills regarding lateral entrants in the technical sector.

RQ: what are the most transferable skills of lateral entrants within the technical sector

To construct the 'soft skill' model for this study, interpersonal skills, problem-solving skills, strategic influencing skills, and communication skills are operationalized, based on previous research by Hendarman et al. (2018), and Rao (2018). The restriction to four skills is intended to make the model minimal, yet appropriate for this study. Using Hendarman (2018) as a reference, this study operationalizes hard skills through the ability to use specialized tools and applications, task experience, and knowledge of technical language.

RO1: expanding on skill transfer theory by researching the perceived relevance of lateral entrants and employers regarding transferable skills within the technical sector.

Hypothesis 1: Soft skills are perceived as more important than hard skills by employers.
Hypothesis 2: Hard skills are perceived as more important than soft skills by lateral entrants.
Hypothesis 3: Employers perceive soft skills as more important than lateral entrants.
Hypothesis 4: Lateral entrants perceive hard skills as more important than employers.
These four hypotheses are derived from a study by Succi and Canovi (2019). They showed that employers deemed soft skills as more important than hard skills, which was the other way around for students.

RO2: expanding on skill transfer theory by researching differences of skills within lateral entrants in the technical sector.

Hypothesis 5: Lateral entrants score higher on average on soft skills than on hard skills.

This hypothesis is derived from a qualitative interview with Damsma (personal communication, July 3, 2021). The results showed that it is likely that lateral entrants will have gathered and developed more soft skills through previous work in other sectors. Which is compelling, as there is an increased need for soft skills and digital literacy among technicians, which implies that already existing workers have not yet fully developed or lack these skills (SER, 2018).

RO3: expanding on skill transfer theory by researching differences of skills within lateral entrants in the technical sector.

Hypothesis 6: Lateral entrants age <45 score higher on average regarding soft skills in comparison with lateral entrants age >45.

It is likely to assume that lateral entrants age >45 have focused more on hard skills in the past, as soft skills are especially becoming more important in the last decade. Moreover, until now, most people working in sectors involved in the energy transition are people aged 45+ (SER, 2018). In addition, research shows that there may be a significant decline in the transfer of skills when crossing a certain age (Horton et al., 2008).

Hypothesis 7: Lateral entrants score higher on average on teamwork and communication skills than on strategic influencing and problem-solving skills.

This hypothesis is based on findings by Succi and Canovi (2019), their results showed that the most important soft skills were: teamwork, and communication skills, which is also in line with previous research by Andrews and Higson (2008).

Method

This explanatory study examined the transferability of both hard and soft skills, obtaining quantitative results to give more insight into the specific state of hard and soft skills regarding lateral entrants in the technical sector. The primary goal of this study was to find variations between, and within variables. Primary data was collected in a numerical and standardized format and evaluated using statistical methods. In this study, a single data collection approach (questionnaires) was used, resulting in a mono method quantitative study. This study is cross-sectional and establishes observatory explanations. This chapter lays forth the approach used to complete this thesis. It is divided into subchapters that discuss the analytical methods used in the thesis to address the research issue.

Participants

People who work in the technical sector, and are classified as lateral entrants or employers, were allowed to participate in this study. An attempt was made to create equal groups, although it is good to mention that this was very difficult due to a heterogeneous population. All people who were not an employer or lateral entrant working in the technical sector were excluded from this study. Considering the advice from professionals of Platform 31, participants were not compensated for their participation, since it might affect the purity of the participation and skew the results. Therefore, an appeal was made to the added value of the research for their work environment and personal benefit. The ethical aspects were reviewed and approved by the Psychology Research Ethics Committee of Leiden University. The study was conducted in accordance with applicable laws and guidelines, examined and approved by the institute mentioned above.

The data were mainly collected by distributing questionnaires to lateral entrants and employers from contacts of Platform 31, Bonarius and Project CrossOver. Platform 31 is a knowledge and network organization that connects practice and science regarding current issues. As a result, they have a lot of contact with employers, and connections to lateral entrants within the technical sector. Bonarius is a company in the technical sector, maintaining more than 250,000 central heating systems. In addition, they offer training for lateral entrants within the company. Project CrossOver develops 'work-to-work journeys', 'lifelong learning' and 'retention' initiatives. They conduct action research and set up innovative initiatives.

Furthermore, in a second stage, multiple other companies in the technical sector have been contacted. In total more than twenty companies, institutions, and training organisations were contacted by email, linked-in, and calls, with a range of approximately tens of thousands of potential respondents (this is a rough estimate). About 10 companies have actually indicated that they distributed the research internally. How those companies distributed the questionnaire, remains unclear due to confidentiality. Initially, the questionnaire would be open from October 17 to November 3. However, it has been extended twice due to a low response rate and finally closed on December 7th. Several reminders were sent during the data collection to the companies with which contact was made (about every 1.5 weeks). A large part of these companies has also indicated that they have passed this on to their staff. A list of the contacted companies and additional information can be found in appendix two.

Based on a power analysis, the number of participants was aimed at 700 in total for this study, subdivided into 360 employers, and 340 lateral entrants. Yet, this number is not met. In total 22 respondents started the questionnaire, where 9 employers and 4 lateral entrants completed the questionnaire, 2 lateral entrants and 2 employers dropped out during the process, and 5 people chose the option 'other', which led to the end of questionnaire directly. There are no interesting characteristics to report about the participants who dropped out, rather than the fact that there were 2 for each condition. For the lateral entrant's condition, one of the participants filled in nothing, and the second respondent only filled in the HS questions. Regarding the employer's condition, both dropouts filled in nothing besides their function.

Design

The general design of this study is both a between, and within-subject design. Hypotheses one, two, and five until seven are within-subjects. Hypotheses three and four are between subjects. The independent variable of this study is position, subdivided into lateral entrants and employers in the technical sector. The level of measurement is nominal for all independent variables for all hypotheses. The moderator variable 'age' only applies in the within-subjects' hypotheses and is measured ordinal. A sizeable variance is expected within age with more tendency to lateral entrants <45. Alternative interpretations have been ruled out, by adhering to the assumptions set in the specific analysis used.

The survey was based on the design used by Hendarman et al. (2018) as a reference. There were two elements in the model: hard skills (HS), and soft skills (SS). Variables that

were operationalized in the questionnaire were present in each of these components. A five-point Likert scale was used to assess the two constructs at the individual respondent level (Allen et al., 2007; Krosnick et al., 2009). "1: Strongly disagree", "2: Disagree", "3: Neutral", "4: Agree", and "5: Strongly agree", were the five points on the scale (Boone et al., 2012).

The measurement of hard skills and soft skills in this study derives from the following literature: Maduko and Puche (2020). Based on the arguments by Maduko and Puche (2020), three hard skills were used. Soft skills is a composite of four skills, where four skills are also taken from Maduko and Puche (2020). The Cronbach's alpha estimation of each factor exceeds 0.7, and therefore surpasses the reliability threshold (Peterson, 1994). Moreover, an exploratory factor analysis by Maduko and Puche (2020) showed a favourable construct validity. This study made use of already existing questionnaires towards the proposed factors. Minor adjustments were needed, as the study by Maduko and Puche (2020) focused on analysing the impact of hard and soft skills on manager's innovativeness, and this research is focused on lateral entrants. The questionnaire was adjusted regarding the target group with the help of two professionals from the field. Modifications were made in collaboration with experts from Platform 31 and Crossover.

Hard skills were operationalized into three variables, which are good indicators for measuring the level of hard skills one has in a given career, as explained in the theory chapter. Task experience (TE), capacity to use tools and applications (TA), and technical language understanding (TL), are the variables. The geometric mean of these variables is used to calculate the hard skill (HS) measure. Four variables were used to operationalize soft skills. Communication skills (CS), interpersonal skills (IS), strategic influencing skills (SIS), and problem-solving abilities (PSS), are examples of soft skills (SS). These soft skills were operationalized, and the geometric mean was utilized to determine a lateral entrant's level of soft skills.

In this study, the different skill types were the independent variables, while function was the dependent variable. The questionnaire asked about their hard and soft abilities and their perceived relevance regarding those skills. The first task measured skills (soft/hard); the second task measured perceived relevance regarding these skills. Where lateral entrants filled in both, employers/trainers only filled in the perceived relevance task.

In addition to the independent and dependent variables, a control variable was also introduced to improve the robustness of the result. The control variable was a respondent's demographics and was used together with multiple regression analysis (Shanker et al., 2017, p. 72). The control variable was applied, so that its effect on the difference between hard and

soft skills and perceived relevance of lateral entrants and employers, is controlled. The individual variable was Age (A) and was measured and analysed as ordinal data. Table 1 shows how the theoretical framework is translated into empirical variables using a conceptual model.

Construct	Variable	Item	Operationalization
Hard Skills	Hard Skills (HS)	Work Experience (WE)	Lateral entrants' perception of the amount of experience they have in subject-specific tasks that they must perform.
		Tools and Applications (TA)	Lateral entrants' perception of their ability to use tools and applications in their job.
		Technical language (TL)	Lateral entrants' perception of their ability to understand technical language and terms used during work.
	Perceived Relevance_ Hard Skills (PR_HS)	Perceived Relevance Work Experience (PR_WE)	Lateral entrants and employers perceived relevance of the amount of experience in subject-specific tasks that need to be carried out.
		Perceived Relevance Tools and Applications (PR_TA)	Lateral entrants and employers perceived relevance on the ability to use tools and applications in the job.
		Perceived Relevance Technical language (PR_TL)	Lateral entrants and employers perceived relevance on the ability to understand technical language and terms used during work.
Soft Skills	Soft Skills (SS)	Communication Skills (CS)	Lateral entrants' perception of how effective they communicate with their team and other stakeholders.
		Interpersonal Skills (IS)	Lateral entrants' perception of how effective they are in building professional relationship with members of their team and other stakeholders.
		Strategic Influencing Skills (SIS)	Lateral entrants' perception of how effective they are in strategically influencing their team.
		Problem Solving Skills (PSS)	Lateral entrants' perception of their ability to analyse and solve problems effectively.
	Perceived Relevance_ Soft Skills (PR_SS)	Perceived Relevance Communication Skills (PR_CS)	Lateral entrants and employers perceived relevance on communicating effective with team members and other stakeholders.
		Perceived Relevance Interpersonal Skills (PR_IS)	Lateral entrants and employers perceived relevance on building a professional relationship with team members and other stakeholders.
		Perceived Relevance Strategic Influencing Skills (PR_SIS)	Lateral entrants and employers perceived relevance on strategically influencing a team effectively.
		Perceived Relevance Problem Solving Skills (PR_PSS)	Lateral entrants and employers perceived relevance on the ability to analyse and solve problems effectively.

Table 2: Theoretical framework based on Maduko and Puche (2020)

Procedure

When starting the questionnaire, all participants needed to read the informed consent. The informed consent consisted out of information regarding the purpose of the study, procedure, confidentiality of data, requirements, duration, and rights. Moreover, contact information was provided for questions about the research and complaints. For the general instruction, people were informed about fill-in data restriction (when till when), what to specifically fill in, why their participation is important, what will happen to the data, and a thankyou note. In addition, participants were asked to confirm participation and with it acknowledging to have read and understood the information about the study, and that they had the opportunity to ask questions about it. Moreover, indicated that they agree with the fact that the data will be collected and processed encrypted, withdraw from participation at any time without giving a reason is possible, consent to the participation and use of the data for the purpose described above, and agreed that the data will be published in a form that is not identifiable.

After reading and agreeing with the informed consent, all participants needed to fill in a screener question to make sure they were qualified. This multiple-choice question regarding function (F), was subdivided into the following answers: lateral entrant, employer/trainer, and other. People who filled in ‘other’, were sent to the end of the questionnaire. Participants who had filled in the option of a lateral entrant or employer, could continue the questionnaire. Subsequently, a control variable question regarding age (A) was shown, participants needed to choose whether they were <45 or >45.

As there were two target groups involved in this study, the procedure was slightly different for each group. After the introduction, lateral entrants got to see the 1st block with questions, with additional explanation regarding the questions about their skills and how to fill in. After completing the 1st block, lateral entrants were shown a 2nd block with questions. The same applies here as before, but regarding perceived relevance. Employers only got to see the 2nd block; it applies also here that they first received an explanation. Where lateral entrants needed to choose their skill level for each variable, and subsequently filled in their perceived relevance for each variable, employers only filled in the perceived relevance part of the questionnaire using a five-point Likert scale. The different instructions between conditions where necessary, as lateral entrants filled in an additional questions block. Moreover, employers, nor lateral entrants, needed to know that there was a difference in the questionnaire, for that could have had an impact on the veracity of answering the questions.

A short debrief was provided at the end of the questionnaire, containing information about the purpose of the study, background information and context, an option to revoke the data when desired, and contact information for further questions. The questionnaire was administered online. On average it took the participants approximately 5 minutes to finish the first task (skills), and 4 minutes to finish the second task (perceived relevance). This study did not involve deception.

Stimuli and apparatus

The software of Qualtrics was used to collect the data, as they are proven to be well secured and guaranteeing anonymity when chosen. The software used to analyse the data was SPSS, which is short for 'Statistical Package for the Social Sciences' and is a program that is utilized by a variety of researchers to analyse complex statistical data (Jordan, 2021). No hardware was used during the experiment; however, the researcher used a desktop to collect and analyse the data and to distribute the questionnaire by mail. No external stimuli were used during the task, participants were only asked to complete the questionnaire, without being misled or getting stimuli. The questionnaire was pre-tested by a researcher of Platform 31 and the recruitment director of CrossOver.

Analysis

The following steps were taken for the statistical analyses. First the data was imported from the online questionnaire to SPSS 26. Secondly the screening data and assessing data quality were checked by looking at distribution, outliers, validity, and reliability by means of statistical tests. The criteria and procedure for outliers and missing data were the following: first, all respondents who did not finish the questionnaire, or filled in 'other' at the screening question were removed. In addition, a boxplot and the Tukey's Hinges test were used to check for outlies in regard to the dependent variables. Thirdly, to get from raw data to operationalized scores, the data was transformed into variables described in the measuring section. Lastly the hypotheses were tested, and exploratory analyses were performed.

For all hypotheses the independent samples t-test (or unpaired t-test), was used to examine if the two means differ significantly from each other. It was expected that there was a significant difference in the perceived relevance regarding the variables hard and soft skills between employers and lateral entrants. In addition, it was expected that there was a significant difference in the variables soft and hard skills within lateral entrants in the

technical sector. Moreover, it was assumed that there was a significant difference between <45 y and >45 y on the variable soft skills. It was expected that there was a significant difference within the concept of soft skills between the variable's communication and interpersonal skills regarding strategic influencing and problem-solving skills.

For the exploratory data analysis, the normality was checked by using a histogram and the Shapiro-Wilk test. Moreover, homogeneity of variances and covariance, and equal groups of variances assumptions were checked by the Levene's test. Lastly, if it was concluded that the assumptions were not met, the robustness of the F-test was examined for the violation of these assumptions.

Results

Data screening

In total, 22 persons began the survey; nine employers and four lateral entrants finished it; two lateral entrants, and two employers dropped out during the process; and five people picked the option 'other', which led to the survey's immediate conclusion. By removing the data from the dropouts and the participants that chose the option 'other' regarding the screening question, a number of 13 participants for further analyses was arrived. In addition, no additional data was removed during the checking for outliers, statistical analyses showed that there were none. The boxplot showed no outliers on either end of the boxplot for all dependent variables (see appendix 3). In addition, the Tukey's Hinges test produced the same results.

Table 1

Descriptive statistics of the participants

	Lateral entrants		Employers		Total	
	N	*(%)*	*N*	*%*	*N*	*%*
<45	4	(31)	4	(31)		
>45	0	(0)	5	(38)		
Total	4	(31)	9	(69)	13	(100)

Results associated with perceived relevance

As can be seen in Table 2, the independent variables were sufficiently normal distributed for conducting a t-test; PR_HS ((W) 13 = .952, p = 0.629), PR_SS ((W) 13 = .939, p = 0.441). Additionally, the homogeneity of variances and covariance were checked by the Levene's test. Results of the statistical analysis show no violation for this assumption for both independent variables; PR_HS *F* (11) = 0,667, p = 0.428, PR_SS *F* (11) = 0.076, p = 0.788.

To check the validity and reliability of the dependent variables, the Pearson Correlation, and the Cronbach's Alpha were used. Results of the analyses show a positive validity and reliability for the variables: PR_HS and PR_SS. There are medium to high correlations between the questions from r = .50** to r = .90**, moreover, the Cronbach's Alpha is 0.8 on average. The value complied with the rule of thumb for assessing the measurement quality (Gliem & Gliem, 2003). Cohen's *d* was estimated at 0.45 for the variable PR_HS, and 5.0 for the variable PR_SS, which are medium effects based on Cohen's (1992) guidelines.

Table 2: *Descriptive statistics associated with perceived relevance*

	Shapiro-Wilk test *(W)*	Levene's test *(F)*	Pearson Correlation *(R)*	Cronbach's Alpha (*α)*	Cohen's d *(d)*
Perceived relevance_ hard skills (PR_HS)	.95	.67	.88**	.86	.45
Perceived relevance_ soft skills (PR_SS)	.94	.08	.72**	.77	.50

Hypothesis 1 (H1) predicted that participants in the employer condition (N = 9), would perceive soft skills as more important than hard skills. A paired-samples t-test was conducted to test the hypothesis. Results show a significant difference in perceived relevance between soft skills (M = 4.20, SD = 0.50) and hard skills (M = 3.41, SD = 0.95), t (8) = -3.0, p=.016 in the employer condition (Table 3).

H2 predicted that participants in the lateral entrants' condition, would perceive hard skills as more important than soft skills. A paired-samples t-test was conducted to test the hypothesis. Results show a difference in perceived relevance between soft skills (M = 3.96, SD = 0.46) and hard skills M = 3.00, SD = 0.72), t (3) = -2.7, p=.074 in the lateral entrant's condition, yet not significant.

H3 stated that employers perceive soft skills as more important than lateral entrants. An independent-samples t-test was conducted to test the hypothesis. Results show a difference in perceived relevance regarding soft skills between the employers (M = 4.20, SD = 0.50) and lateral entrants' (M = 3.96, SD = 0.46), condition t (11) = -0.84, p=.421, yet not significant.

H4 stated that Lateral entrants perceive hard skills as more important than employers. An independent-samples t-test was conducted to test the hypothesis. Results show a difference in perceived relevance regarding hard skills between the employers (M = 3.41, SD = 0.95) and lateral entrants' (M = 3.00, SD = 0.72), condition t (11) = -0.76, p=.465, yet not significant.

Table 3: *Means and standard deviations of the perceived relevance, divided by function*

	Lateral entrants		Employers	
	M	*SD*	*M*	*SD*
Perceived relevance_ hard skills (PR_HS)	3.00	0.46	3.41**	0.95
Perceived relevance_ soft skills (PR_SS)	3.96	0.72	4.20**	0.50

** means P ≤ 0.01, thus highly significant.

Results regarding skills

As can be seen in Table 4, the independent variables SS ((W) 4 = .849, p = 0.224), and SIS and PSS HS ((W) 4 = .995, p = 0.406), were sufficiently normal distributed for conducting a t-test. Yet, for the variables: HS ((W) 4 = .630, p = 0.01), and CS and IS ((W) 4 = .630, p = 0.01), the Shapiro-Wilk test and a graphical representation showed a significant departure from normality. The sample size for this study is not sufficient large enough, therefore, there are few consequences associated with a violation of the normality assumption as it does not contribute to bias or inefficiency in regression models. The t-test seems to be non-normality resistant, according to Fayers (2011). If a t test produces a significant result, it can be assumed that it is accurate, as the likelihood of a false-positive result is low. The type II error, or the chance of a false negative, can however, be greatly increased (lower power). Furthermore, the study's sample size is quite low. When the sample size is too small, the research's power is diminished, and the margin of error increases.

To check the validity and reliability of the dependent variables, two statistical analyses were used, respectively: the Pearson Correlation to check the validity, and the Cronbach's Alpha to check the reliability. Results of the analyses show a rather negative validity and reliability for the variables: HS, SS, CS, and IS, and SIS and PSS. There are low to medium correlations between the questions from r = .30 to r = .50, yet not significant. Moreover, the Cronbach's Alpha is negative on average and does not give a useful result due to a low sample size for those variables (n=4). The value does not comply with the rule of thumb for assessing the measurement quality (Gliem & Gliem, 2003). According to Segal and Coolidge (2018), a lack of dependability reduces or attenuates the statistical studies conclusions, perhaps leading to misinterpretations as a result. When understanding the results of behavioral research, people who read it should consider the aggravating impact of imprecise measurement, just as those who do it should.

Table 4: *Descriptive statistics associated with skills*

	Shapiro-Wilk test *(W)*	Levene's test *(F)*	Pearson Correlation *(R)*	Cronbach's Alpha (α)	Cohen's d *(d)*
Hard skills (HS)	.63**	..	-1.25	.41	…
Soft skills (SS)	.85	..	-0.18	.50	…
Communication and interpersonal skills (CS and IS)	.63**	..	…		…
Strategic influencing and problem-solving skills (SIS and PSS)	.99	..	…		…

* No valuable statistics can be described for all the empty places in the table

H5 predicted that participants in the lateral entrants' condition, would score higher on average on soft skills than on hard skills. A paired-samples t-test was conducted to test the hypothesis. Results show a significant difference between soft skills *(M* = 4.38, *SD* = 0.25*)* and hard skills *(M* = 3.50, *SD* = 0.33*), t*(3*)* = -3.4, *p*=.043, in the lateral entrant's condition (Table 5).

H6 stated that lateral entrants age <45 score higher on average regarding soft skills in comparison with lateral entrants age >45. A t-test was conducted to test the hypothesis. Yet, the t-test could not be computed because at least one of the groups was empty. Results show that there were no participants in the age category of >45 in the lateral entrant's condition.

H7 predicted that participants in the lateral entrants' condition, would score higher on average on teamwork and communication skills than on strategic influencing and problem-solving skills. A paired-samples t-test was conducted to test the hypothesis. In the lateral entrant's condition, there is a non-significant difference between teamwork and communication skills (M = 4.63, SD = 0.25) and strategic influencing and problem-solving skills (M = 3.88, SD = 0.63), t(3) = 2.1, p=.124.

Table 5: *Means and standard deviations of skills*

	Lateral entrants	
	M	*SD*
Hard skills (HS)	3.50**	0.33
Soft skills (SS)	4.38**	0.25
Communication and interpersonal skills (CS and IS)	4.63	0.25
Strategic Influencing and problem-solving Skills (SIS and PSS)	3.88	0.63

Discussion

Summary of aim of the study

The aim of this study was to examine the transfer of skills within lateral entrants in the technical sector. Due to the energy transition, many new jobs in this sector are required, but cannot be supplemented with the current supply of personnel. Lateral entrants seem to be to most suitable to fill up the gap, yet employers are sometimes reluctant to hire them, as there is often a lot of uncertainty about the status of the skills present. Moreover, in literature there is still a lot of contradictories regarding the transfer of skills, more research is needed.

Findings

The results of the current study indicate a difference in perceived relevance regarding hard and soft skills for lateral entrants and employers. These results build on existing evidence of a study by Succi and Canovi (2019), as employers valued soft skills more than hard skills according to their findings. Contrary to the hypothesized association, results indicate that lateral entrants perceived soft skills as more important than hard skills. These results contradict with earlier research by Succi and Canovi (2019), as they showed that students deemed hard skills as more important than soft skills.

It was hypothesized that employers would perceive soft skills as more important than lateral entrants. The data confirms this hypothesis, however not with significant differences. Not in line with the formulated hypothesis are the results that show that lateral entrants perceived hard skills as more important than employers. Since literature indicates that soft skills are becoming more and more relevant and are requested in the technical sector. Supporting this statement, SER (2018) observed an increased need for soft skills among technicians. It is interesting to note that lateral entrants perceived soft skills as more relevant than hard skills, contradicting the findings in the research by Succi and Canovi (2019). Moreover, according to Aasheim et al. (2009), soft skills are valued more highly by IT managers than hard skills and are found critical for success in that field. Possibly these findings could also apply to the perceived relevance of lateral entrants regarding the use of skills in this industry. Another possible explanation could be that lateral entrants, due to previously acquired competencies and experiences, have come to find soft skills more and more important, which would be in line with research by Klaus (2010) that estimated that job success in general, depends for 75% on soft skills, and 25% on hard skills. Awareness may also have arisen regarding the fact that soft skills are becoming more relevant each day. As

cultural diversity, globalization, and technology are elements affecting the need to enhance soft skills in the workplace, according to Abu Jbara et al. (2018).

The data suggests that participants in the lateral entrants' condition, scored higher on average on soft skills than on hard skills, which corresponds to the stated hypothesis and is in line with the results of a qualitative interview with Damsma (personal communication, July 3, 2021), as it was suggested that it is likely to assume that lateral entrants will have gathered and developed more soft skills through previous work in other sectors. This can be a valuable outcome, since there is an increased need for soft skills among technicians (SER, 2018). It was hypothesized that lateral entrants age <45, would score higher on average regarding soft skills in comparison with lateral entrants age >45. Yet, there were no participants in the >45 group, therefore no results can be administered regarding this hypothesis. However, including age as a variable hasn't been for nothing, as it could be an explanation for the high score on soft skills.

Considering soft skills have become increasingly significant in the previous decade, it's likely that lateral entrants over 45 have concentrated more on hard talents in the past. Furthermore, until today, the majority of persons working in industries involved in the energy transition have been over 45 years old (SER, 2018). Additionally, research suggests that as people reach a particular age, their ability to transmit abilities decreases significantly (Horton et al., 2008). It was predicted that lateral entrants would score higher on average on teamwork and communication skills, in regard to strategic influencing and problem-solving skills. The evidence supports this idea, although not by a considerable margin. The results are consistent with earlier research (Succi and Canovi, 2019; Andrews & Higson, 2008), that showed that the most important soft skills were teamwork, and communication skills.

Significance

Adding to the theoretical significance for the field of research, the results obtained, expand the understanding of transferability in the technical sector. By showing a significant difference in employer's perceived relevance regarding soft and hard skills and displaying a significant difference between the hard and soft skills obtained by lateral entrants. Moreover, this study builds and adds on previous research by Maduko and Puche (2020). The theoretical concept can be used to measure hard and soft skills, as it can be used to measure perceived relevance regarding those skills.

Contributing to the practical significance for the field of or research, the result of this study imparts a conceptual model for assessing hard and soft skills, and the perceived

relevance regarding those skills in the technical sector. Moreover, the materials described, can be used in conducting further scientific research regarding transferability. The promising results, although not generalizable due to limitations, indicate that the concept of skills and the transferability of it, should be investigated further.

Limitations

Although some of the present findings have been explained in the preceding chapter, some of the findings might possibly be attributable to the limits of the study's approach. The selection of participants, the measurement of the dependent variables, the experimental procedure, and the extrapolation of the results are further explained regarding limitations.

Participants

Due to limitations regarding the acquisition of participants, the number of respondents was low (N=13). The overall number of participants for this study was set at 700, divided 360 employers and 340 lateral entrants after a power analysis was performed. This number, however, has not been reached. Therefore, the generalizability of the results is limited by a small sample size. In addition, this study conducted a survey to obtain the research results. The participants were asked to respond to the survey questions. Yet, due to limited ability to gain access to the appropriate type or geographic scope of participant, the people who responded to the survey questions, may not truly be a random sample. This results in limitations for the study known as “sample bias” or “selection bias”, because it jeopardizes external validity, and specifically population validity. Sampling bias reduces likewise the generalizability of findings (Smith & Noble, 2014).

Especially lateral entrants were difficult to reach during the data collection period. This may be because the relevance of this study was not seen within this target group. Another possible explanation is the fact that there was no reward linked to participating in the study. For future research it is therefore advised to consider a reward for participation, and to call on more organizations that could distribute the questionnaire. Preferably an initiative from the government if possible.

Design

Another limitation results from the method used to measure skills and transferability. As discussed in the introduction, there are many possibilities to measure those constructs as there are multiple divergent definitions. The design of this study has limited itself to the skill

model of Heckman et al. (2018) to measure hard and soft skills, and to perceived relevance as a factor for transferability as this is one of the most important factors regarding the transfer of skills according to Ettington and Camp (2002). However, this is only a limited representation of both concepts. This study may have contributed to identifying literature gaps and to present the need for further development in this area of study. For future research it is advised to investigate the model used in this study under a larger sample or a different target group.

Due to an insufficient sample size, a lot of problems regarding statical analyses occurred. Where the construct regarding the perceived relevance of hard and soft skills met the set statistical requirements, the construct of hard and soft skills did not. As already highlighted in the result section, the normality assumption was violated, resulting in a significant enhancement of the type II error, or the likelihood of a false negative (low power).

Moreover, results of the analyses showed a rather negative validity and reliability, resulting in a lack of dependability. Which reduces or attenuates the statistical studies conclusions, perhaps leading to misinterpretations as a result. Therefore, the results must be interpreted with caution, and the limitations described above should be borne in mind. According to literature, the main cause of these statistical problems is probably the low sample size (Smith & Noble, 2014). For future research, it is therefore advised to gather a larger sample, since the problems might be eliminated with a bigger sample. If these problems still occur in a bigger sample, it is wise to investigate the model used and the questions asked even further.

Another limitation is regarding the formulation of research aims, objectives and hypotheses. Where this study focused specifically on the perceived relevance of using skills in the new sector, it is only a part of transferability as a whole concept. The results and previous research considered, it is wise to focus on other important variables of the construct transferability, such as the impact of training, or the similarity between settings and characteristics, as Kirwan and Birchall (2006) suggested. This is important, since prior research has shown that technical education and lateral entry guidance does not always match the demands of lateral entrants (Bolhuis and Simons, 2011), which can result in a negative influence on the transfer of skills.

Moreover, the lack of difference between prior employment sectors is a crucial option taken to be able to compare groups (and make the questionnaire less difficult), but it may jeopardize the study's external validity. Previous employment may be relevant in real life, since it may make a difference if you started out in the entertainment industry or the construction industry for example, especially regarding the development of certain skills.

Furthermore, no distinction was made between gender, which possibly also has an impact in real life. A distinction was made between two age categories: <45, >45, yet, for the group where this was measured, there was no score on the age classification >45. As a result, this control variable became irrelevant. Which can lead to a negative effect on the internal validity of this study by enhancing the influence of confounding and other extraneous variables.

Procedure

In relation to the procedure of this study, there may also be some possible constraints regarding the time and timing of the data acquisition. As already discussed, the original data set was determined for 3 weeks. Due to low response, this was extended for another four weeks. However, the response might have been higher if the time slot had been a bit larger beforehand. It is also likely that if the survey had been available for a longer period, more organizations that initially hesitated, might have responded. Especially given the fact that some companies responded after the closing of de data acquisition.

Moreover, this study was plotted close to the end of the year. Organizations are generally quite busy around this time, which may have impacted response negatively. In addition, Covid-19 may also play a role. Since several companies are already busy surviving as a business and may not be waiting, or not have time, for an investigation. Therefore, it can be stated that there is a need for a future study (e.g., a longitudinal study) to answer this research problem.

Future research

As some future research suggestions are already made in the limitation section, this paragraph briefly focuses on how to proceed with studying a similar research question, and how to proceed with academic work on this topic in general.

This study focused on a specific group in a specific sector. It can be valuable to conduct a similar study in another sector, for example education where, based on observations from the literature, many lateral entrants are employed (Tigchelaar et al., 2010). It could also be valuable to conduct the research among non-lateral entrants (i.e., people who have been working in the sector for some time) and see whether differences can be detected between the two groups. Since the literature suggests that more people are needed in the engineering sector with soft skills, it may be interesting to see if there is actually a difference (SER, 2018).

Moreover, it is advised to take ‘earlier employment sector’ as a control variable in a follow-up study. Previous work experience may be useful in real life, since it can make a

difference whether you started out in the entertainment business or the construction industry, for example, especially in terms of skill development.

In addition, there is a lack of previous studies in this research area. A lot of research regarding hard and soft skills has been conducted, yet little research has been done in relation to the transferability of it. Moreover, insufficient research has been done regarding lateral entrants, especially in the technical sector. One reason for this could be that it only recently become reasonably relevant in this sector. Another explanation could be that 'lateral entrants' is a fairly new concept. Therefore, more research is needed regarding the transferability of skills, especially regarding this target group. This is especially important for this group, since skill transfer is (or may be) a big aspect of changing industries.

Conclusion

This research aimed to examine the perception of lateral entrants in the technical sector regarding the transfer of their skills. Based on the quantitative results, it can be concluded that soft skills are observed as the most transferable skills within lateral entrants in the technical sector. The results indicate that both lateral entrants and employers perceive softs skills as most relevant in regard to hard skills. In addition, the data implies that lateral entrants scored significantly higher on average on soft skills than on hard skills.

While the low sample size limits the generalizability of the results, this study provides new insight into the concept of skills and the transfer of it. Moreover, this is one of the first studies to include lateral entrants as a research group, which makes it very novel. Further research is needed to determine the differences regarding skills between lateral entrants and non-lateral entrants (i.e., people who have been working in the sector for some time). Moreover, to better understand the implications of these results, future studies could focus on a bigger sample size and include 'earlier employment sector' as a control variable.

This study started with the fact that there was an increased need for soft skills among technicians. Based on these conclusions, employers and trainers should consider the fact that lateral entrants indicated to have developed these skills and perceive them as very relevant in their job in the technical sector.

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Appendix

Appendix 1: Questionnaire

Enquête opnieuw beginnen

Bladwijzer instellen

Universiteit Leiden
The Netherlands

INFORMATIE BRIEF

Studie-informatie en vergoeding

Beste Lezer, fijn dat u wilt deelnemen aan deze enquête! U staat op het punt om deel te nemen aan een onderzoek van de Universiteit Leiden naar de transfer van vaardigheden binnen de techniekssector en dan specifiek zijinstroom. Deelname kost ongeveer 5 a maximaal 10 minuten van uw tijd en er is geen vergoeding gebonden aan dit onderzoek.

Procedure

Tijdens dit onderzoek zult u verschillende vragen beantwoorden met betrekking tot vaardigheden. Let op: graag de enquête in één keer af ronden.

Vertrouwelijkheid van gegevens

U kunt er zeker van zijn dat alle informatie en gegevens die tijdens dit onderzoek zijn verkregen, vertrouwelijk worden behandeld. Na deelname aan dit onderzoek zullen de onderzoeksgegevens op een gecodeerde manier geanalyseerd worden. Dit betekent dat aan elke deelnemer een nummer wordt toegekend (dus geen naam). Uw antwoorden worden opgeslagen zonder gegevens waarmee u identificeerbaar bent.

Uw deelname

We zouden uw deelname aan dit onderzoek zeer op prijs stellen, maar we willen benadrukken dat deelname geheel vrijwillig is. Als u besluit niet deel te nemen aan dit onderzoek, zijn er geen negatieve gevolgen voor u op welke manier dan ook. Bovendien kunt u op elk moment tijdens dit onderzoek besluiten om u terug te trekken uit dit onderzoek en u mag dit doen zonder het opgeven van een reden. Mocht u besluiten om te stoppen, dan willen we u vragen om alstublieft geen onzinnige antwoorden te geven maar alleen het experimentvenster te sluiten.

Contactgegevens

Voor vragen over dit onderzoek, kunt u contact opnemen met onderzoeker Cors van Zomeren (Universiteit Leiden) via [redacted]. Voor vragen over privacy en gegevensopslag, kunt u contact opnemen met de Functionaris Gegevensbescherming van de Universiteit Leiden via [redacted]

Klachten

Als u klachten heeft over dit onderzoek, kunt u contact opnemen met de hoofdonderzoeker (Guido Band) [redacted]

Geïnformeerde toestemming

Geïnformeerde toestemming

Door de antwoorden aan het eind te verzenden, bevestigt u uw deelname en daarmee dat :

- U de informatie over het onderzoek gelezen en begrepen heeft en de gelegenheid heeft gehad om vragen hierover te stellen
- De gegevens worden verzameld en gecodeerd worden verwerkt.
- U zich te allen tijde kunt terugtrekken uit deelname zonder het opgeven van een reden.
- U toestemming biedt voor deelname en gebruik van de gegevens voor het hierboven beschreven doel.
- U ermee in stemt dat de gegevens worden gepubliceerd in een vorm die niet identificeerbaar is.

Ik stem ermee in, start de vragenlijst

Ik stem er niet mee in en besluit de vragenlijst te stoppen

→

Universiteit Leiden
The Netherlands

Voordat we beginnen, willen we er zeker van zijn dat je in aanmerking komt voor onze studie. Geef uw functie aan:

Zijinstromer

Werkgever/leerbedrijf

Overig

→

Leeftijdscategorie:

<45 (jonger dan 45)

>45 (45 jaar en ouder)

→

Beste zijinstromer, geef bij de volgende vragen aan in hoeverre u het eens bent met de stelling

Ik heb ervaring in de vakspecifieke taken die ik moet uitvoeren

- Helemaal mee eens
- Mee eens
- Neutraal
- Mee oneens
- Helemaal mee oneens

Ik weet hoe ik de meeste hulpmiddelen en applicaties moet gebruiken binnen mijn werk

- Helemaal mee eens
- Mee eens
- Neutraal
- Mee oneens
- Helemaal mee oneens

Ik begrijp de technische taal en termen die gebruikt worden tijdens werk

- Helemaal mee eens
- Mee eens
- Neutraal
- Mee oneens
- Helemaal mee oneens

→

Ik kan goed communiceren met collega's

- Helemaal mee eens
- Mee eens
- Neutraal
- Mee oneens
- Helemaal mee oneens

Ik kan goed communiceren met anderen (bijvoorbeeld klanten of andere werk gerelateerde contacten)

- Helemaal mee eens
- Mee eens
- Neutraal
- Mee oneens
- Helemaal mee oneens

Ik kan goed samenwerken met collega's'

- Helemaal mee eens
- Mee eens
- Neutraal
- Mee oneens
- Helemaal mee oneens

→

Ik kan goed samenwerken met anderen (bijvoorbeeld klanten of andere werk gerelateerde contacten)

- Helemaal mee eens
- Mee eens
- Neutraal
- Mee oneens
- Helemaal mee oneens

Ik heb een strategische invloed op anderen tijdens mijn werk

- Helemaal mee eens
- Mee eens
- Neutraal
- Mee oneens
- Helemaal mee oneens

Ik ben in staat om problemen tijdens mijn werk goed te beoordelen en op te lossen

- Helemaal mee eens
- Mee eens
- Neutraal
- Mee oneens
- Helemaal mee oneens

Ik zie een verband tussen eerdere opleiding/werkervaring en een opleiding/baan in de techniek

- Helemaal mee eens
- Mee eens
- Neutraal
- Mee oneens
- Helemaal mee oneens

Licht uw antwoord toe

Mijn eerder opgedane kennis en ervaring is bruikbaar in een opleiding/baan in de techniek

- Helemaal mee eens
- Mee eens
- Neutraal
- Mee oneens
- Helemaal mee oneens

Licht uw antwoord toe

→

Beste werkgever of zijinstromer, geef bij de volgende vragen aan hoe belangrijk u het vindt dat een zijinstromer deze vaardigheid bezit bij het beginnen van een nieuwe baan in de techniek

Ik vind het ... dat een zijinstromer ervaring heeft in het uitvoeren van vakspecifieke taken

- Heel belangrijk
- Belangrijk
- Neutraal
- Niet belangrijk
- Helemaal niet belangrijk

Ik vind het ... dat een zijinstromer weet hoe de meeste hulpmiddelen en applicaties gebruikt moeten worden binnen het werk

- Heel belangrijk
- Belangrijk
- Neutraal
- Niet belangrijk
- Helemaal niet belangrijk

Ik vind het ... dat een zijinstromer de technische taal en termen die gebruikt worden tijdens werk begrijpt.

- Heel belangrijk
- Belangrijk
- Neutraal
- Niet belangrijk
- Helemaal niet belangrijk

→

Ik vind het ... dat een zijinstromer goed kan communiceren met collega's

- Heel belangrijk
- Belangrijk
- Neutraal
- Niet belangrijk
- Helemaal niet belangrijk

Ik vind het ... dat een zijinstromer goed kan communiceren met anderen (bijvoorbeeld klanten of andere werk gerelateerde contacten)

- Heel belangrijk
- Belangrijk
- Neutraal
- Niet belangrijk
- Helemaal niet belangrijk

Dat een zijinstromer goed kan samenwerken met collega's vind ik...

- Heel belangrijk
- Belangrijk
- Neutraal
- Niet belangrijk
- Helemaal niet belangrijk

→

Dat een zijinstromer goed kan samenwerken met anderen (bijvoorbeeld klanten of andere werk gerelateerde contacten) vind ik...

- Heel belangrijk
- Belangrijk
- Neutraal
- Niet belangrijk
- Helemaal niet belangrijk

Ik vind het ... dat een zijinstromer een strategische invloed heeft op andere tijdens het werk

- Heel belangrijk
- Belangrijk
- Neutraal
- Niet belangrijk
- Helemaal niet belangrijk

Dat een zijinstromer in staat is om tijdens het werk problemen goed te beoordelen en op te lossen vind ik...

- Heel belangrijk
- Belangrijk
- Neutraal
- Niet belangrijk
- Helemaal niet belangrijk

→

Universiteit Leiden
The Netherlands

Beste deelnemer,

Bedankt voor uw deelname aan het onderzoek van de Universiteit Leiden naar de transfer van vaardigheden binnen de techniekSector en dan specifiek zijinstroom. We willen u graag een korte uitleg geven over het onderzoek waar u aan mee heeft gedaan en uw rol hierin. Als u hier geen interesse in heeft kunt u dit stuk overslaan.

In de psychologie is veel onderzoek gedaan naar de transfer van vaardigheden. Transfereren is een ander woord voor overbrengen en houdt in deze situatie in dat aangeleerde vaardigheden overgebracht kunnen worden van het ene vakgebied naar het andere. Sommige overdraagbare vaardigheden zijn 'hard', zoals omgang met applicaties, en sommige zijn 'zachte' vaardigheden, zoals communicatie. Echter zijn veel wetenschappelijke resultaten over het overdragen van vaardigheden tegenstrijdig en vaak afhankelijk van veel factoren. Schakelen tussen verschillende banen kan een uitdaging zijn, zelfs bij vakgebieden die op elkaar lijken.

In het onderzoek waar uw aan mee heeft gewerkt wordt specifiek gekeken naar de transfer van vaardigheden binnen en naar de techniekSector en dan specifiek bij zijinstroom. Er is namelijk nog weinig bekend over de transfer van verschillende vaardigheden bij zijinstromers. De vraag naar personeel in de techniekSector is heel groot en zijinstroom kan deze leegte mogelijk helpen opvullen. Het is daarom relevant om te onderzoeken of en welke vaardigheden overgedragen kunnen worden van de 'ene' naar de 'andere' sector. Door uw deelname aan dit onderzoek, heeft u meegeholpen aan het mogelijk verkrijgen van nieuwe inzichten met betrekking tot dit onderwerp, inclusief de overeenkomsten en verschillen zoals die door zij-instromers en werkgevers/ opleiders worden ervaren. Nogmaals dank hiervoor.

Heeft u na het lezen van het werkelijke doel van het onderzoek besloten dat uw gegevens niet voor die doeleinden gebruikt mogen worden, dan kunt u dit hieronder aangeven. Daarbij nogmaals opgemerkt dat uw antwoorden niet alleen anoniem zijn, maar ook niet aan u als persoon kunnen worden verbonden.

Mocht u meer informatie willen over het onderzoek waaraan u zojuist heeft deelgenomen of als u interesse heeft in literatuur over dit onderwerp, aarzel dan niet om contact op te nemen met de onderzoeker (Cors van Zomeren) [redacted]

→

Uitgevoerd met Qualtrics

Appendix 2: List of contacted companies and additional information who responded

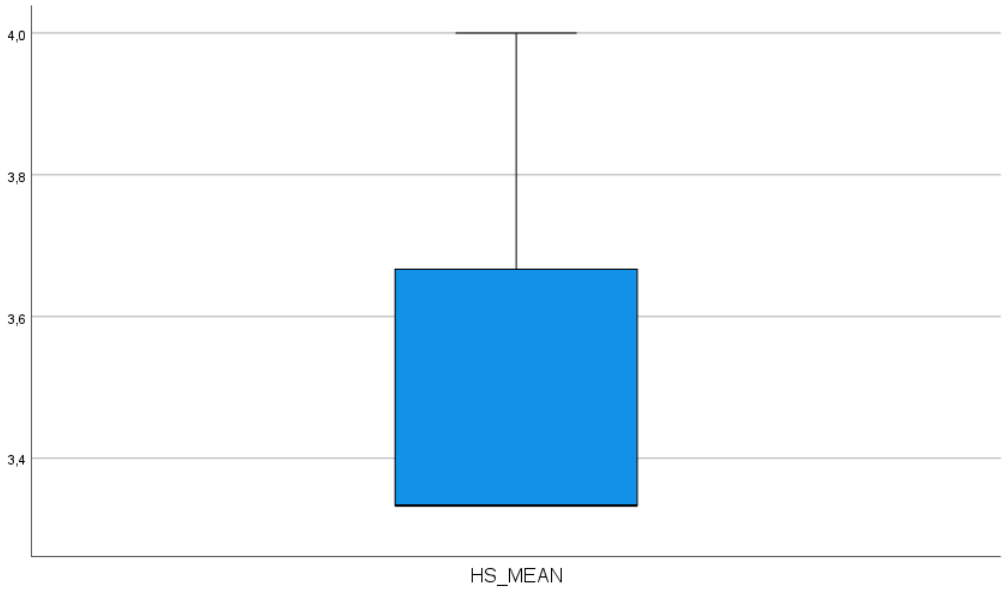
During my thesis, I reached out to multiple organizations for forwarding the questionnaire:

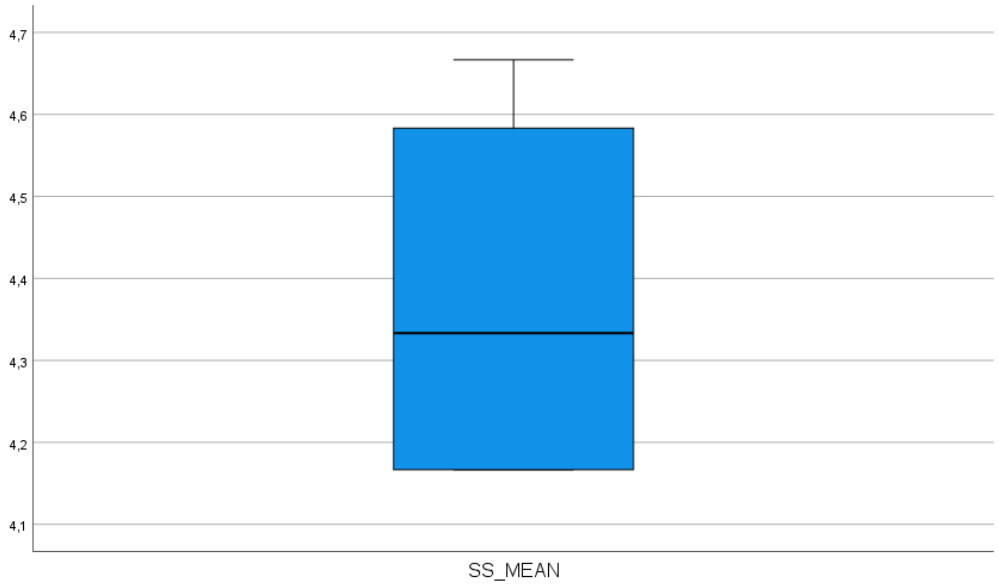
(1) Platform 31*
- (1.1) Bonarius
- (1.2) S-BB
- (1.3) –
- (1.4) –
- (1.5) –
- (1.6) –

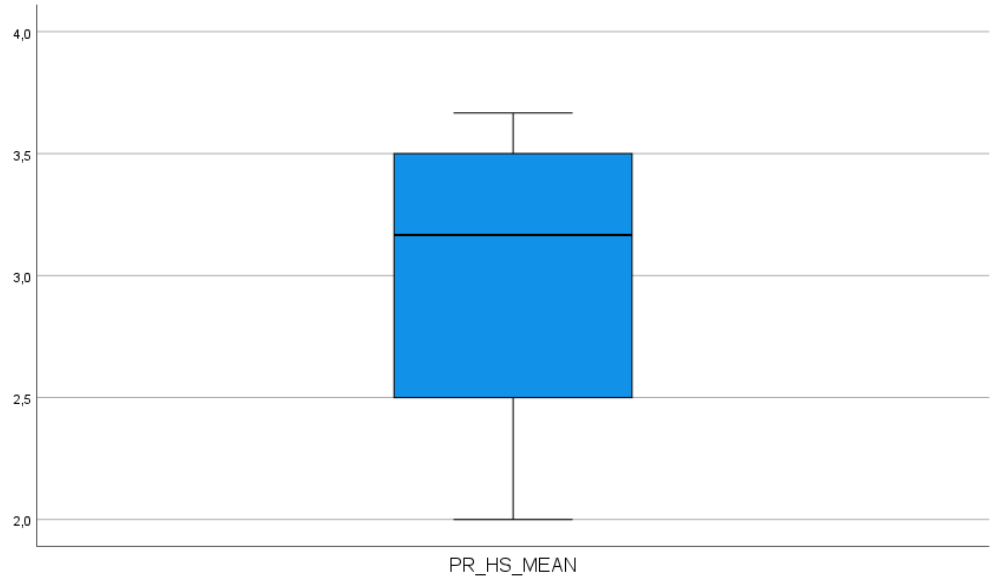
(2) Own network
- (2.1) CrossOver (Josje Damsma)
- (2.2) Banenmarkt Amsterdam (Willem Draaisma)
- (2.3) Croonwolter&dros
- (2.4) Giesbers installatiegroep
- (2.5) Van den Pol Electrical Engineering B.V. (Van den Pol Elektrotechniek B.V.
- (2.6) Feenstra
- (2.7) Wij Techniek
- (2.8) Sociaal-Economische Raad (SER)

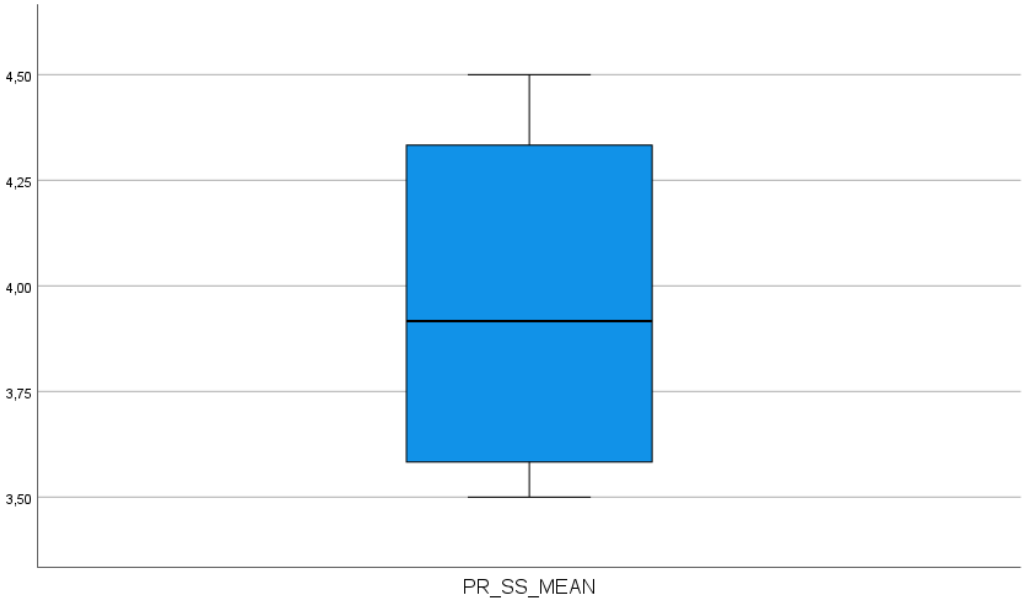
**Platform 31 is the organization that distributed the questionnaire for me. In exchange for helping with their own research and a small fee. I have no insight into which company's they exactly send the questionnaire to.*

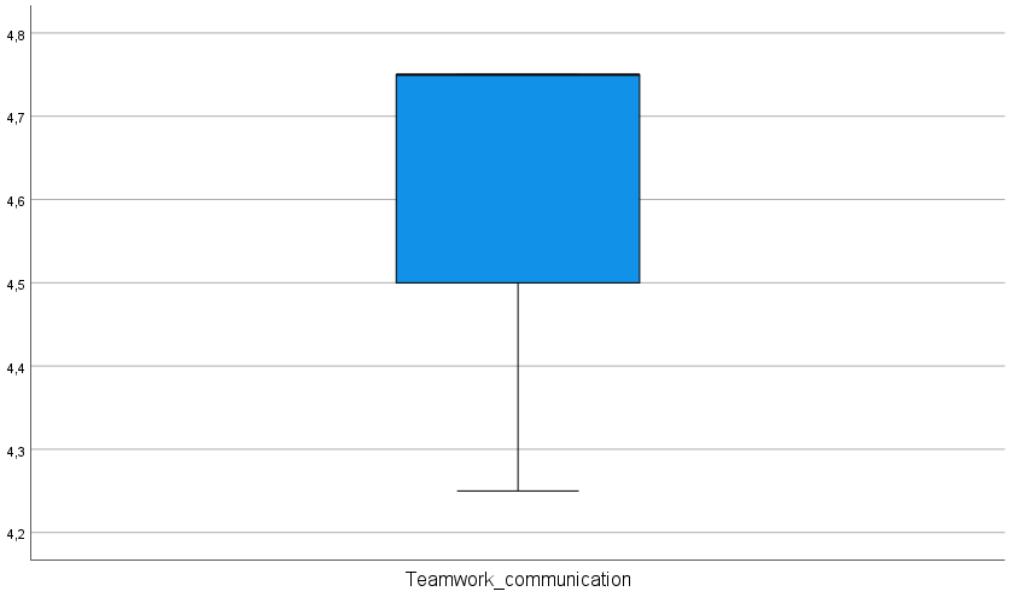
Appendix 3: Boxplot of all dependent variables

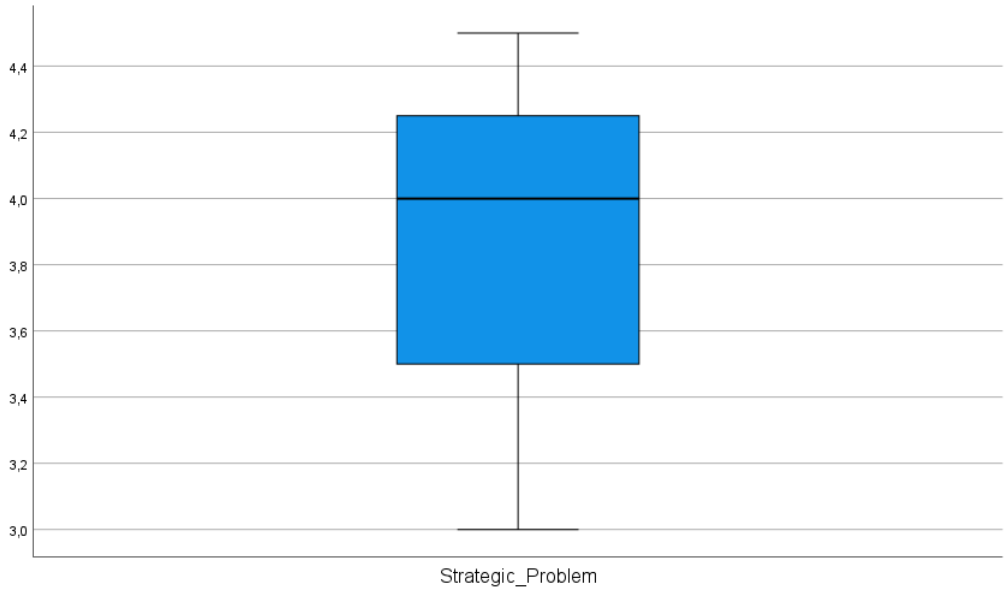







4,50
4,25
4,00
3,75
3,50
PR_SS_MEAN


4,8
4,7
4,6
4,5
4,4
4,3
4,2
Teamwork_communication


4,4
4,2
4,0
3,8
3,6
3,4
3,2
3,0
Strategic_Problem