Increasing importance of the ‘human’ aspect in Purchasing and Supply Management: Can intrapersonal and interpersonal competencies be developed?

Rafal Wisniewski (s2041693)

Msc Business Administration, University of Twente

Purchasing & Supply Chain Management

Faculty of Behavioural, Management and Social Sciences (BMS)

Master thesis

22.10.2019

1st supervisor: Mr. Klaas Stek
2nd supervisor: Prof. Dr. habil. Holger Schiele

Abstract

This study examines the development potential of intrapersonal and interpersonal competencies needed in PSM. The 'human' aspect is becoming increasingly important to the PSM function and as a result, these competencies are considered the future key to success in procurement.

With regard to the research design of the study, first, a systematic literature review was conducted. The skill-set identified by this approach contains nineteen competencies, consisting of twelve intrapersonal and seven interpersonal skills. Second, for this study a PSM competency survey was held amongst European PSM professionals (*n*=581), ranking their intrapersonal and interpersonal competencies levels. Third, regression analyses of the nineteen different competencies on the age of participant are performed in order to reveal possible development with an increased age.

As hypothesized, all skills develop with increasing ages. However this is not the case for 'willingness to learn', which skill showed an insignificant beta. Therefore, it is assumed that the willingness to learn is an innate character trait, which seems to divide the population. With ANOVA is shown that participants with higher 'willingness to learn' competencies are more competent in almost all PSM related competencies. A higher education- and working level of is associated with higher willingness to learn competencies. Furthermore, the multiple regression analysis identifies nine intrapersonal and interpersonal, which have a positive effect on willingness to learn. Participants with higher scores on these competencies are more likely to have higher willingness to learn competencies.

Considering managerial applications, this study confirms the development potential of intrapersonal and interpersonal competencies. This means that providing employee training can lead to gaining internal expertise. Besides, this study stresses out the importance of the 'undevelopable' competence willingness to learn and creates a profile for identifying PSM professionals with a high level of this competence. This profile can be used for current and future employee evaluation.

It is recommended to conduct a qualitative study, validating the findings of this research. Furthermore, due to the immense importance of willingness to learn competencies, the issue of identifying professionals with a high level of this skill should be further investigated.

Preface

This dissertation aims to finalize my studies in order to obtain a Master of Science in Business Administration specialized in Purchasing & Supply Management.

Before starting with the official research, I would like to thank people who supported me throughout the stages of this project. First, I would like to thank Mr. Klaas Stek for supporting and advising me throughout the stages of my final assignment. Thank you for sharing your constructive critics and your suggestions with me. I would also like to thank Prof. Dr. Holger Schiele for providing his valuable input as the 2nd supervisor for this thesis.

Last but not least, I thank everyone who is associated with 'Project PERFECT'. Your work was the foundation for the research conducted in this study. Finally yet importantly, I am expressing special thanks to all people who supported me throughout my master study at the University of Twente.

This research paper is also the foundation for further research on this topic and will be included in a competetivie paper as an appendix.

Enschede, 4th of November 2019

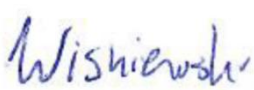


Table of content

List of figures and tables

Figures

Tables

1.0 Intrapersonal and interpersonal competencies the key to future success in PSM.

Purchasing and Supply Management (PSM) is currently undergoing some serious developments (Lydia Bals, Heike Schulze, Steve Kelly, & Klaas Stek, 2019a, p. 10; Feisel, Hartmann, & Giunipero, 2011, p. 55; von der Gracht, C. Giunipero, & Schüller, 2016, p. 2). This circumstances are caused by changes in the business environment, such as increased globalization, technological advancement and increasingly complex customer requirements (L. Giunipero, D. Denslow, & R. Eltantawy, 2005, p. 602; von der Gracht et al., 2016, p. 4)

Zheng et al. (2007) state that the role of purchasing is becoming more strategic due to the changes in the environment, such as outsourcing, achieving sustainability goals and relationship with suppliers (Zheng, Knight, Harland, Humby, & James, 2007, p. 73). Hence, the majority of researchers examining the field of purchasing and supply management consider the procurement role to be a strategic organizational function (Mol, 2003, p. 43; Nadler & Tushman, 1999, p. 48; Schiele, Ellis, Eßig, Henke, & Kull, 2015, p. 4). While the procurement and supply management function has become more demanding throughout in the past, it also resulted in positive effects to organisations. Today, purchasing is regarded as a function which can increase a firms competitive advantage by "improving cost savings, increasing the quality of products and processes and advancing innovation capability (Feisel et al., 2011, p. 55)

As a result of the changing procurement role as well as an increased emphasis on the PSM function, the ideal skill set for a "world class" procurement professional also changed (L. Giunipero & D. Pearcy, 2000, p. 6). Today, the task shift from a transactional- and operational role, consequently an advanced skill set is required. PSM researchers are concerned with this topic and identified skills and competencies needed for achieving success in PSM (L. Giunipero, R. Handfield, & R. Eltantawy, 2006, p. 824). Although technical competencies are still regarded to as being crucial, interpersonal and intrapersonal skills seem to become the future key to success in PSM. Various authors stressed out this importance, by arguing that the profession is becoming increasingly human-centered (Perfect, 2017, p. 25). As Feisel et al. (2011) state, "In recent years, the importance of the human aspect to the PSM function has been increasingly recognized" (p. 63). They are required at every organisational level for effective procurement management (von der Gracht et al., 2016, p. 4).

One important issue arising in this context is concerned with the development potential of intrapersonal and interpersonal competencies. In the literature, no solid opinion on this issue. While some authors claim that these skills can be developed, others view them as attributes

with little development potential (Bailly & Léné, 2012; Bergh, Van Staden, Pm, Krüger, Ge, Jl, Schurink, Preez Rr, Sv, & Bg, 2006; Gillard, 2009).

However, knowledge regarding development potential of intrapersonal and interpersonal competencies is a very important issue. A research conducted by Feisel et al. (2011) claims that companies often have to make the decision between recruiting new employees or work or establishing employee development programs, especially when specific competencies are increasingly required by the organisation (Feisel et al., 2011, p. 60). This means that knowing which intrapersonal and interpersonal competencies can be developed may have a big influence on this decision. If the required competencies are more likely to be developed, companies may be more likely to invest into developing these competencies. On the other hand, if the required skills are not likely to be developed, companies may rather recruit employees that are more competent. Furthermore, an analysis on the development potential of intrapersonal and interpersonal competencies is also a valuable contribution to educational- and HRM domain, especially concerning training and development methods. According to Kyllonen (2013), corporate training is currently a $50-billion-dollar industry. Besides that, cognitive tests are accounted for only 20 percent of educational attainment's effect on future success (Kyllonen, 2013, p. 22), meaning that the focus should clearly be on gaining knowledge regarding developing intrapersonal and interpersonal competencies.

Based on the arguments discussed above, the aim of this research project is to provide an answer to the question, which intrapersonal and interpersonal competencies, associated with success in PSM, can be developed.

Consequently, this leads to the research question:

RQ 1: Can intrapersonal and interpersonal competencies, competencies, which are associated with success in PSM, be developed?

The first step towards answering this question is the identification of intrapersonal and interpersonal competencies, which are associated with success in PSM, which will be done through a systematic literature review. Furthermore, literature regarding developing these competencies will be reviewed. In order to receive a comprehensive picture of the situation,

literature from the domains of Supply Management, Human Resource Management, Psychology and Educational Sciences, will be taken under consideration.

In the next step, statistical analyses on interpersonal and intrapersonal competencies will be conducted. For this study a PSM competency survey was held amongst European PSM professionals (n=581), ranking their intrapersonal and interpersonal competencies levels. The goal of this approach is to find statistical associations, which indicate a development of intrapersonal and interpersonal competencies over time. In case of significant findings on specific variables, additional analyses will be conducted.

2.0 Increasing importance of intrapersonal and interpersonal competencies in PSM.

As already mentioned in the previous chapter, an increasing emphasis on intrapersonal and interpersonal competencies, can be observed in the field of PSM. These changes are coupled with the evolution of PSM from an administrative and transactional function, to a strategic activity (L. Giunipero & D. Pearcy, 2000, p. 4). Furthermore, these skills support other important procurement functions, such as internal and external enterprise skills, which include relationship management within and outside the organisation (Tassabehji & Moorhouse, 2008b, p. 59). Torn implies that "the expansion of the role of purchasing towards more engagement, compared to its former clerical role, is emphasized by the broad set of competences with added emphasis on 'soft' skills that are required by purchasing professionals nowadays." (Torn & Schiele, 2017, p. 47).

Giunipero et al. (2006) highlight key skills required by supply chain professionals. Team building skills, leadership, influencing and compromising, communication skills consisting of presentations, public speaking and listening are among others the most important skills in the field of PSM. Giunipero and Pearcy's (2000) introduced the 'world class skill set', consisting of the ten most important procurement skills. Many of these competencies are interpersonal and intrapersonal skills, with interpersonal communication being the most important competence of all PSM competencies. Besides that, this list consists of other important 'human' competencies. The ability to work in teams, negotiation and influencing and persuasion are among these skills. According to the authors, it is the result of "increasing emphasis on supply chain management as well as cross-functional cooperation within firms" (p. 11). Faes et al., (2001) recognize the importance of intrapersonal and interpersonal competencies in PSM. In future, they have to become more flexible team workers with greater leadership skills. Besides that, cross functional communication within and outside of the organisation is becoming increasingly important (Faes, Knight, & Matthyssens, 2001a, p. 202). Procurement professionals take a coordinating role and are responsible for upward and downward communication within an organisation (Prajogo, 2013, p. 1533).

The results of Tassabehji & Moorhouse's (2008) research on PSM competencies also underlines the rising importance intrapersonal and interpersonal competences in PSM. The authors suggest, "An overarching trend was to develop internal selling skills so they can communicate the value they can bring" (p. 63). After that, the most important competencies seem to be people management and the skills to communicate. Schiele et al. (2012), present another line of argument that stresses out the increasing importance of the human part within

the profession. The authors argue, “relationships are taking over as the central element of exchange” (p. 133). Two major reasons for this are the concept of being a preferred customer as well as the trend towards an early supplier integration in innovation and new product development process.

Being a preferred customer refers to the concept of reverse marketing. According to Blackhorn and Banting (1991) reverse marketing is described as “a reversal of buyer-supplier roles", whereas the purchaser acts proactively in order to persuade the supplier to serve the buyer's organisation needs (p.187). The top suppliers are in demand; therefore, it becomes important to be attractive to the supplier by cultivating a good relationship. Olsen and Ellram (1997) state, that “it is very important to strengthen the relationship to keep a loyal supplier” (p.108), especially when the purchase situation is more complex. Supplier relationship management is based on ‘human’ skills; hence, professionals with better social skills will be more successful.

Early supplier integration in innovation and new product development can be linked to the concept of being a preferred customer, because it follows the same objectives. Goldberg & Schiele (2018) imply that “early supplier integration increases buying company innovation and innovation project success” (p. 94). The success of integrating suppliers depends very much on interpersonal skills, especially on communication competencies. Tian & Peng (2010) argue that the relationships with suppliers have become a key issue for manufacturing enterprises. In the context of early suppler integration in the innovation and new product development process, communication can improve inter-organisational relationship, acquire organisational information and knowledge, establish cooperation and trust, make partners transmit important information more timely and accurate, and share important and sensitive information (Tian & Peng, 2010, p. 1928).

Besides that, there is another argument, which can explain the increased need for intrapersonal and interpersonal competencies in the procurement function: the current movement towards Industry 4.0. Bauer et al. (2014) state, “central to Industry 4.0 is the possibility to connect people, machine, objects, and ICT-systems intelligently and in real time to manage complex systems dynamically” (Bauer, Schlund, Marrenbach, & Ganschar, 2014, p. 18). These implications will result in changes in the PSM business environment. Von der Gracht et al. also expect these changes to occur and argue that over the years the diverse range of procurement activities has broadened considerably, hence it cannot be limited to a single job profile. Technical jobs may be taken over by innovative and digital changes, the procurement

role of the future will therefore be more of a strategic and coordinative nature (von der Gracht et al., 2016, p. 24). Consequently, the job profile requires advanced social and communication skills. The KMPG report presents a possible future procurement scenario. This scenario suggests, that procurement "has gone from a knowledge-based society to a human economy, where abilities like collaboration, communication, creativity and flexibility are in demand. Innovation, individualism and services are the driving forces of the times." (p. 25) Following this, the purchasing role would be almost entirely depending on intrapersonal and interpersonal competencies.

It is becoming clear that future procurement and supply chain professionals must possess an advanced set of intrapersonal and interpersonal competencies in order to manage global supply chains and to be able to deal with future issues and challenges in an effective and responsive manner.

2.1 Intrapersonal and interpersonal competencies associated with success in PSM

The aim of this chapter is to conduct a systematic literature review on intrapersonal and interpersonal competencies, which are associated with success in PSM. However, first it is important to understand the basic concept of a competence. Furthermore, it is crucial to get a general idea about all competencies leading to success in the field of procurement.

According to Arnold et al (2001), a competence refers to the capacity of a person to act and is more holistic, comprising not only content or subject knowledge and ability, but also core and generic abilities (Arnold, Nolda, & Nuissl, 2001). Nadler & Tushman (1999) underlines the importance of competencies and argues that organisations need to become proficient in certain core competencies in order to succeed (Nadler & Tushman, 1999, p. 52).

Le Deist & Winterton (2005), claim that the German and Austrian model is currently the best approach towards defining a competence. It is a multi-dimensional approach, consisting of knowledge, skills and behaviours (p 36). That means that a competence does not consist of just one layer, but is a result of a multidimensional inter-function. Just if an individual masters all the components, meaning having the required knowledge and skills as well as showing a proactive attitude (behaviour), it can be spoken from having a competence. Furthermore, the author argues that "From this analysis, we argue that a holistic typology is useful in understanding the combination of knowledge, skills and social competences that are necessary for particular occupations" (Le Deist & Winterton, 2005). This concept is similar to the French

model, which consists of a cognitive, functional and social competence, representing the same layers as the German and Austrian model (p. 39).

The authors presents a competency typology. It consists of a conceptual/operational layer as well as an occupational/personal layer.

	Occupational	*Personal*
Conceptual	Cognitive competence	Meta competence
Operational	Functional competence	Social competence

Figure 1: Typology of competence (Le Deist & Winterton, 2005, p. 39)

Using this typology assists in getting a comprehensive understanding of a specific competence. It can be used for evaluation- as well as training development purposes. Understanding the concept of a competence can assist in a more effective evaluation. Purchasing competencies can be divided into several categories. These categories include technical and business administration skills, social skills, enterprise skills and strategic skills.

Technical skills relate to specific tasks, and can be therefore referred to as functional skills (Tatham, Wu, Kovács, & Butcher, 2017, p. 268). Business administration skills deal with management-related tasks, such as project management, cost analysis and financial management. Social skills are associated with communication abilities, therefore skills such as teamwork, conflict management or networking can be placed into this category (Cacciolatti, Lee, & Molinero, 2015, p. 4). Enterprise skills refer to the purchasers relationships, within- as well as outside of the organisation (Feisel et al., 2011, p. 61).

These competencies can be categorized to what is often referred to as ‘hard skills’ and ‘soft skills’. Hard skills are technical skills that involve working with equipment, data, software, etc. while soft skills refer to a persons’ intrapersonal abilities of self-management as well as

interpersonal abilities such as communication and human interactions (Laker & Powell, 2011, p. 112).

It is argued, that it is easier to transfer hard skills, due to its transferability. Acquiring hard skills is done mainly through education and accumulated experience. This may be the reason, why "technical training represents the most dominant form of training (…) and it is estimated to exceed 85 percent of all training delivered" (Laker & Powell, 2011, p. 113) The development of 'soft skills' on the other hand is more complicated. Laker and Powell (2011) present a number of arguments expressing the difficulty of acquiring these skills. First, people have already been in similar or identical situations before and have therefore a bigger resistance to change. Besides that, there is also a greater resistance of trainees, organisations and management to acquire new soft skill. Furthermore, there is a lesser degree of mastery achieved during the training, compared to hard skills. It could be argued that this is the case, because soft skills are more difficult to train (Laker & Powell, 2011, p. 114).

Torn implies that the expansion of the role of purchasing towards more engagement, compared to its former clerical role, is emphasized by the broad set of competences with added emphasis on intrapersonal and interpersonal skills that are required by purchasing professionals nowadays. (Torn & Schiele, 2017, p. 47). The skills discussed above are equivalent to the intrapersonal and interpersonal competencies elaborated in this research paper. The following sections aim to identify the intrapersonal and interpersonal competencies, which lead to success in PSM.

2.2 Discourse on the development of intrapersonal competencies

Intrapersonal competencies are immensely important in procurement. Various authors defined intrapersonal competencies in order to understand the essence of that concept. According to Zimmermann (2000), intrapersonal competencies can be referred to as "self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals" (Zimmerman, 2000, p. 14).

Illkowska and Engle (2010) on the other hand describe these competencies as "the process by which one monitors, directs attention, maintains, and modifies behaviors to approach a desirable goal" (Illkowska & Engle, 2010, p. 268). Intrapersonal competencies are 'transportable', meaning that it can be transferred from one context to another. Therefore, they can serve an individual in many areas, reaching from private and social to business related aspects. Moreover, these skills contribute to adaptability and productivity, due to the fact that

they counteract undesired influences that may arise from within the person or from the environment (Hoyle & Davisson, 2011, p. 4).

Although these skills can be trained, according to Hoyle and Davisson (2001), they are not entirely in an individual's control. As the authors state, "some behaviors are governed by biological needs and therefore not routinely under the direct control of the individual. Other behaviors have become associated with cues in the environment (i.e., conditioned) and, as a result, typically are produced by those cues rather than a conscious decision by the individual" (p. 3)

There are a number of intrapersonal competencies considered being important in the field of procurement, mentioned by the literature. Various authors identified intrapersonal competencies, which are associated with success in PSM (Bals et al., 2019a; Feisel et al., 2011; Giunipero & Flint, 2001). The most important intrapersonal competencies found within the literature are presented in the following section.

2.2.1 Holistic thinking

One important skill seems to be the ability of holistic and analytical thinking (Bals et al., 2019a, p. 10; Perfect, 2017, p. 27). According to Lau (2010), procurement professionals need to have analytical skills in order to make decisions, which are based on facts. The author elaborates, by stating that "understanding business conditions such as the supply market and how the key suppliers operate gives the practitioners an early understanding of the supply base, helping the company to reduce supply risk and identify cost reduction opportunities" (p. 407) This eventually results in a reduction of total costs and positively affects the business continuity. This also resonates with the Gammelgaard & Larson (2001) who found that holistic thinking is crucial to supply chain professionals. The authors call it seeing the "big picture" and consider it to be a priority competence (Gammelgaard & Larson, 2011, p. 31).

A research conducted by Cacciolatti (2017) clearly underlines the importance of analytical skills by showing that professionals with such skills have often high ranking positions such as procurement consultant, senior buyer or production manager and consequently are rewarded above the market average (Cacciolatti et al., 2015, p. 9). Although holistic- and analytical thinking is important across the field of PSM, there is evidence that this may be industry related. Some industries are a subject to many influencing factors, such as weather, global commodity price fluctuations, emerging substitutes, etc. and could therefore require more holistic- and analytical thinking skills (Perfect, 2017, p. 33).

2.2.2 Ability to solve problems / result oriented action taking

Another important intrapersonal competence stressed out by the literature is the ability to solve problems and result oriented action taking. A study conducted by Knight et al. (2014), ranked the ability to solve problems under the top five of most important PSM competencies. The authors suggests an explanation for that and believes that this may be the result of high levels of customization, continual design changes, and frequent innovations (Knight, Tu, & Preston, 2014, p. 12).

Result oriented working is among the skills identified by Myers et al. (2004) as essential for managing contemporary supply chains (Mayers et al., p 214). Jordan and Bak (2016) also recognize the importance of problem solving within PSM and consider it to be one of the most important competencies (Jordan & Bak, 2016, p. 623).

Although problem-solving skills might include theoretical features, nevertheless experience is considered the most effective developing method. This is also suggested by Bak and Boulocher-Passet (2013). Their research showed that problem-solving skills are imperative within the context of supply chain education, which can be provided via consultancy projects or in class real-life cases (Bak & Boulocher-Passet, 2013, p. 472).

According to Tatham (2017), "problem-solving skills, along with forecasting and customer/supplier relationship management, stand out as important components that support the ability of supply chain managers to sense and shape opportunities and threats in a turbulent business environment" (p. 276). Furthermore, the results of Tatham's research consider problem solving abilities to be the second most important competence for procurement professionals (Tatham et al., 2017, p. 277). A study conducted by Thai (2012), also ranks problem solving abilities among the top five of the most important procurement competencies (Thai, 2012, p. 118). This variety of authors stressing out the importance of problem solving competencies is a great indication for its importance within procurement and supply management. It seems that within the current business environment, which is becoming increasingly complex and demanding, the ability to solve problem is a key success component.

2.2.3 Conscientiousness

Among the intrapersonal competencies associated with success in procurement and supply management, the ability to take conscientious decision and to adapt to the business environment seems to play a crucial role. This competence can be seen as the ability to develop

continuously the own skills, qualities and traits (e.g. persuasiveness, creativeness, entrepreneurial thinking) according to a change in the environment.

Pulakos et al. (2000) defined it as a willingness to cope with new and uncertain environments, which are under constant change. This includes being able to respond quickly to crises as well as learning quick. Furthermore, it includes handling stress situations, adapting to different types of personalities, communications styles and cultures. (Pulakos et al., p. 612). Eltantawy et al. (2009), state that the ability to be flexible and adapt to changes in the business environment is one of the crucial strategic supply management skills, which are needed to control highly important supply management decisions (R. Eltantawy, L. Fox, & Giunipero, 2009, p. 101).

Upton (1995) thinks consciousness helps to ensure continuity of the organisation and rapidly respond to changes, coming from inside as well as outside the system (Upton, 1995, p. 207). This means that this competence is multi-dimensional and can be useful in various contexts. As already mentioned in this paper, procurement is currently undergoing some changes. The profession is evolving together with the responsibilities, consequently, conscientiousness, including one's active development of the own abilities, is an important PSM characteristic.

2.2.4 Willingness to learn / Proactivity

Being proactive as well as being willing to learn have been identified as important traits in purchasing. Lumpkin & Dess (2001) define proactivity as being able to response to opportunities in an appropriate mode. It is especially important in dynamic environments and during the growth stage of an organisation (Lumpkin & Dess, 2001, p. 430). Willingness to learn is especially required in high-technological environments. Bandyopadhyay (2004) suggests that for successfully implementing very complex procedures such as just-in-time production, willingness to learn is among the five most important skills. Such environments need a constant update of knowledge and know-how, hence, professionals operating in such markets are required to be proactive and willing to gather new knowledge (Bandyopadhyay, 2004, p. 6).

A study provided by Wilson & Barbat (2015) shows that proactivity had positive effects on business operations and are therefore a required skill of an ideal procurement professional (Wilson & Barbat, 2015, p. 76). Although being proactive is important in PSM, Wilson (2015) has recognized a problematic issue. Proactivity suggests the freedom to act autonomously,

however, in the reality; procurement professionals often have little hierarchical authority. This is the reason, why although it is an important competence, being proactive cannot always be optimally implemented (Wilson & Barbat, 2015, p. 70). Proactivity also has been identified throughout the literature as an important competence in PSM. Among the most important future procurement competencies presented in by Project Perfect, creativity can be found (Perfect, 2017, p. 42). This skill was regarded as being important already in the past. Giunipero et al. (2005), believe that proactivity also enables the ability to recognize opportunities, which are invisible to others. Therefore, one reason why such professionals are successful, is the envision to see alternative scenarios (L. Giunipero et al., 2005, p. 604).

2.2.5 Inventiveness

Inventiveness is another intrapersonal competence, associated with success in supply chain management. According to Lumpkn & Dess (2001), "innovativeness refers to a willingness to support creativity and experimentation in introducing new products/services, and novelty, technological leadership and R&D in developing new processes (Lumpkin & Dess, 2001, p. 431).

Sinha et al. (2016) conducted a study with the aim to match the supply and demand in PSM education. For that purpose, the authors conducted an analysis of supply chain management job postings, and found that on 48 % of these postings, innovative thinking was a key-skill requirement (Sinha, P. Millhiser, & He, 2016, p. 30). Allal-Chérif & Maira (2011) argue similarly and claim that the role of procurement has changed during past years, therefore an innovative approach is required. The procurement role gradually has become less operational and more strategic. In addition to managing suppliers, now purchasers have to exploit the market in order to detect new trends and technical progress resulting from technological innovation, hence, an innovative mind-set is desired in the market. People who will be able to deliver such an innovative approach are consequently more likely to be successful (Allal-Chérif & Maira, 2011b, p. 860).

2.2.6 Empathy / loyalty / honesty

According to literature, an ideal procurement professional also needs to possess ethical traits such as honesty and loyalty. Lau's (2010) study, confirmed that the ethical aspect is becoming increasingly important in the context of PSM. The skill to act in an ethical manner

can be found among the presented top-ten trends list, which is concerned with skills and knowledge of ideal future procurement professionals (Lau, 2010, p. 406).

Especially honesty seems to play an important role. A research conducted by Faes et al. (2001), even ranks integrity and honesty as the most important trait of all. The authors state: "We conclude that &integrity and honesty' is recognized as a vital trait for purchasing agents whatever their employment context, and is not a variable by which effective buyers can be differentiated" (Faes et al., 2001a, p. 204). Thai (2012) also recognized this fact, in the conducted research, ethical behaviour is among the mostly needed PSM skills (Thai, 2012, p. 111).

2.2.7 Self-assurance

Self-assurance has been regarded to as important in purchasing and supply management, mainly due to the fact, that in most cases, it can be directly linked to leadership competencies, which are considered as very important for supply management professionals. Furthermore, a general competence can positively affect all other competencies. Axelrod (2006) reveals that "self-confidence plays a role in every aspect of a leader's thoughts, feelings, behavior, relationships, and job performance, through an internal psychological mechanism called self-leadership" (p. 300).

Self-confidence plays a role in psychological empowerment and influences the willingness and competence to take control over one's own actions as well as to make independent and well-concerned decisions (Paglis Dwyer & G. Green, 2002, p. 219). It also contributes to a leader's ability to influence his fellows' thoughts, attitudes, emotions , and behaviours, by being observed as more credible and additionally creates interpersonal trust (Caetano, Vala, & Leyens, 2001, p. 106).

As already mentioned, poise and self-confidence positively influence a number of an individual's behaviours. Axelrod (2016) finds, that self-confidence positively affects a person's psychological empowerment, goal-setting, motivation and persistence, management of emotions, presence and voice and authenticity and achievement (Axelrod, 2017, p. 300). These are all behaviours, which lead to the general success of a supply chain professional.

2.2.8 Willingness to take risks

For a rounded-up profile of an ideal procurement and supply management expert, within the literature, risk management and the willingness to take risks is regarded as important competencies.

Murphy & Poist (2006) claim that a risk-taking attitude is a part of the general risk management competence. It consists of having the ability to weigh the pros and cons of each option in order to make a good decision. It does not mean risk avoidance; instead, it reflects a readiness to engage in calculated risk-taking (Murphy & Poist, 2006, p. 48).

Axelrod (2006) identified the willingness to take risks as a part of great leadership competencies. “Leaders with strong self-confidence tend to have positive expectations and, so, are willing to take risks that others might avoid”. (Axelrod, 2006, p.302). The belief in one’s own competencies, coupled with a willingness to take risks allows such people to set high and hard goals are more likely to receive positive results out of their actions (Axelrod, 2017, p. 302).

Furthermore, especially due to rising globalization and a more engaged involvement of suppling companies, a highly skilled PSM professional must become a global manager. Harvey & Richey (2001), claim that creating new ideas, promoting change and being willing to take risks are all competencies required for a high-class global manager. These skills are all necessary in global inter-organisational relations These skills require the ability to synthesize connections, reframe complex problems, and assess the value of actions, regardless of past experience (Harvey & Richey, 2001, p. 108).

2.3 Intrapersonal competencies leading to success in PSM

The last section clearly highlighted the importance of intrapersonal competencies in the field of procurement. Nevertheless, according to the literature, interpersonal competencies seem to play an even greater role. A number of interpersonal competencies can be fund among the most importance PSM competencies (L. Giunipero & D. Pearcy, 2000, p. 5). Before examining the interpersonal competencies, which are associated with leading to success in purchasing, it is essential to understand how these competencies can be characterized.

Lim (2019) describes interpersonal competencies as the characteristics and behaviours of a person when it comes to interacting with other people in a proper manner. In a business context, these skills refer to a professional’s ability to collaborate with others and being able to maintain relationships, without leaving aside own responsibilities. Interpersonal skills range

from communication and listening to attitude and deportment. Strong interpersonal skills are a prerequisite for many positions in an organisation (Lim, 2019, p. 1).

People who possess interpersonal competencies skills are seen as charming, poised, socially adept, approachable, and rewarding to deal with. They are able to collaborate with individuals in groups as well as maintain internal and external relationships (Elmuti, 2004, p. 444). In addition, the author claims that the dimension of interpersonal competencies has four components, which are "(1) disposition to oneself in the place of another person; (2) skill to correctly anticipate another person's expectations; (3) skill to incorporate those expectations in one's subsequent behavior; and (4) self-control to stay focused on the other person's expectations. " (p. 444).

Iyer (2005) underlines the importance of these skills and states that moving towards improving is unavoidable for professionals seeking success. However, Iyer (2005) notes that it is not entirely clear whether interpersonal competencies can be thought within a short "especially when one considers the fact that a person has lived with those traits all his life. To this, the answer is harsh but real -- a professional who wants to do well in his / her career does not really have a choice" (Iyer, 2005, p.22).

The next section of this paper, deals with interpersonal competencies, which have a positive effect on procurement performance.

2.3.1 Communication competencies

Out of all competencies required in the field of procurement, communication competencies play the most important role. Practically, all authors examining this field, rank interpersonal communication among the most important PSM competencies.

How important interpersonal communication skills actually are, was discovered at a very early stage by a number of authors. Kolchin and Giunipero (1993), projected that interpersonal communication will be the most valuable competence of the future (Kolchin & Giunipero, 1993). A survey conducted by the Down and Liedtka (1994), was concerned with the skills corporate recruiters look for when they hire new procurement employees. Among these skills, interpersonal communication was identified as the most important one (Down & Liedka, 1994, p. 16). Roy (1998) also believes in the power of interpersonal communication and explains the importance. According to the author, "many organizations are modifying both inter- and intra-organizational structures to address the resultant competition. These modifications largely focus

on increased small group cooperation. In the execution of these changes managers frequently assume that employees will adapt to new cooperative forms'' (Roy Matthew, 1998, p. 565).

This shows that these skills have always been stressed out as key procurement competencies. This perception did not change much, since current literature also provides great evidence regarding the importance of interpersonal communication. According to Faes et al. (2001), one of the most important functions for a purchaser is to achieve and sustain partnerships. This includes establishing high-quality relationships and most importantly and leads to a better integration of the purchasing function. The purchasing function can be seen as the 'spider in the web', where cross-functional integration is of great importance (Faes et al., 2001a, p. 197).

A study conducted by Giunipero et al. (2005), argues very similarly and ranks interpersonal competencies as the most valuable PSM competence (p.610). Very recent studies confirm the validity of the previous research made on this topic. Shou & Wang (2015), found through a job advertisement analysis that interpersonal communication was one of the top appearances of all procurement competencies. It is considered as a crucial competence that should be mastered, at least at a certain level, by PSM professionals (Shou & Wang, 2017, p. 62).

2.3.2 Team member skills

The competence to work effectively in teams is also a very important interpersonal competence, needed in PSM. Among various authors, team member skills are considered among the most important competencies in PSM.

Prajogo (2013) identify communication and teamwork as the most important competencies for successful supply chain integration. The authors define teamwork as "ability to work effectively with individuals and groups/teams – cross-culturally, intra and inter organizationally" (p. 1541) Therefore, it is important in nearly all domains of an organisation.

Another study conducted by Giunipero (2005) also ranks team ability skills as one of the most important competencies in PSM and furthermore believes, that due to the evolving procurement environment, this competence will become increasingly important in the future (L. Giunipero et al., 2005, p. 604). Gammelgaard & Larson (2001) conducted a survey, including 474 professionals with a supply management background. The survey contained 45 skill items. Teamwork was the second most important competence of all. The authors claim, "a

supply chain manager needs to be a team player, know everyone's business (across functions and organizations), and become an information expert" (p. 29)

Also on the market-level, the importance of team ability skills was reported. A job advertisement study conducted by Shou & Wang (2017) clearly shows that teamwork is greatly regarded by employers. Nearly 50 percent of all job advertisements requested team work abilities, making it one of the most valuable competencies for successful supply chain managers (Shou & Wang, 2017, p. 14)

2.3.3 Leadership

Another important interpersonal competence required in the field of supply management is leadership. Today's supply management organisations and its goals are pursued by people who move rapidly between leading and following roles. This enables such leaders to make decisions which are based on the diversity of different experiences and insights from its different team members (Klingborg, Moore, & Varea-Hammond, 2006, p. 280). For that reason, effective leadership requires insight and self-awareness, organisation, ongoing communication and reinforcement, the ability to catalyse a shared future vision, and successful recruitment of followers motivated to action (Kouzes JM & Challenge, 2002, p. 24).

In the context of procurement, purchasers with strong leadership competencies are also more flexible, proactive and adaptable, when it comes to entering new environments. As Knight et al. (2014) claim, "purchasing leaders also focus closely on skills and knowledge requirements and how these vary according to organisational context, where context can be described in terms of corporate strategy, purchasing maturity, organisational structure and business context (p. 2). Furthermore, their study also ranked leadership competencies among the top ten of all PSM competencies. Mangan (2005) also recognize the importance of leadership in supply management context. The author suggests a general agreement that leadership is critical for developing progressive supply chain managers (Mangan, 2005, p. 187).

A recent study conducted by Shou & Wang (2017), concerned with important PSM competencies, found that leadership competencies were among others the most important skills (Shou & Wang, 2017, p. 16). Leadership is considered as a strategic skill and is therefore seen as increasingly important. As Giunipero (2006) concludes, "the tactical elements of the supply manager's job are slowly beginning to be replaced by a greater need for effective communication, team – building skills, and leadership" (p. 839).

2.3.4 Training staff

Due to the changing role of a purchaser, the importance of training staff is becoming more important. Training and development can be defined as an educational process whereby new information is transferred to the employees and existing knowledge and skills are re-learned and reinforced. Furthermore, it facilitates businesses to adapt new technology by increasing efficiency and adaptation of employees (Karia, Omari, Mwanaongoro, & Kimori, 2016, p. 10)

Marsikowa (2015) identified several advantages of having well-trained employees. It gives organisations a competitive advantage and a higher value of their intellectual capital. Besides that, employees seem to value the opportunity to receive additional training. This results in greater motivation and loyalty within their firm (Maršíková & Šírová, 2015, p. 13).

Recent research has emphasized the increasing importance of training and retaining competent supply chain managers (Harvey, Fisher, McPhail, & Moeller, 2013, p. 4; Rahman & Qing, 2014, p. 277). Shou & Wang (2017) state that "it is apparent that supply chain managers nowadays are responsible for more complex functionalities with a broader coverage than that described in the supply chain manager competency model" (p. 59). Bals et al. (2019) examined current and future essential PSM competencies and found seventeen additional competencies needed in the future. The authors suggest that there is a need for a new and updated supply-chain-manager-competency-profile. This reflects a business context influenced by the latest developments in industry 4.0 and sustainability, such as the move towards a circular economy and circular supply chains (Bals et al., 2019a, p. 10). Consequently, a future world-class procurement professional must be able to transfer his knowledge and skills to other team members for reaching organisational goals.

2.3.5 Building relations

Especially due to increasing globalization and an earlier involvement of suppliers in new product development processes, networking and building relationships is a necessary future supply-chain-competence. The emerge of a global market place requires supply chain management to become refocused into a global network context (Harvey & Richey, 2001, p. 106).

Various authors claim, that building fruitful relations results in competitive advantage to supply management organisations. Teller et al. (2016) found, that "supplier relationships and their management allows firms to achieve the advantages of being responsive, agile, fast and

profitable" (p. 111) According to Lages et al. (2008), an organisations business performance is highly effected by the relationship with its partners. As managers and researchers, observe that good versus poor relationships significantly affect business performance. Consequently, high-quality relationships between partners of the supply chain has significant effects on the success of the entire chain and results in higher profitability and supply chain performance.(Lages, Lancastre, & Lages, 2008, p. 686).

The increasing strategic role of the purchasing function also affects the value of networking competencies. Giunierpo (2006) suggests that in order to impact corporate revenue realization with strategic sourcing purposes, relationship management must be extended into market (L. Giunipero et al., 2006, p. 823). In an earlier paper, the author already recognized the importance of relationship building. Giunipero & Flint (2001) stress out its value and believe that it is a topic worth greater consideration (Giunipero & Flint, 2001, p. 688).

While the majority of the research on this topic analyzes the required skill-set for achieving success in supply management, the importance of internal and external relationship building is often not considered (Giunipero & Flint, 2001, p. 692). A recent study conducted by Bals et al. (2019), concerned with future PSM competencies, found that relationship management will become even more important in the future (Bals et al., 2019a, p. 10). PSM professionals should therefore be able to build and maintain such relationships on the internal and external level.

2.3.6 Cross-cultural awareness

Being able to communicate, build relationships and creating a common ground with people and organisations from different cultural backgrounds is a skill with ever-growing importance in the field of supply chain management.

The complexity of global operations requires managers to devote attention to matters such as cultural diversity and economic development (Youngdahl, Ramaswamy, & Dash, 2010, p. 802). Rahman and Qing (2014) conducted a study that provides an assessment on the supply chain skills required by supply chain managers. The authors found that among the most important PSM skills there was the competence of cross-cultural awareness (Rahman & Qing, 2014, p. 290). Larson (2008) conducted a survey study on supply chain professionals' competencies and found multicultural skills among the most essential PSM competencies. The author claims that the PSM role is becoming more strategic on a global context, hence, there is a rising need for cross-cultural competencies among purchasers (P. Larson, 2008, p. 378).

Tassabehji &Moorhouse (2008) introduced a new taxonomy of procurement skills, consisting of five different skill categories. The category of interpersonal skills consists of cultural awareness. The authors also consider cultural awareness be one of the future challenges in PSM (Tassabehji & Moorhouse, 2008b, p. 63). A research conducted by Bals et al. (2019) ranks cross-cultural awareness among the top ten most important purchasing competencies of the future. A world class procurement professional needs to be able to successfully build international relationships (Bals et al., 2019a, p. 9).

2.3.7 Persuasion

Being persuasive is a skill that is required by strategic supply chain managers for many reasons. The growing importance of supply chain management has led to an increasing recognition of the strategic role of purchasing (Andersen & Rask, 2003, p. 84). While purchasing is receiving increased attention in many firms, the purchasing function within these firms are at different stages of strategic development or evolution (Schiele, 2007a, p. 284).

However, research suggests that a higher procurement performance has a considerable contribution to the overall performance of the firm (Carr & Pearson, 2002, p. 1034; Sánchez-Rodríguez, Hemsworth, & Martínez-Lorente, 2005, p. 295). Although there is enough evidence showing the positive effects of procurement involvement on a strategic level, Schiele (2007) argues, that he extent to which purchasing is embedded into an organisations decision making process may strongly depend its acceptance within the organisation (Schiele, 2007a, p. 274).

In that context, internal persuasion power becomes a key component for a higher strategic involvement of the procumbent function. The purchaser needs to be able to communicate the importance of strategic purchasing involvement. In that line of argument, Giunipero (2005) argues, “influencing and persuasion could improve one’s effectiveness in gaining and keeping management support” (p. 607). Furthermore, the author claims that influencing and persuasion also can be seen as crucial elements of flexibility and that management support cannot be achieved permanently, but instead needs to be earned continually (L. Giunipero et al., 2005, p. 607).

Next to the internal influencing approach, persuasion also has another important function that gained importance by the evolution of the procurement function. As Guinipero (2005) recognizes, the competence of persuasion was traditionally an important skill for a salesperson. Nowadays, a supply chain manager “needs to possess influencing and persuasion skills that enable them to sell the alternative business solutions to internal customers and/or suppliers” (L.

Giunipero et al., 2005, p. 607). Consequently, the ability to be persuasive will be a vital competence for supply chain managers of the future (L. Giunipero et al., 2005, p. 607).

2.4 No clear opinion within the literature regarding the development potential of intrapersonal and interpersonal competencies.

The pervious section provided an overview of the most important intrapersonal and interpersonal competencies for achieving success as a PSM professional. For the purpose of this research project, the key question is whether these competencies are well developable. The literature within the field of HRD, points out some difficulties when it comes to train and develop these competencies. Laker & Powell (2011) argue that the fact of making no differentiation between hard skills and soft skills hinders an optimal training transfer of these skills (Laker & Powell, 2011, p. 111).

According to the author, “the inability to transfer any form of training usually results in an extremely costly waste of time, energy, and money (estimated cost ranges from $50 billion to $200 billion annually)” (p. 111).

Furthermore, there is evidence within the HRD literature, which suggests that soft competencies are harder to develop through training, when compared to hard skills. Consequently, this incompetence of soft-skill transfer results in extremely costly waste of time, energy and money (Kupritz, 2002, p. 443).

Laker & Powell (2011) presented an overview, showing the typical differences between ‘soft’ skill training and ‘hard’ skill training.

Table 1. Typical Differences Between Hard- and Soft-Skill Training

Characteristic	*Hard-Skill Training*	*Soft-Skill Training*
Prior learning and experience	Less prior experience Less negative transfer	Greater prior experience Greater negative transfer
Trainee resistance to learning	Less trainee resistance	Greater trainee resistance
Organizational resistance to training	Less organizational resistance	Greater organizational resistance
Managerial support and resistance	Greater support and less resistance	Less support and greater resistance
Identification of training needs and objectives	More precise identification of training needs and objectives	Less precise identification of training needs and objectives
Immediacy and salience of feedback and consequences	More immediate and more salient on the job	Less immediate and less salient on the job
Similarity between training, work, and work environment	Greater similarity, less variety, narrower range of alternative situations	Less similarity, more variety, wider range of alternative situations
Level of proficiency (mastery) achieved in training	Greater degree of proficiency (mastery) achieved	Lesser degree of proficiency (mastery) achieved
Degree of self-efficacy achieved	Greater degree of self-efficacy achieved	Lesser degree of self-efficacy achieved
Scope of training responsibilities and methods of instruction	Hard-skill trainers and methods of instruction are frequently hard-skill specific	Soft-skill trainers and methods of instruction are frequently soft-skill specific

Figure 2: *Typical differences between Hard- and Soft skill training*

(Laker & Powel, 2011, p.114)

It can be seen, that compared to soft skill training, hard skill training consists of significantly less obstacles. Various circumstances cause soft skill training to be more challenging. Other researchers within the field were also concerned with the development potential of intrapersonal and interpersonal competencies and came to different conclusions.

Bailly & Lene (2012), interviewed French service-sector purchasing managers and concluded that the tendency of this study goes towards the opinion that intrapersonal and interpersonal competencies are not highly developable. The majority of the participants argued that these skills are embedded in a person's character traits and are therefore a part of a being an individual. One argument in this context was the fact, that competencies and taints are often possessed by other members of a family as well (Bailly & Léné, 2012, p. 86). As a participant concludes, "You can teach someone to calculate a margin, you can teach them the rules of

marketing or merchandising, but the fact of being cheerful, saying hello etc., OK, that can be taught but ultimately it's innate" (p 86).

Gillard (2009) states that various authors disagree with the claim that soft skills are teachable and on the contrary advocate that the skills are innate or genetic and can be regarded to as personality traits (Gillard, 2009, p. 725). A study conducted by Bergh et al. argues similarly, by suggesting that intrapersonal and interpersonal skills are a part of a person's character. Owing to the nature of some soft skills, they are sceptical as to whether soft skills could be acquired or taught (Bergh et al., 2006, p. 16).

To the contrary, other authors believe that acquiring soft skills is a matter of development and training. Williams & Conell suggest that relational skills are the product of learning and socialization processes (L. Williams & Connell, 2010, p. 352). Furthermore, the involvement of an individual are highly determined by the organisational context in which the workers operate (Klebe Treviño, Butterfield, & McCabe, 2001, p. 457). This means that the organisation also has a big influence on acquiring soft skills. Many studies, particularly in psychology, have shown that even attitudes can change over time (Fraley & Roberts, 2005, p. 64).

This presentation of current literature regarding soft skill development shows that there is no clear answer to the question whether intrapersonal and interpersonal competencies are indeed well developable. Nevertheless, the tendency goes towards the opinion that although it is more difficult to transfer soft skills, these skills can be developed.

Based on the research questions presented in the first chapter and the arguments discussed in this section, following hypothesizes are proposed:

H 1: Intrapersonal competencies, associated with success in PSM, can be developed.

H 2: Interpersonal competencies, associated with success in PSM, can be developed.

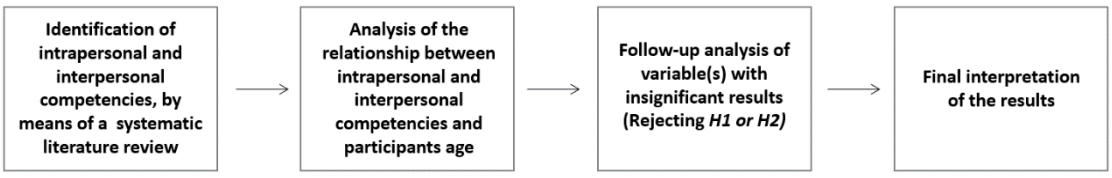
3. Research Methodology: Identifying intrapersonal and interpersonal competencies leading to success in PSM by means of a systematic literature review and analysing the development of these skills by conducting a linear regression analysis.

The aim of this research paper is to examine the development potential of the most important intrapersonal and interpersonal competencies, needed in the PSM profession. To achieve this goal, the research is divided into several methodological steps, which will be applied throughout the study.

According to Drisko (2005), it is crucial to apply the selected research methodology appropriately and fully in order to ensure the reliability and validity of the results (Drisko, 2005, p. 590). Opoku et al. (2016) consider appropriate research methodology to be one of the most important and difficult tasks of a research project. The choice of the appropriate research methodology usually depends on the type of research. However, "regardless of the method or methodology adopted for the study, the data collection techniques employed must be suitable and capable of meeting the objectives of the study" (p. 32).

This chapter presents all methodological steps applied in this paper in order to answer the research questions. The research process of this study consist of four steps, which are displayed, in the figure below.

Overview of the research procedure



The study starts with conducting a systematic literature review, in order to identify the most important intrapersonal and interpersonal competencies in the field of PSM. On that basis, the research continues by conducting a linear regression analysis, using the 'European Survey on Purchasing Competencies' dataset provided by the University of Twente. For a better understanding of the method application, this chapter covers all relevant steps in detail.

3.1 Data Collection

3.1.1 Systematic literature review on intrapersonal and interpersonal competencies, associated with success in PSM.

The first step of the methodological approach is the conduction of a systematic literature review. The goal is to get a serious understanding on intrapersonal and interpersonal competencies, which lead to success in the field of PSM. As Torres-Carrion et al. (2018) state, "a systematic review of the scientific literature in a specific area is important for identifying research questions, as well as for justifying future research in said area" (p. 1364). It provides a framework of information and is the foundation for further research. The process of this approach can be divided into three sup-categories: planning, conducting and reporting results (Torres-Carrion, González González, Aciar, & Rodriguez, 2018, p. 1364).

The figure below gives an overview of a systematic literature review procedure, applied in this research paper.

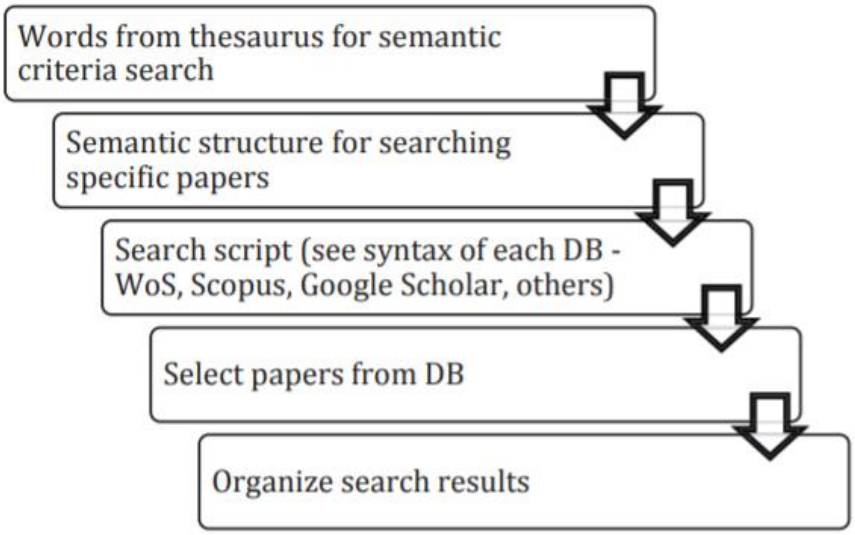


Figure 3: *Systematic Search Procedure (Torres et al., 2018, p. 1366)*

The literature provides a wide range of articles concerned with PSM competencies. In order to identify the most valuable and reliable literature, the search is limited to the database of Scopus and Web of Science. Only a few selected articles, which were not derived from these

search engines, were used for the competence identification process (Bals et al., 2019a; Perfect, 2017)

Keywords used for identification of relevant literature

(1)TITLE-ABS-KEY("purchasing skills" OR " supply chain skills OR "purchasing competence" OR "supply skill" OR "supply capability" OR "supply competence" OR "supply chain skill" OR "supply chain capability" OR "supply chain competence" OR "supply chain management skill" OR "supply chain management capability" OR "supply chain management competence" OR "purchasing professional" OR "supply professional" OR "purchasing manager" OR "supply chain manager " OR "supply manager" OR „procurement skill" OR "procurement capability" OR "procurement competence" OR "procurement professional" OR "procurement manager")

(2) TITLE-ABS-KEY("soft skills" OR "intrapersonal and interpersonal skills" OR "soft skill training" OR "supply management skills" OR "soft skills training methods" OR "potential of soft skill development" OR "supply chain soft skill" OR "interpersonal competencies in procurement" OR "intrapersonal competencies in procurement" OR "skill development" OR "managerial competencies development" OR "Leadership development " OR "communication competencies training" OR "soft skills required in supply management")

Scopus and Web of Science are the scientific search engines that provide the biggest quantities of reliable and peer-reviewed literature (Mongeon & Paul-Hus, 2015, p. 226). The search for the most valuable literature was modified by a combination of keywords on the topic of intrapersonal and interpersonal competencies required in PSM.

This literature review contains literature from the field of PSM. The identification of intrapersonal and interpersonal competencies, which are leading to success in procurement, is strictly limited to this domain. For further information regarding the competencies and for more insights on competence development, literature from the domains of Psychology, HRM, Management, Industrial Training and Organisational Behaviour, is used. This literature is not

directly concerned with PSM issues, but does still provide valuable and insightful information (Lau, 2010; Mol, 2003; Paglis Dwyer & G. Green, 2002).

For the selection of the most relevant articles, a systematic literature review approach is applied. The first step consists of selecting the most relevant articles, through an analysis of the titles and abstracts. The titles and abstracts are scanned by the researcher for the identification of relevant literature. Articles, which are not directly relevant to the research topic or to the field of procurement, are excluded from further analysis. After this step, the initial search of more than 1000 articles can be limited to 87 articles with direct relevance.

Subsequently, the articles are scanned by the researcher, in order to get a deeper insight into the contents. Articles, which do not seem to fit the framework of this research project, are excluded from further analysis. The final sample consists of 51 articles, which are directly linked to intrapersonal and interpersonal PSM competencies used in this paper. Other articles, dealing with general PSM issues, competency development and methodology purposes are not part of this sample, but rather follow a pragmatic literature review approach.

In the last step, the articles are coded, based on the field of the study and the topic covered. The final coding scheme, covering all relevant intrapersonal and interpersonal competencies required in the PSM profession, is shown in the table below. Only competencies, which are mentioned by relevant literature at least four times among the most important intrapersonal and interpersonal competencies for achieving success as a procurement professional, are used for further analysis.

Based on the systematic literature review, the variables are chosen from the '*European Survey on Purchasing Competencies'* dataset. All relevant information regarding this approach is discussed in the next section.

Table 1: *Final literature used for identifying most important intrapersonal and interpersonal competencies.*

Skill	Frequency	Sources
Intrapersonal competencies		
Holistic thinking	4	[1], [2], [32], [12]

Problem solving	6	[1], [4], [6], [7], [8], [9],
Result driven	7	[1], [4], [5], [6], [9], [41], [47]
Conscientiousness	5	[6], [10], [11], [12], [16]
Willingness to learn	4	[4], [13], [48], [49]
Proactivity	4	[1], [5], [13], [14], [48]
Inventiveness	5	[13],[14], [15], [16], [38]
Empathy	4	[1], [9], [17], [30]
Loyalty	4	[1], [7], [9], [17]
Honesty	5	[1], [5], [9], [17], [30]
Self-assurance	5	[5], [18], [19], [20], [30]
Willingness to take risks	5	[14], [18], [21], [22], [47]
Interpersonal competencies		
Communication	12	[1], [3], [4], [5], [6], [7], [14], [17], [27], [30], [38] [47],
Team ability	10	[1], [2], [5], [6], [7], [9], [14], [30], [41], [47]
Leadership	7	[4], [5], [7], [28], [29], [30], [47],
Training staff	6	[7], [22], [31], [38], [46], [47]
Building relations	7	[22], [30], [32], [33], [34], [35], [36],
Cross-cultural aware	6	[5], [9], [22], [31], [32], [37],
Persuasion	7	[4], [14], [30], [38], [46], [50], [51]

(1) (Lau,2010), (2) (Gammelgaard & Larson, 2001), (3) (Cacciolatti et al, 2017), (4) (Knight et al., 2014), (5) (P. D. Larson, 2009) (6) (Jordan & Bak, 2016), (7) (Tatham et al., 2017), (8) (Bak & Boulocher-Passet, 2013), (9) (Thai, 2012), (10) (Pulakos, Arad, Donovan, & Plamondon, 2000) (11) (R. A. Eltantawy, Giunipero, & Fox, 2009), (12) (Upton, 1995), (13) (Lumpkin & Dess, 2001), (14) (L. C. Giunipero, D. Denslow, & R. Eltantawy, 2005), (15) (Sinha, Millhiser, & He, 2016), (16) (Allal-Chérif & Maira, 2011a), (17) (Faes, Knight, & Matthyssens, 2001b), (18) (Axelrod, 2017), (19) (Paglis Dwyer & G. Green, 2002), (20) (Caetano et al., 2001), (21) (Murphy & Poist, 2006), (22) (Harvey & Richey, 2001), (23) (L. C. Giunipero & D. H. Pearcy, 2000), (24) (Lim, 2019), (25) (Elmuti, 2004), (26) (Iyer, 2005), (27) (Shou & Wang, 2015), (28) (Kouzes JM & Challenge, 2002), (29) (Mangan, 2005) (30) (L. C. Giunipero, R. B. Handfield, & R. Eltantawy, 2006), (31) (Rahman & Qing, 2014), (32) (Lydia Bals, Heike Schulze, Stephen Kelly, & Klaas Stek, 2019b) (33) (Teller, Kotzab, Grant, & Holweg, 2016), (34) (Lages et al., 2008), (35) (Fynes, De Burca, & Mangan, 2008), (36) (Giunipero & Flint, 2001), (37) (Youngdahl et al., 2010), (38) (Tassabehji & Moorhouse, 2008a), (39) (Andersen & Rask, 2003), (40) (Schiele, 2007b), (41) (Prajogo & Sohal, 2013) (42) (Mehra & Inman, 2004), (43) (Essex, Subramanian, & Gunasekaran, 2015), (44) (Parker & Anderson, 2002), (45) (Sartor, Orzes, Nassimbeni, Jia, & Lamming, 2015), (46) (Large & Giménez, 2006), (47) (Wu, Huang, Goh, & Hsieh, 2013), (48) (Bandyopadhyay, 2004) (49) (Wilson & Barbat, 2015), (50) (Andersen & Rask, 2003), (51) (Carr & Pearson, 2002)

3.1.2 Using the 'European Survey on Purchasing Competencies' dataset for the statistical analysis on intrapersonal and interpersonal competencies development over time.

As discussed earlier in this paper, now there is no clear standpoint regarding the real development potential of intrapersonal and interpersonal competencies (Bailly & Léné, 2012; Bergh et al., 2006; Fraley & Roberts, 2005; Gillard, 2009). While some authors claim that these skills can be trained and developed, others do not see much potential for development and claim that these competencies are diriment from one individual to the other, hence, these competencies generally not well developable. Based on the current situation, it is a valuable topic, which needs further consideration. Most of the studies covering this topic are based on qualitative research designs and there is no quantitative evidence regarding this issue to be found.

In order to provide an answer to the research questions, this study conducts a statistical analysis, applying the 'European Survey on Purchasing Competencies' dataset. The aim of this approach is to find out, if the intrapersonal and interpersonal competencies, which are covered in this paper, show a positive association concerning the participants age.

The dataset was created within the framework a European Union research project, which aims "is to develop an empirically validated European best practice curriculum for both a

bachelor's and a master's program in Purchasing and Supply Management (PSM) and in the next step to establish an international studying program at participating universities for higher education in PSM" (Perfect, 2017, p. 7). It is a collaboration project of various European universities, including the University of Twente.

The project consists of a self-evaluation survey of 581 PSM professionals from all over Europe, including operative, direct and indirect buyers, tactical and strategic buyers, purchasing engineers, innovation buyers, CPO's and contract managers (Perfect, 2017, p. 4).

The survey has three major objectives:

- To rank the professional focuses costs, quality, delivery, innovation and sustained competitive advantage.
- To evaluate the purchaser on 88 PSM related skills items (knowledge areas and competencies)
- To state the level of PSM success the participant self-assessed the achieved individual success in costs reductions, quality improvement, securing safe delivery, ensuring to have access to the innovations of the supplier, enforcing supplier satisfaction, and to achieve sustained competitive advantage (Perfect, 2017, p. 5).

For the purpose of this research project, the important part of the survey is the PSM related skills ranking. The researcher used nineteen skills, which are identified through the previously conducted systematic literature review. Each survey participant scored on a 5-point Likert scale ('low competence' to 'high competence'). The variables used in this study are displayed below.

Table 2: *Intrapersonal and interpersonal competencies chosen for analysis*

Variable Name	Label	Description
Intrapersonal competencies		
PS_20_HolisticThink_Comp	Holistic thinking	Understanding a system by se using large-scale patterns
PS_210_ProblemSolving_Comp	Problem solving	Ability to solve problems
PS_101_ResultDriven_Comp	Result driven	Result-oriented action taking

PS_201_Conscientious_Comp	Conscientiousness	Being trustworthy in professional life
PS_10_Will2Learn_Comp	Learning motivation	Being curious, motivation to learn continuously
PS_90_Proactivity_Comp	Proactivity	Being anticipatory, change-oriented and self-initiated behavior
PS_120_Inventivenes_Comp	Inventiveness	Being inventiveness
PS_190_Empathy_Comp	Empathy	Capacity to listen and understand
PS_50_Loyalty_Comp	Loyalty	Being trustworthy in professional life
PS_40_Honesty_Comp	Honesty	Being trustworthy in professional life
PS_70_SelfAssurance_Comp	Self-assurance	Being assertive and having self esteem
PS_110_Will2TakeRisks_Comp	Willingness to take risks	Willingness to take risks
Interpersonal competencies		
HR_111_CommunSkillComp	Communication	Having the skills and knowledge of how to communicate
HR_90_TeamAbilSkills_Comp	Team ability	The ability to work in a group of persons acting together as a team
HR_50_Leadership_Comp	Leadership	Managing employees in teams
HR_60_TrainPersonnel_Comp	Training staff	Improve the knowledge and skills of employees by training
PS_160_Networking_Comp	Building relations	Networking and relations management
HR_120_CrossCultAwar_Comp	Cross-cultural	The ability to become aware of cultural values, beliefs and

		perceptions of yourself and other cultures
PS_170_Persuasion_Comp	Persuasion	Having influential skills

In conclusion, the data collection process consists of two steps. The systematic literature review provides a theoretical foundation for further research. Through this procedure, the intrapersonal and interpersonal competencies, leading to success in PSM, are identified. Based on this approach, nineteen competencies, consisting of twelve intrapersonal- and seven interpersonal competencies are regarded as being the most important 'soft' competencies in PSM.

Furthermore, the current standpoint on training and development of these skills is discussed. It can be seen that there is still a debate within the literature on this topic. The 'European Survey on Purchasing Competencies' dataset provides quantitative data on the skill level of 581 PSM professionals. This dataset is used for the statistical analysis that aims to establish the relationship between the participants' level of intrapersonal and interpersonal competencies and the participants' age.

3.2 Statistical analysis of the nineteen most important intrapersonal and interpersonal PSM competencies.

Based on the systematic literature review, nineteen competencies are chosen from the 'European Survey on Purchasing Competencies' dataset for analysis. These nineteen competencies consist of twelve intrapersonal competencies and seven interpersonal competencies, which are listed in the previous section.

In the first stage of the analysis, the focus lays on the relationship between the participant's intrapersonal and interpersonal competencies and the participant's age. It is hypostatized in this paper, that intrapersonal and interpersonal competencies can be developed, although there is no entirely clear opinion on that topic (Bergh et al., 2006; Fraley & Roberts, 2005; Gillard, 2009). A positive relationship between a skill and age could therefore be seen as an indicator for the development potential of the analysed skill. In this case, the hypothesis can be confirmed.

To analyse the relationship between the participants' intrapersonal and interpersonal competencies and the participants' age, for each competence, a linear regression analysis is

conducted. A curve estimation line is added as a feature, in order to receive a visual representation of the results.

In his book, Huizingh (2007) states that simple linear regression analysis provides information about the relationship between two variables. The analysis shows both, the strength of the relation and its direction (positive or negative) (Huizingh, 2007, p. 291). As described by Samuels & Gilchrist (2014), simple linear regression estimates the coefficients b0 and b1 of a linear model which predicts the value of a single dependent variable (y) against a single independent variable (x) in the form: y = b0 + b1x (Samuels & Gilchrist, 2014, p. 1). In the context of this study, the dependent variable is 'Age'. The independent variable is the competence of interest.

Consequently, the estimation model for this study is: *Intrapersonal/Interpersonal competence = b0 + (b1 x Age)*

Twomey & Kroll (2008) state that "linear regression methods try to determine the best linear relationship between data points while correlation coefficients assess the association" (p.529). The method can be therefore used in order to see patterns and relationships between variables.

Based on that information, linear regression analysis is the appropriate method for answering the research questions. The study aims to examine the relationship between intrapersonal and interpersonal competencies (independent variables) and Age (dependent variable) for that intent, linear regression analysis is a valid and reliable method.

The type of the linear regression technique used in this study is the parametric method: ordinary linear regression (OLR). The Cronbach's alpha chosen is a=0.05. According to Dahiru (2008), it is the most commonly significance level used in science (Dahiru, 2008, p. 21). Cronbach's alpha is a statistic commonly quoted by authors to demonstrate that tests and scales that have been constructed or adopted for research projects are fit for purpose. Cronbach's alpha is regularly adopted in studies in science education, usually as a measure of reliability (Taber, 2017, p. 1).

The analysis is conducted with SPSS. For each competence, the method chosen in SPSS is *Analyse - Regression - Curve Estimation.* The results of the analysis are displayed and interpreted in the research results section. The results show a coefficient table, including

estimates for Unstandardized Coefficients, Standardized Coefficients, *T*-value and Significance Level. Furthermore, a Curve Estimation graph is shown.

In the second step of the analysis, variable(s) with insignificant results are further analysed and investigated. Insignificant results do not confirm the proposed hypothesis, which means that no significant development of a competence over time can be observed. In that case, further investigation is required. In order to find out which other intrapersonal and interpersonal competencies have the strongest effect on the insignificant variable(s), several statistical methods are applied. First, a dummy variable of the insignificant competence will be created. The first group consists of study population with 'Competence < 3.5' and the second group consists of study population with 'Competence > 3.5)

Secondly, a multiple regression analysis is conducted. The results will be displayed in form of a structural equation modelling. As Stein et al. (2012) describe, "Structural equation modelling (SEM) is a multivariate statistical method that involves the estimation of parameters for a system of simultaneous equations. SEM is a generalized framework that includes regression analysis, pathway analysis, factor analysis […] to name a few" (p. 495). The SEM displays all significant relationships and its significance levels.

Further analyses elaborate the relationship of the participants' competence while taking into account the participants'- sector, education level and professional focus. The goal is to find patterns and relationships between the insignificant competencies and other competencies and factors.

3.2.1 Checking the assumptions for a linear regression analysis and examining the validity and reliability as well as the limitations of the research methodology.

There are certain assumptions, which need to be considered during a linear regression analysis. Generally, the uncertainty and/or error in the regression estimates increases when the data is not evenly distributed, the number of data points is low, the samples are not independent and then the relationship between the data is not linear (Twomey & Kroll, 2008, p. 530).

The dataset used for this study consists of a survey with 581 respondents; hence, there is a big number of data points. The samples are independent; the results were collected independently from each other by means of an online survey. The competencies ranking allowed the participants to rank their competencies level with a value between one and five.

Consequently, there are no unexceptional and extreme data points that need to be considered in the assumption checking process.

Another important issue is the validity and reliability of the research. According to Heale & Twycross (2015), "validity is defined as the extent to which a concept is accurately measured in a quantitative study" (p. 66). As the authors illustrate, a study designed to explore one concept (ex. Depression) is not considered as being valid, when it actually measures another concept or variable (ex. Anxiety). Following this arguments, the study conducted in this paper can be regarded to as being valid. The paper aims to examine the intrapersonal and interpersonal competencies development over time and exactly that is measured via the linear regression analysis.

The second measure of quality in quantitative study is reliability, or the accuracy of an instrument. In other words, reliability is the extent to which a research instrument consistently has the same results if it is used in the same situation on repeated occasions (Heale & Twycross, 2015, p. 66). Reliability relates to the consistency of a measure. A participant completing an instrument meant to measure a variable that should have approximately the same responses each time the test is completed. Because the dataset used for the study was constructed based on a self-evaluation survey, the reliability of the results should be taken under consideration. While self-evaluation questionnaires have some advantages, they also have certain limitations. Self-evaluation questionnaires have the advantage a quick sample collection, high generalization rate (due to the random data collection) and accurate evaluations (the respondents are close to the issue) (Demetriou, Özer, & Essau, 2015, p. 1)

Nevertheless, a few limitations should be considered. The main disadvantage of self-report questionnaires is so-called 'response bias' which includes the possibility of invalid answers. While responding to the items, respondents may not answer truthfully or to respond in a certain tendency, regardless of the question. Another problem in using self-report questionnaires might be the clarity of the items, which brings the risk of obtaining different interpretations of questions (Demetriou et al., 2015, p. 1)

The possibility to provide incorrect answers cannot be fully excluded. However, because the survey was not conducted under a certain social framework and that there was no reason to assume incorrect answers.

The problem regarding the clarity of the questionnaire of the items is not considered as being problematic, due to the fact, that each question included a description of the competence.

The variables chosen for analysis, including the descriptions used in the survey can be seen in Table 2.

In order to increase the validity and reliability of a study, transferability of the research is an important issue. Literature suggests that transferability is related to the extent to which the findings of the study can be generalized to a different context (Drisko, 1997, p. 189; Shenton, 2004, p. 69). Polit & Beck (2010) describe transferability of the research as a 'collaborative enterprise' and argue, "The researcher's job is to provide detailed descriptions that allow readers to make inferences about extrapolating the findings to other settings" (p. 1453). The consumers on the other hand, have to evaluate to which extent they can apply their findings to new situations. Hence, the readers are the actual instance, which transfers the results. The researcher accomplishes the job by providing all necessary information regarding the background of the study, the limitations of the research procedure and dataset and the actual statistical analysis.

One reason that may indicate a high transferability of the research is the study design. This research aims to examine the relationship between the participant's intrapersonal and interpersonal competencies and the participant's age. The data for this procedure is based on a self-evaluation survey conducted in the field of PSM. There is no reason to assume that professionals from other domains experience a different relationship between these variables. However, readers and consumers have to decide by themselves to what degree this study is transferable to other domains.

Another issue that needs to be taken under consideration in the context reliability and validity of this study is the fact, that this not a panel study. As Park, H.M. (2011) states, "panel data are also called longitudinal data or cross-sectional time-series data. These longitudinal data have observations on the same units in several different time periods A panel data set has multiple entities, each of which has repeated measurements at different time periods" (p.1). There is widespread consensus that panel data and the methodological advantages they provide are essential for rigorously addressing the types of questions that drive and are central to life-course-oriented educational research (Halaby, 2004, p. 503). A panel study provides several measurement points and provides therefore the most reliable results. However, due to the fact that it is a longitudinal process and the data collection usually takes several years, this method is not appropriate for this research project (Hans-Peter, Schneider, & Doll, 2009, p. 21).

This paper on the other hand applies a cross-selection study. According to Levin (2006), cross-sectional studies are carried out at one time. They are usually conducted to estimate the

prevalence of the outcome of interest for a given population. Furthermore, data can also be collected on individual characteristics In this way cross-sectional studies provide a ‘snapshot’ of the outcome and the characteristics associated with it, at a specific point in time (Levin, 2006, p. 24). In a cross-selection study, there is just one measurement point. In the context of this study, the limitation of this method have to be taken under consideration.

4.0 Research findings: A significant development of intrapersonal and interpersonal competencies over time and 'willingness to learn' as the key competence for success.

In this paper, it is hypothesized that there is a development of in intrapersonal and interpersonal competencies over time. If this can be confirmed, it may an indication for the development potential of a competence. This chapter presents the findings, carried out with respect to the methodological steps discussed in the previous section.

4.1 Linear regression results show significant increase of intrapersonal and interpersonal competencies over time.

This section covers the results of the linear regression analysis on intrapersonal and interpersonal competencies development over time. It can be seen, that among all variables from both categories, 'willingness to learn' is the only variable with insignificant results. This goes along with the hypotheses proposed in this paper.

Before examining the results in more details, some general conditions have to be discussed. First, all analysed variables have a positive beta, meaning that no competence is actually decreasing with rising age. This makes sense from the logical perspective, because competencies usually do not decrease, but rather increase, with higher age. For that reason, decreasing competencies would have been a rather surprising finding.

Furthermore, the results show relatively small betas as well as small R^2 values. These values are displayed in Table 3.

Table 3: *Regression analysis – Beta and R^2 results*

Competence	Beta	R^2
Intrapersonal competencies		
Holistic thinking	0.013	0.024
Problem solving	0.012	0.031
Result driven	0.009	0.018
Conscientiousness	0.012	0.037
Willingness to learn	0.004	0.003
Proactivity	0.013	0.035
Inventiveness	0.019	0.058

Empathy	0.009	0.015
Loyalty	0.010	0.027
Honesty	0.010	0.029
Self-assurance	0.011	0.028
Willingness to take risks	0.017	0.047
Interpersonal competencies		
Communication	0.013	0.034
Team ability	0.015	0.043
Leadership	0.034	0.115
Training staff	0.039	0.135
Building relations	0.012	0.023
Cross-cultural aware	6	0.025
Persuasion	0.014	0.044

To explain this a closer look into the data is required. The small beta values can be explained by considering the diagram design. The competencies (y-axis) are presented on a 5-point Likert scale and range between one ('low competence') and five ('high competence'), however, with very little exceptions, the measurement values range between two and five. In practice, this leads to a range of four possible values. In contrast to this, the x-axis measurement values of the participant's age, range between twenty years old and eighty years old, which consequently leads to a range or of sixty measurement values. As a result, a change in the y-axis (Age) causes a very little change in the x-axis (Competence) and therefore leads to a small slope.

Another issue that can be observed are little R^2 values. According to Reisinger (1997), the larger the sample size, the lower is R^2. Because of statistical properties, models based on a larger sample size usually give better (in the statistical sense of more exact) parameter estimates than models with a smaller sample size. Consequently, the targets of achieving (a) the most precise estimation result, and (b) the highest possible proportion of explained variance, are competing with each other (Reisinger, 1997, p. 9). In addition, in social sciences, low R^2 values in regression equations are common, especially in cross sectional studies. Thomason (2019) further claims, at it is worth emphasizing that a seemingly low R^2 does not necessarily mean

that the results of the regression analysis are useless. Especially students tend to put too much weight on the size of R^2 (Thomason, 2019, p. 44).

These arguments demonstrate that the results of the study have to be interpreted in relation to the study design. Small slope- an R^2 values have to be interpreted correctly in order to receive valuable findings. The following section provides all valuable outcomes of the linear regression analysis.

4.1.1 'Willingness to Learn' the only variable with insignificant results

The linear regression results for the analysis of intrapersonal competencies show a clear tendency towards the increase of a competence over time. The results of analysis show that 38.3 percent of the population is found to be in the category 'not willing to learn' (N= 216), while 61.7 percent are found to be in the category 'willing to learn' (N= 348). All variables have a positive relationship, which means that the competencies developments have a positive direction. The only variable with insignificant results is 'willingness to learn' (0.004). Although there is a slight positive slope direction, the results are too small to confirm the hypothesis. In the context of this paper, this means that no significant development of the competence 'willingness to learn' can be observed, when considering the rising age of the survey participants.

The intercepts for intrapersonal competencies range between 2.359 and 3.449. This has no big influence on the interpretation of the results but provides a better estimation of the results. Furthermore, most of the measurement values range between three and four, meaning that most of the participants rank their competencies level around these two numbers.

Except for the variable 'willingness to learn', all variables have a very strong significance level. Besides 'empathy' that has a significance level of 0.003, all remaining variables have a significance level of 0.000. This indicates, that there is a significant change of intrapersonal competencies with rising age and that these observations did most likely not occur by coincidence. Among all intrapersonal competencies, 'inventiveness' (0.019) and 'willingness to take risks' (0.017) have the largest beta values, which means that the biggest change can be observed among these two competencies. All other competencies, except of 'willingness to learn', have slopes with a range between 0.090 and 0.013.

The linear regression analysis for intrapersonal competencies indicates that there is an these competencies levels with rising age of the survey participants. This can be interpreted as

a first identification of the development potential of these competencies, however, the limitations discussed in the previous chapter, have to be taken into consideration for a meaningful interpretation of the results. Nevertheless, the strong significance levels indicate that there is a real development of intrapersonal competencies.

4.1.2 A significant increase of all interpersonal competencies.

Similarly, to the linear regression analysis on intrapersonal competencies, the analysis of interpersonal competencies also shows a significant increase of the competencies with rising age of the survey participants. While the intrapersonal competencies analysis included one insignificant variable (Willingness to learn), all interpersonal competencies have significant results.

The intercepts for interpersonal competencies range between 2.359 and 3.449, similarly to the intrapersonal competencies analysis, it has no big influence on the interpretation of the results. Also similarly to the intrapersonal competencies analysis, most of the measurement values range between three and four, with very little counts on values one and five.

As already mentioned, all interpersonal competencies have significant results. All competencies reach a significance level of 0.000, which is considered as very strong evidence. In contrast to the intrapersonal competencies analysis, two variables of the interpersonal competencies analysis indicate a much stronger development, compared to the remaining variables. These competencies are ‘leadership’ and ‘training staff’. While ‘leadership’ has a beta of 0.034, ‘training staff’ has a beta of 0.039. Compared to all other competencies from both categories, these values are relatively high. This fact may seem to have circumstantial reasons, especially when considering the usual social framework, where older people are regarded to as more credible and as better leaders, when compared to younger people. However, within the literature, there is evidence for both cases, meaning that higher age does not necessarily lead to better leadership and training competencies.

***Table 4**: Regression analysis results for intrapersonal competencies*

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
PSa_20_HolisticThink_C	,013	,003	,156	3,738	,000
PS_210_ProblemSolving_C	,012	,003	,176	4,236	,000
PS_101_ResultDriven_C	,009	,003	,136	3,248	,001
PS_201_Conscientious_C	,012	,003	,194	4,678	,000
PS_10_Will2Learn_C	,004	,003	,059	1,403	,161
PS_90_Proactivity_C	,013	,003	0,188	4.532	,000
PS_120_Inventivenes_C	,019	,003	,240	5,858	,000
PS_190_Empathy_C	,009	,003	,124	2,955	,003
PS_50_Loyalty_C	,010	,002	,164	3,953	,000
PS_40_Honesty_C	,010	,022	,171	4,123	,000
PS_70_SelfAssurance_C	,011	,003	,167	4,018	,000
PS_110_Will2TakeRisks_C	,017	,003	,217	5,279	,000

While some authors recognize a positive relationship between these variables, others cannot indicate such a relationship. Research confirms a positive relationship between these variables (Gilbert, Collins, & Brenner, 1990, p. 192; Zacher, Rosing, & Frese, 2011, p. 49).

Oshagbemi (2004) on the other hand claims that “today’s flatter organisations give greater interaction between younger and older workers and the practice of leadership is no longer an exclusive domain of the older people, as it used to be” (p. 14). According to Borregitter’s (2015) study, there is no significant link between leaders’ age and leadership outcomes. Therefore, the author concludes that older leaders do not deviate from younger leaders in achieving effective leadership. Furthermore, the significant negative relationship in the current study between leaders’ negative affect and transformational leadership behaviour (Boerrigter, 2015, p. 11). This study does confirm a significant positive relationship between ‘Leadership’- and ‘Training staff’ competencies and the variable ‘age’. Therefore, these results can be regarded as a valuable contribution to the current discussion on this topic.

Besides the variables ‘leadership’ and ‘training staff’, all remaining competencies have a slope in the range of 0.012 and 0.016. Compared to the slopes of the intrapersonal

competencies, which range between 0.090 and 0.013, interpersonal competencies seem to have a stronger development potential.

The linear regression analysis for intrapersonal competencies indicates that there is a significant increase of these competencies, when considering the dependent variable ‘age’. All competencies have significant results and especially ‘Leadership’ and ‘Training staff’ seems to have the strongest effects. This leaves room for interpretation, since the increase might be attributed either to a higher development potential of these competencies or to the argument that older people may by nature have more credibility and consequently score higher on these competencies. Likewise, to the intrapersonal competencies results, the limitations of the study discussed in the methodology chapter have to be taken into consideration when interpreting the results.

Table 5: *Regression analysis results for intrapersonal competencies.*

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
HR_111_CommunSkillC	,013	,003	,185	4,457	,000
HR_90_TeamAbilSkills_C	,015	,003	,207	5,009	,000
HR_50_Leadership_C	,034	,004	,339	8,542	,000
HR_60_TrainPersonnel_C	,039	,004	,367	9,352	,000
PS_160_Networking_C	,012	,003	,150	3,606	,000
HR_120_CrossCultAwar_C	,014	,004	,159	3,815	,000
PS_170_Persuasion_C	,016	,003	,029	5,074	,000

4.2 Identifying significant relationships between the 'Willingness to learn' competence and other PSM related variables.

Out of all analysed competencies, 'willingness to learn' was the only variable with insignificant results. With a significance level of p=0.161, the results fail to confirm the hypothesis. Consequently, the researcher conducts further analyses on this variable, in order to understand its overall impact on PSM competencies.

For this purpose, a new variable, 'Willingness to learn >3.5', is created. This variable includes all participants with a 'Willingness to learn' competence of at least 3.5. This approach creates two separate groups, with n=216 for the first (Willingness to learn < 3.50) and n=348 for the second group (Willingness to learn > 3.50). Based on this groups further analyses are conducted. The first analysis is concerned with the relationship between the variable 'Willingness to learn > 3.5) and all other PSM competencies. For identifying significant differences between these two groups, an independent *T*-test and an ANOVA is conducted. The results show that participants with a higher 'willingness to learn competence' score higher on many of the technical competencies. Furthermore, all intrapersonal and interpersonal competencies have significantly higher results in Group 2 (Willingness to learn > 3.5). Apparently, participants with higher 'Willingness to learn' competencies are generally more competent on a 'soft' skills level.

The second analysis shows no significant differences between the groups, when considering the participants' sector (p=0.189). 'Willingness to learn' competencies of a PSM professional seem not to be sector related. Likewise, there is also no significant relationship between the participants gender (p=0.394), nationality (p= 0.409*)* and the country in which the participant is employed (p= 0.427). The results do not indicate any relationship in that direction, 'willingness to learn' seems not to affected by any of these factors.

On the other hand, participants' educational level has an effect on the 'Willingness to learn' competence (0.027). The results suggest that participants with a higher educational level also have a higher 'Willingness to learn' competence. This is also widely supported by the literature. Various authors indicated a relationship between these factors (Gorges, Schwinger, & Kandler, 2013, p. 764; Hejazi, 2011, p. 840). In addition, the working level of the study participant has an effect on 'willingness to learn' competencies. Study population with higher 'willingness to learn' competencies also had a higher working level within the organization.

On the basis of these results, it can be argued that people with naturally higher 'willingness to learn' competencies are more likely to achieve higher education- and working

levels in the future. However, participants' gender, nationality, sector and country in which the participant is employed show no indication for differences in the 'willingness to learn' competence of the participant.

Furthermore, the analysis shows the relationship between participants' 'Willingness to learn' competencies and participants' professional focus. The significant professional focusses identified are 'Supplier involvement', 'Quality improvement', 'Sustainability' and 'Innovation' score significantly higher in Group 2 (Willingness to learn > 3.5). In context, participants who's professional focus is to achieve one of these objectives are found to have higher 'Willingness to learn' competencies. Table 3 summarizes the main findings of the independent t-test.

Table 6 - Independent Samples Test; a comparison of the participants that are willing to learn and not willing to learn

	t-test Sig. (1-tailed)	Cohens *d*
Due to my actions, we improved the supply delivery process.	.276	0.052
Due to my actions, we achieved higher than average cost reductions.	.055	0.139
Due to my actions, we achieved a higher than average level of sustainability.	**.043**	**0.149**
Due to my actions, we identified more ideas that are useful with suppliers than the benchmark.	**.017**	**0.183**
Due to my actions, we achieved a higher than average level of quality.	**.016**	**0.186**
Due to my actions, we achieved more product and process improvements than average.	**.002**	**0.246**
Due to my actions, product and process improvements have been implemented.	**.000**	**0.323**
Country in which the participants is employed	.427	0.016
Nationality of the participant	.409	0.020
Gender of the participant	.394	0.023
Sector in which the participants is employed	.186	0.077
Working level of the participant	**.044**	**0.148**
Educational level of the participant	**.027**	**0.167**

To summarize the results of the independent *t*-test, participants who are (not) willing to learn are found in different countries and sectors, amongst different nationalities and the genders. Moreover, both are found to have success in improving supply delivery process and in reducing costs. However, participants that are willing to learn are performing at higher working levels and have higher educational levels, which is not surprising. The ones that are willing to learn have significantly more success in improving the durable, sustainable (CSR) and the overall quality of the supplies. The larger effect sizes are found in innovation sourcing related activities: identifying useful ideas with suppliers, achieving and implementing more product and process improvements.

As already mention in this paper, 'willingnes to learn' had insignificant results in the initial regression analysis. Hence, it is assumed that it is an unchangeable character trait. In that context, the importance of identifying PSM professionals who are willing to learn, arises. One

method of identifying such a population is through finding intrapersonal and interpersonal competencies, which are statistically associated with higher 'willingness to learn' competencies.

For this purpose, two multiple linear regression analyses are conducted. One analysis is concerned with the effects of intrapersonal competencies and the other is concerned with the effects of interpersonal competencies. The effect sizes and significance levels for each competence are displayed in brackets.

The first analysis identifies four intrapersonal competencies with a positive effect on the 'willingness to learn' variable. The variables 'holistic thinking' (0.286***), 'result oriented action taking' (0.147***), 'inventiveness' (0.093*) and 'loyalty' (0.171***) have a positive effect on the 'Willingness to learn competence. In contrast, the variable 'ability to solve problems' indicates a negative effect (-0.121**) on the 'willingness to learn' competence.

The second analysis identifies five interpersonal competencies with a positive effect on the 'willingness to learn' variable. The variables 'communication' (0,126***), 'team member skills' (0,235***), 'training staff' (0,135***), 'cross-cultural awareness' (0,198***) and 'persuasion' (0,126**) have a positive effect on the 'Willingness to learn' competence. In contrast, the variable 'leadership' indicates a negative effect (-0.174***) on the 'Willingness to learn' competence. The structural equation models for each multiple regression analysis are presented below.

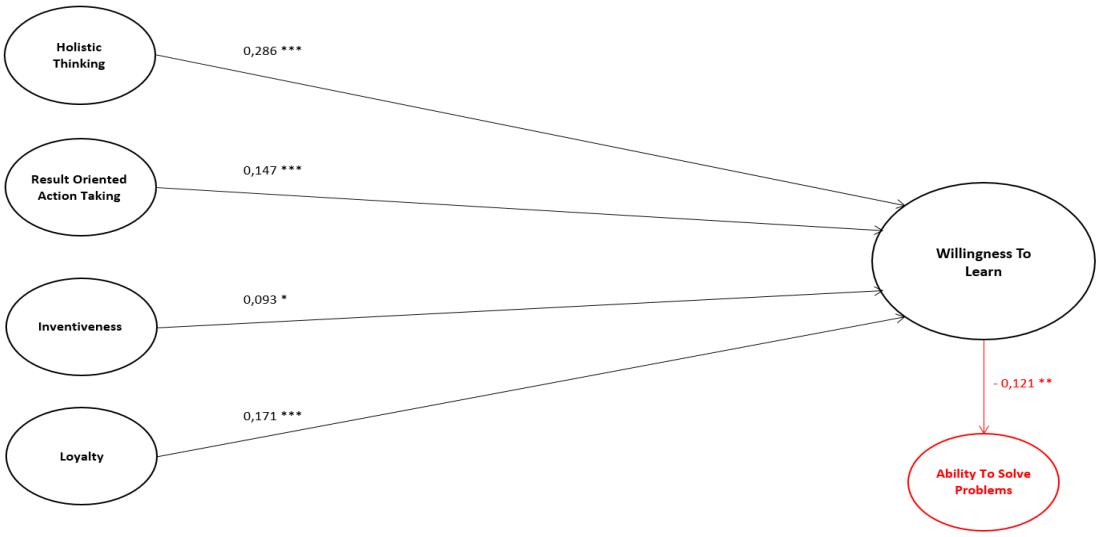


Figure 4: *Effects of intrapersonal competencies level on 'Willingness to learn'.*

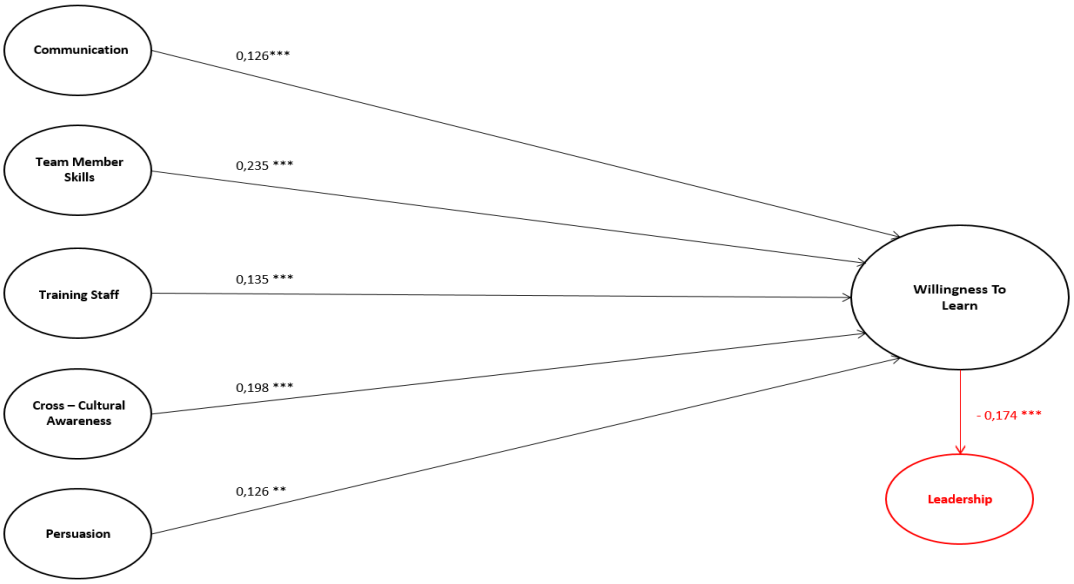


Figure 5: *Effects of interpersonal competencies level on 'Willingness to learn'.*

5.0 Discussion, implications, limitations, recommendations for future research and conclusion

5.1 Discussion section

The PSM profession evolves rapidly and with it the role of the purchaser. Recent research suggests that intrapersonal and interpersonal competencies are becoming the future key to success in procurement (Bals et al., 2019a; von der Gracht et al., 2016). Feisel et al. (2011) supposed that intrapersonal and interpersonal competencies of PSM personnel are not easily developed, which may result in serious human resource complications for the PSM function in organisations (Feisel et al., 2011, p. 54). Besides, little is known about the development potential of these skills. While some authors suggest that these competencies can be developed, others do not agree and claim the skill set is mainly individual-dependent (Bailly & Léné, 2012; Bergh et al., 2006). Furthermore, current training and development methods achieve inefficient results, especially because no differentiation between the skills is made (Laker & Powell, 2011, p. 116). The goal of this study was to investigate the development potential of intrapersonal and interpersonal competencies, leading to success in PSM.

In order to answer the research question, this study followed a specified, elaborated methodological design. First, a systematic literature review on the most important intrapersonal and interpersonal PSM competencies was applied. The goal of this method was to identify the most important competencies in procurement. The set identified in the systematic literature review contains nineteen competencies, consisting of twelve intrapersonal and seven interpersonal skills. These competencies are considered particularly important in the field of procurement.

Second, for this study a PSM competency survey was held amongst European PSM professionals (n=581), ranking their intrapersonal and interpersonal competencies levels. Based on the previously conducted systematic literature review, variables from the dataset were chosen.

Third, regression analyses of the nineteen different competencies on the age of participant were performed, in order to reveal the possible development with an increased age. As hypothesized, all skills develop with increasing ages. However this is not the case for the competency ‘willingness to learn’, which skill showed an insignificant beta. Therefore, we assume that the willingness to learn is an innate character trait, which seems to divide the

population is one part willing and another part not willing to learn. Our study is aimed on identifying both groups.

The first analysis showed that the relationship between the level of competence and age is stronger for interpersonal competencies. Apparently, interpersonal competencies are more likely to be developed, compared to intrapersonal competencies. Among all intrapersonal competencies, inventiveness and willingness to take risks had the strongest relationship with age.

'Leadership' and 'Training staff' had the strongest relationship in relation to all remaining skills. The observed relationship is three times stronger than the average of all other intrapersonal and interpersonal skills. This clearly indicates a particularly strong relationship. This may seem like a very reasonable finding, due to the fact that older people are associated these competencies. However, within the literature, there is evidence that this may not be necessarily the case. While some authors recognize a positive relationship between these variables, others cannot indicate such a relationship and even see an inverted relationship. A study conducted by Zacher (2011), confirm a positive relationship between these variables (Zacher et al., 2011, p. 49). Other authors cannot identify a positive relationship between these variables and claim that in today's flatter organisations give greater interaction between younger and older workers and the practice of leadership is no longer an exclusive domain of the older people, as it used to be (Boerrigter, 2015; Oshagbemi & Gill, 2004, p. 98). A young leader who is driven by the motivation to advance his or her own career might engage more in task-oriented leadership behaviours than an older leader who is motivated by generativity concerns and thus utilizes relationship-oriented leadership behaviors (Rosing & Jungmann, 2015, p. 7).

This study does confirm a significant positive relationship between these variables and provides valuable contribution to the current discussion. PSM professionals with a higher age seem to be especially suited for leadership and training positions. The analysis identifies a strong relationship between these variables; consequently, organisations should consider the age factor when assigning such positions.

The hypothesis of this study suggests that intrapersonal and interpersonal competencies are increasing with rising age of the participants; hence, the insignificant results for the variable 'Willingness to learn' provide valuable findings. Based on the results, it is assumed that willingness to learn is an innate character trait, which seems to divide the population is one part willing and another part not willing to learn. Our study is aimed on identifying both groups.

For that reason, independent T-Test, ANOVA and multiple regression analysis was conducted. In the first step, the relationship between ‘Willingness to learn’ and other PSM related competencies is examined, by means of an independent T-test and an ANOVA. The results identify competencies, which are significantly higher for willing to learn study participants.

The results show that various technical PSM competencies are higher for participants who are willing to learn. Besides the technical competencies, all intrapersonal and interpersonal competencies are significantly higher in the willing to learn category. This indicates that participants with higher ‘soft’ skills have a higher ‘Willingness to learn’ competence.

No relationship could be established between the variable ‘willingness to learn’ and sector. This finding is expected, since so far, no relationship between willingness to learn and operating sector was established by the literature. However, the ‘Willingness to learn’ competence is significantly higher for participants with a higher educational level. A higher education apparently is an indicator for the level of willingness to learn competencies. This conclusion is also supported by the literature, where it is suggested that competence is positively associated with the educational level of the study participants (Gorges et al., 2013, p. 840; Hejazi, 2011, p. 766).

The following analysis studied the relationship between participants’ ‘willingness to learn’ competencies and participants’ professional focus. In conclusion, three significant relationships were identified. Participants with a professional focus in ‘Quality standards’, ‘Sustainability’ and ‘Innovation’ have significantly higher willingness to learn competencies.

In the final analysis, a multiple regression analysis was conducted. The goal was to estimate which intrapersonal and interpersonal competencies have significant effects on the willingness to learn competence. Out of all intrapersonal competencies, ‘holistic Thinking’, ‘result oriented action taking’, ‘inventiveness’, and ‘loyalty’ have a significant positive effect on the ‘willingness to learn’ competence. The results suggest that PSM professionals with higher levels of these skills are more likely to have strong willingness to learn competencies. In contrast, ability to solve problems shows negative effect on the willingness to learn competence, which may indicate a negative relationship.

The second analysis identified interpersonal competencies with a positive effect on Willingness to learn. ‘Communication’, ‘team member skills’, ‘training staff’,’ cross-cultural awareness’ and ‘persuasion’ have a positive effect on the ‘willingness to learn’ competence. These competencies seem to affect positively the willingness to learn of the study participants.

Taking all results into consideration, a profile of a PSM professional with strong ‘willingness to learn’ competencies can be made. The analysis shows that around 40 percent of the study population is found to be ‘not willing to learn’ while 60 percent of the study population are found to be ‘willing to learn’. In practice, this means that identifying these two groups is immensely important. As the results revealed, most of the PSM competencies, including all intrapersonal and interpersonal skills, are higher in professionals with strong ‘Willingness to learn’ competencies. In this context, this competence can be regarded as a key competence for success in the field of PSM.

The results show that a PSM professional who is willing to learn is more likely to have a better education. Furthermore, study participants with strong ‘willingness to learn’ competencies more likely have a professional focus in ‘Process optimization’, Sustainability’, ’Supplier involvement’ and ‘Innovation’. Furthermore, nine intrapersonal and interpersonal competencies were found to have a positive effect on the ‘willingness to learn’ competence.

To summarize, the hypotheses stated at the beginning of this paper can be confirmed. Except, ‘willingness to learn’ all competencies seem to have a significant development potential. This leads to the conclusion:

H 1: With the exception of ‘willingness to learn’ all intrapersonal competencies, associated with success in PSM, can be developed.

H 2 : All interpersonal competencies, associated with success in PSM, can be developed.

5.2 Managerial implications and contributions to the PSM literature.

This study provides valuable findings to both, organisations and PSM relevant literature. Starting with managerial implications, the study results in three main findings.

Firstly, the study confirms the development potential of intrapersonal and interpersonal competencies. For gaining new expertise, companies often have to decide between training employees or recruiting new staff (Feisel et al., 2011, p. 55). The results of the study show that intrapersonal and interpersonal competencies can be developed; consequently, training these competencies can be an effective approach to organisations.

Secondly, the results showed a very strong relationship between the variables ‘Leadership’ and ‘Training staff’ and the variable ‘Age’. This can seem reasonable, since older

people are associated with better leadership and training skills. However, recent studies cannot indicate a positive relationship and claim that these skills can be equally effective among young and old professionals. This study found that ‘Leadership’ and ‘Training staff’ do have an exceptionally strong relationship with a rising age of the participants. Because the findings had by far the strongest relationships, compared to all remaining intrapersonal and interpersonal competencies, we assume that these skills are very age-dependent. Consequently, organisations are advised to consider these facts when assigning related positions.

Thirdly, since ‘Willingness to learn’ had no significant results, we assume that this competence is an innate character trait, which seems to divide the population is one part willing and another part not willing to learn. However, with ANOVA, the importance of this competence is shown. Next to many technical PSM competencies, all intrapersonal and interpersonal competencies are significantly higher for professionals who are willing to learn. Consequently, it is important to make a distinction between these two groups of professionals. According to our analysis, participants who are willing to learn are better educated and work in the field of process optimization, sustainability and innovation. Furthermore, nine intrapersonal and interpersonal competencies have a positive effect on the ‘Willingness to learn’ competence. These findings create a profile of a PSM professional with strong ‘willingness to learn’ competence. Due to the immense importance of this competence, we advise supply management organisations to use these criteria for evaluating current and future employees.

This research paper has several contributions to current PSM competencies literature. The systematic literature review provides an overview of the most important intrapersonal and interpersonal competencies in PSM. From over eight hundred articles on the topic of PSM competencies, fifty-one most-relevant articles were included in the final analysis. Based on the systematic literature review, nineteen competencies, consisting of twelve intrapersonal and seven interpersonal competencies were identified as the most importance ‘soft’ competencies in PSM. This can be used by future researchers who are examining this topic.

This research confirms the hypothesized development potential of intrapersonal and interpersonal competencies. Within the literature, several authors claim that these competencies cannot truly be developed and strongly vary from an individual to another. Although this might be partly true, this paper found significant developments of intrapersonal and interpersonal competencies.

The study also showed that leadership and training staff competencies are age-dependent, however, current literature does also suggest the opposite. Various authors found do not

consider these variables dependent. Consequently, this research adds valuable information to this issue, confirming a strong relationship between these factors.

So far, no known study examining the relationship between a person's willingness to learn and other PSM related competencies exists within PSM literature. This study provides a profile for a 'willing to learn' PSM professional and can be elaborated in further studies.

5.3 Limitations of the research and recommendations for future research

As in every other research, this study also bears limitations. First, the results are based on a cross-sectional study. This analysis uses just one measurement point for every individual, making it impossible to measure the competencies development for each study participant one by another. For this purpose, a panel study would be the ideal research method; however, the data collection process would clearly go beyond the scope of this study because it usually takes several years.

For the analysis, this paper uses the data from a self-evaluation survey. There are some concerns regarding this data-collection method. One limitation of this study is the fact that this paper uses the data from a cross-sectional study. For the purpose of this study, a panel study would surely provide most reliable and meaningful result. However, especially in social sciences, similar cross sectional studies provided satisfying results. Another issue that should be considered is the survey outcome, consisting of self-evaluation answers. The main disadvantage of self-report questionnaires is so-called 'response bias' which includes the possibility of invalid answers. While responding to the items, respondents may not answer truthfully or to respond in a certain tendency, regardless of the question. Another problem in using self-report questionnaires might be the clarity of the items, which brings the risk of obtaining different interpretations of questions. However, the results do not show any unusual patterns, which may lead to the conclusion that the answers are invalid. Another problem in using self-report questionnaires might be the clarity of the items, which brings the risk of obtaining different interpretations of questions (Demetriou et al., 2015, p. 1). The possibility to provide incorrect answers cannot be fully excluded. However, the data shows no exceptional patterns, which indicate incorrect answers.

Last, the study examines the relationship between intrapersonal and intrapersonal competencies and the age of the PSM professional. Consequently, this study design considers just a single predictor, leaving out other possible predictors such as professional experience,

personal experience or personal developments. Competencies development is a complex concept, which may be influenced by a number of factors.

Several propositions for further research can be made. First, a qualitative study, validating the results of the study is recommended. This research is based on a survey, using a 5-point Likert scale (‘fully disagree’ to ‘fully agree’). The concept of competencies is complex and a qualitative study could provide another perspective to this issue. In combination, the quantitative and qualitative findings would lead to conclusions that are more meaningful.

This study uses only one predictor for estimating an increase of a competence. In this context, it would be valuable to identify other predictors and its effect sizes, in order to estimate a competence development more accurately.

One of the main findings of this research paper was the insignificant outcome for ‘Willingness to learn’. Therefore it is assumed, that willingness to learn is an innate character trait, which seems to divide the population is one part willing and another part not willing to learn. This finding led to a series of analyses, which revealed the importance of this skill. PSM professionals with high ‘Willingness to learn’ competencies show higher levels of other PSM competencies. It is recommended to further investigate how to identify individuals with strong ‘Willingness to learn’ competencies in order to employ more effective and ‘willing to learn’ workforce.

5.4 Conclusion

The objective of this study aimed to identify the development potential of intrapersonal and intrapersonal competencies. Research shows, that the changing business environment requires a new skill set for PSM professionals. Especially ‘human’ skills are becoming immensely impotent. However, little is known about the development potential of these competencies and there are reasonable arguments on both sides. Accordingly, the following research questions have been developed at the beginning of this paper:

RQ 1: Can intrapersonal competencies, which are associated with success in PSM, be developed?

RQ 2: Can interpersonal competencies, which are associated with success in PSM, be developed?

These questions were answered by following a specific methodological approach, consisting of a systematic literature review and various statistical analyses. The results clearly suggest that intrapersonal and interpersonal competencies can be developed. Besides ‘willingness to learn’ all competencies had a significant development with regards to the increasing age of the study participant. Concerning the context of this study, these findings propose that training employees in these skills can lead to satisfying results. There is no necessary need to acquire new ‘human’ expertise only through recruitment.

Besides, the results indicate the strongest relationship among ‘leadership’ and ‘training staff’ competencies. This fining proposes to supply management companies to assign leading- and training positions to older employees. Within current literature, there is a debate regarding the influence of age on leadership and training competencies, however, this study suggests that older employees are better equipped for such positions.

Due to the insignificant results for ‘willingness to learn’ it is assumed that ‘willingness to learn’ is an innate character trait, which seems to divide the population is one part willing and another part not willing to learn. Our study is aimed on identifying both groups. The results show that ‘willingness to learn’ is a key competence to future success in PSM. This argument is based on a finding which indicates that most of the PSM competencies, including all intrapersonal and interpersonal skills, are significantly higher for participants with higher ‘willingness to learn’ competencies. Especially the increasing importance of intrapersonal and interpersonal competencies strengthens this conclusion.

In addition, the study identifies characteristics and competencies for recognizing a PSM professional with high ‘willingness to learn’ competencies. Higher educational- and working level have a positive relationship with ‘willingness to learn’. Furthermore, a participants professional focus in ‘Supplier involvement’, ‘Quality improvement’, ‘Sustainability’ and ‘Innovation’ is positively associated with higher ‘willingness to learn’ competencies. Consequently, this profile can be applied by organisations for the identification of the ‘willing to learn’ population. The importance of this competence has been emphasized in this study and on that basis, it is suggested that identifying current and future employees with high- and low levels of this competence can result in various benefits.

6.0 Refferences

Allal-Chérif, O., & Maira, S. (2011a). Collaboration as an anti-crisis solution: the role of the procurement function. *International Journal of Physical Distribution & Logistics Management, 41*(9), 860-877.

Allal-Chérif, O., & Maira, S. (2011b). Collaboration as an Anti-Crisis Solution: The Role of the Procurement Function. *International Journal of Physical Distribution & Logistics Management, 41*, 860-877. doi:10.1108/09600031111175825

Andersen, P. H., & Rask, M. (2003). Supply chain management: new organisational practices for changing procurement realities. *Journal of Purchasing and Supply Management, 9*(2), 83-95. doi:https://doi.org/10.1016/S1478-4092(02)00037-7

Arnold, R., Nolda, S., & Nuissl, E. (2001). Worterbuch Erwachsenen-padagogik

Axelrod, R. H. (2017). Leadership and Self-Confidence. In.

Bailly, F., & Léné, A. (2012). The personification of the service labour process and the rise of soft skills: A French case study. *Employee Relations, 35*. doi:10.1108/01425451311279429

Bak, O., & Boulocher-Passet, V. (2013). Connecting industry and supply chain management education: Exploring challenges faced in a SCM consultancy module. *Supply Chain Management: An International Journal, 18*, 468-479. doi:10.1108/SCM-11-2012-0357

Bals, L., Schulze, H., Kelly, S., & Stek, K. (2019a). Purchasing and supply management (PSM) competencies: Current and future requirements. *Journal of Purchasing and Supply Management*, 100572. doi:10.1016/j.pursup.2019.100572

Bals, L., Schulze, H., Kelly, S., & Stek, K. (2019b). Purchasing and supply management (PSM) competencies: Current and future requirements. *Journal of Purchasing and Supply Management, 25*(5), 100572.

Bandyopadhyay, J. K. (2004). Implementing Just-in-Time ptoduction and procurment strategies. *International Journal of Management, 12*.

Bauer, W., Schlund, S., Marrenbach, D., & Ganschar, O. (2014). *Industrie 4.0 - volkswirtschaftliches Potenzial für Deutschland*.

Bergh, A.-M., Van Staden, C., Pm, J., Krüger, C., Ge, P., Jl, R., . . . Bg, L. (2006). Medical students' perceptions of their development of 'soft skills' Part II : The development of 'soft skills' through 'guiding and growing'. *South African Journal of Family Practice, 48*, 1-22. doi:10.1080/20786204.2006.10873436

Boerrigter, C. (2015). *How leader's age is related to leader*

effectiveness: Through leader's affective state

and leadership behavior. University of Twente,

Cacciolatti, L., Lee, S. H., & Molinero, C. M. (2015). Clashing institutional interests in skills between government and industry: An analysis of demand for technical and soft skills of graduates in the UK. *Technological Forcasting & Social Change*, 1-15.

Caetano, A., Vala, J., & Leyens, J.-P. (2001). Judgeability in person perception: The confidence of leaders. *Group Dynamics: Theory, Research, and Practice, 5*, 102-110. doi:10.1037/1089-2699.5.2.102

Carr, A., & Pearson, J. (2002). The Impact of Purchasing and Supplier Involvement on Strategic Purchasing and Its Impact on Firm's Performance. *International Journal of Operations & Production Management, 22*, 1032-1053. doi:10.1108/01443570210440528

Dahiru, T. (2008). P-value, A true test of statistical significance? A cautionary note. *Annals of Ibadan postgraduate medicine, 6*, 21-26. doi:10.4314/aipm.v6i1.64038

Demetriou, C., Özer, B., & Essau, C. (2015). Self-Report Questionnaires. In.

Down, K., & Liedka, J. (1994). What corporations seek in MBA hires. *Selections*, 10-18.

Drisko, J. W. (1997). Strengthening Qualitative Studies and Reports. *Journal of Social Work Education, 33*, 185-197.

Drisko, J. W. (2005). Writing up Qualitative Research. *Families in Society, 86*.

Elmuti, D. (2004). Can management be taught? *Management Decision, 42*(3/4), 439-453. doi:10.1108/00251740410523240

Eltantawy, R., L. Fox, G., & Giunipero, L. (2009). Supply management ethical responsibility: Reputation and performance impacts. *Supply Chain Management: An International Journal, 14*, 99-108. doi:10.1108/13598540910941966

Eltantawy, R. A., Giunipero, L. C., & Fox, G. L. (2009). A strategic skill based model of supplier integration and its effect on supply management performance. *Industrial Marketing Management, 38*(8), 925-936.

Essex, A., Subramanian, N., & Gunasekaran, A. (2015). The Relationship between Supply Chain Manager Capabilities and Performance: Empirical Evidence. *Production Planning and Control, 27*. doi:10.1080/09537287.2015.1091519

Faes, W., Knight, L., & Matthyssens, P. (2001a). Buyer profiles: An empirical investigation of changing organizational requirements. *European Journal of Purchasing & Supply Management, 7*, 197-208. doi:10.1016/S0969-7012(00)00031-9

Faes, W., Knight, L., & Matthyssens, P. (2001b). Buyer profiles: an empirical investigation of changing organizational requirements. *European Journal of Purchasing & Supply Management, 7*(3), 197-208.

Feisel, E., Hartmann, E. V. I., & Giunipero, L. (2011). The importance of the human aspect in the supply function: Strategies for developing PSM proficiency. *Journal of Purchasing and Supply Management, 17*, 54-67.

Fraley, R., & Roberts, B. (2005). Patterns of Continuity: A Dynamic Model for Conceptualizing the Stability of Individual Differences in Psychological Constructs Across the Life Course. *Psychological review, 112*, 60-74. doi:10.1037/0033-295X.112.1.60

Fynes, B., De Burca, S., & Mangan, J. (2008). The effect of relationship characteristics on relationship quality and performance. *International Journal of Production Economics, 111*, 56-69.

Gammelgaard, B., & Larson, P. (2011). Logistics Skills and Competencies for Supply Chain Management. *Journal of Business Logistics, 22*, 27-50. doi:10.1002/j.2158-1592.2001.tb00002.x

Gilbert, G. R., Collins, R. W., & , & Brenner, R. (1990). Gilbert, G. R., Collins, R. W., & Brenner, R. (1990). Age and leadership effectiveness: From the perceptions of the follower. Human Resource Management, 29(2), 187–196. doi:10.1002/hrm.3930290205 *Human Resource Management, 29*, 187-196.

Gillard, S. (2009). Soft Skills and Technical Expertise of Effective Project Managers. *Issues in Informing Science and Information Technology, 6*. doi:10.28945/1092

Giunipero, L., Denslow, D., & Eltantawy, R. (2005). Purchasing/Supply Chain Management Flexibility: Moving to an Entrepreneurial Skill Set. *Industrial Marketing Management - IND MARKET MANAG, 34*, 602-613. doi:10.1016/j.indmarman.2004.11.004

Giunipero, L., & Flint, D. (2001). Purchasing practices in Saudi Arabia – an exploratory analysis. *International Journal of Physical Distribution & Logistics Management, 31*, 686-704. doi:10.1108/09600030110408170

Giunipero, L., Handfield, R., & Eltantawy, R. (2006). *Supply Management's Evolution: Key Skill Sets for the Supply Manager of the Future* (Vol. 26).

Giunipero, L., & Pearcy, D. (2000). *World-Class Purchasing Skills: An Empirical Investigation* (Vol. 36).

Giunipero, L. C., Denslow, D., & Eltantawy, R. (2005). Purchasing/supply chain management flexibility: Moving to an entrepreneurial skill set. *Industrial Marketing Management, 34*(6), 602-613.

Giunipero, L. C., Handfield, R. B., & Eltantawy, R. (2006). Supply management's evolution: key skill sets for the supply manager of the future. *International Journal of Operations & Production Management, 26*(7), 822-844. doi:doi:10.1108/01443570610672257

Giunipero, L. C., & Pearcy, D. H. (2000). World-class purchasing skills: an empirical investigation. *Journal of Supply Chain Management, 36*(3), 4-13.

Gorges, J., Schwinger, M., & Kandler, C. (2013). Linking University Students' Willingness to Learn to Their Recollections of Motivation at Secondary School. *Europe's Journal of Psychology, 9*, 764-782. doi:10.5964/ejop.v9i4.638

Halaby, C. N. (2004). Panel models for the analysis of change and growth in life course studies. *Handbook of the life course*.

Hans-Peter, B., Schneider, T., & Doll, J. (2009). Methodological Advantages of Panel Studies: Designing the New National Educational Panel Study (NEPS) in Germany. *Journal for Educational Research Online, 1*.

Harvey, M., Fisher, R., McPhail, R., & Moeller, M. (2013). Aligning global organizations' human capital needs and global supply-chain strategies. *Asia Pacific Journal of Human Resources, 51*. doi:10.1111/j.1744-7941.2012.00054.x

Harvey, M., & Richey, R. (2001). Global supply chain management: The selection of globally competent managers. *Journal of International Management, 7*, 105-128. doi:10.1016/S1075-4253(01)00040-0

Heale, R., & Twycross, A. (2015). Validity and reliability in quantitative research. *Evidence-Based Nursing, 18*, 66-67.

Hejazi, E. (2011). The Relationships Between Personality Traits and Students' Academic Achievement. *Procedia - Social and Behavioral Sciences*, 836 – 845.

Hoyle, R. H., & Davisson, E. L. (2011). Assessment of Self-Regulation and Related Constructs: Prospects and Challenges. *NRC Workshop on Assessment of 21st Century Skills*.

Huizingh, E. (2007). *Applied Statistics with SPSS*.

Illkowska, & Engle. (2010). Working memory capacity and self-regulation. *Handbook of Personality and Self-Regulation.*, 265-290.

Iyer, R. (2005). Administrative Theory: An Introduction. *Indian Journal of Public Administration, 51*.

Jordan, C., & Bak, O. (2016). The growing scale and scope of the supply chain: a reflection on supply chain graduate skills. *Supply Chain Management: An International Journal, 21*, 610-626. doi:10.1108/SCM-02-2016-0059

Karia, A., Omari, S., Mwanaongoro, S., & Kimori, Y. (2016). Importance of Training and Development on Performance of Public Water Utilities in Tanzania. *AFRICAN JOURNAL OF BUSINESS AND MANAGEMENT, 2*, 10-18.

Klebe Treviño, L., Butterfield, K., & McCabe, D. (2001). The Ethical Context in Organizations: Influences on Employee Attitudes and Behaviors. *Research in Ethical Issues in Organizations, 3*, 301-337. doi:10.1016/S1529-2096(01)03018-8

Klingborg, D., Moore, D., & Varea-Hammond, S. (2006). What Is Leadership? *Journal of veterinary medical education, 33*, 280-283. doi:10.3138/jvme.33.2.280

Knight, L., Tu, Y.-H., & Preston, J. (2014). Integrating skills profiling and purchasing portfolio management: An opportunity for building purchasing capability. *International Journal of Production Economics, 147*, 271–283. doi:10.1016/j.ijpe.2013.06.013

Kolchin, M., & Giunipero, L. (1993). Purchasing Education and Training, Center for Advanced Purchasing Studies. *AZ*(1993), 183.

Kouzes JM, & Challenge, P. B. T. L. (2002). The Leadership Challenge. *The Leadership Challenge*

23-29.

Kupritz, V. (2002). The relative impact of workplace design on training transfer. *Human Resource Development Quarterly, 13*, 427-447. doi:10.1002/hrdq.1042

Kyllonen, P. C. (2013). Soft Skills for the Workplace. *Change: The Magazine of Higher Learning, 45*(6), 16-23. doi:10.1080/00091383.2013.841516

L. Williams, C., & Connell, C. (2010). "Looking Good and Sounding Right": Aesthetic Labor and Social Inequality in the Retail Industry. *Work and Occupations - WORK OCCUPATION, 37*, 349-377. doi:10.1177/0730888410373744

Lages, L. F., Lancastre, A., & Lages, C. (2008). The B2B-RELPERF scale and scorecard: Bringing relationship marketing theory into business-to-business practice. *Industrial Marketing Management, 37*, 686-697. doi:10.1016/j.indmarman.2007.05.008

Laker, D., & Powell, J. (2011). The Differences Between Hard and Soft Skills and Their Relative Impact on Training Transfer. *Human Resource Development Quaterly*, 111-122.

Large, R. O., & Giménez, C. (2006). Oral communication capabilities of purchasing managers: measurement and typology. *Journal of Supply Chain Management, 42*(2), 17-32.

Larson, P. (2008). Accreditation program design: A survey of supply chain professionals. *J. Enterprise Inf. Management, 21*, 377-392. doi:10.1108/17410390810888660

Larson, P. D. (2009). Public vs. Private sector perspectives on supply chain management. *Journal of Public Procurement, 9*(2), 222-247.

Lau, A. (2010). Training needs of purchasing and supply management personnel in Hong Kong. *Journal of European Industrial Training, 34*, 400-415. doi:10.1108/03090591011049783

Le Deist, F. D., & Winterton, J. (2005). What is competence? *Human Resource Development International*, 27-46.

Levin, K. (2006). Study Design III: cross-sectional studies. *Evidence-based dentistry, 7*, 24-25. doi:10.1038/sj.ebd.6400375

Lim, S. (2019). Interpersonal Skills. *https://www.investopedia.com/terms/i/interpersonal-skills.asp*, 1.

Lumpkin, G., & Dess, G. (2001). Linking Two Dimensions of Entrepreneurial Orientation to Firm Performance: The Moderating Role of Environment and Industry Life Cycle. *Journal of Business Venturing, 16*, 429-451. doi:10.1016/S0883-9026(00)00048-3

Mangan, J. (2005). Management Development and the Supply Chain Manager of the Future. *International Journal of Logistics Management, 16*, 178-191. doi:10.1108/09574090510634494

Maršíková, K., & Šírová, E. (2015). Perspectives of employee training and development: methods and approachee. *ACC Journal, 21*, 13-23. doi:10.15240/tul/004/2015-3-002

Mehra, S., & Inman, R. (2004). Purchasing management and business competitiveness in the coming decade. *Production Planning & Control - PRODUCTION PLANNING CONTROL, 15*, 710-718. doi:10.1080/09537280412331298247

Mol, M. (2003). Purchasing's Strategic Relevance. *Journal of Purchasing and Supply Management, 9*, 43-50. doi:10.1016/S0969-7012(02)00033-3

Mongeon, P., & Paul-Hus, A. (2015). The Journal Coverage of Web of Science and Scopus: a Comparative Analysis. *Scientometrics, 106*. doi:10.1007/s11192-015-1765-5

Murphy, P., & Poist, R. (2006). Skill Requirements of Contemporary Senior- and Entry-Level Logistics Managers: A Comparative Analysis. *Transportation Journal, 45*, 46-60.

Nadler, D. A., & Tushman, M. L. (1999). The organization of the future: Strategic imperatives and core competencies for the 21st century. *Organizational Dynamics, 28*(1), 45-60. doi:https://doi.org/10.1016/S0090-2616(00)80006-6

Oshagbemi, T., & Gill, R. (2004). Differences in leadership styles and behaviour across hierarchical levels in UK organisations. *Leadership & Organization Development Journal, 25*, 93-106. doi:10.1108/01437730410512796

Paglis Dwyer, L., & G. Green, S. (2002). Leadership self-efficacy and managers' motivation for leading change. *Journal of Organizational Behavior, 23*, 215-235. doi:10.1002/job.137

Parker, G., & Anderson, E. (2002). From Buyer to Integrator: The Transformation of the Supply-Chain Manager in the Vertically Disintegrating Firm. *Production and Operations Management, 11*, 75-91. doi:10.1111/j.1937-5956.2002.tb00185.x

Perfect, P. (2017). European Survey on Purchasing Competences. Purchasing skills leading to success. *White Paper*.

Prajogo, D. (2013). Supply chain professionals. *International Journal of Operations & Production Management, 33*(11/12), 1532-1554. doi:10.1108/IJOPM-08-2010-0228

Prajogo, D., & Sohal, A. (2013). Supply chain professionals: A study of competencies, use of technologies, and future challenges. *International Journal of Operations & Production Management, 33*(11/12), 1532-1554.

Pulakos, E. D., Arad, S., Donovan, M. A., & Plamondon, K. E. (2000). Adaptability in the work place: Development oftaxonomy of adaptive performance. *Journal of AppliedPsychology, 85*, 612-624.

Rahman, S., & Qing, N. (2014). Graduate students' perceptions of supply chain skills for supply chain managers. *Benchmarking: An International Journal, 21*, 276-299. doi:10.1108/BIJ-01-2012-0002

Reisinger, H. (1997). The impact of research designs on R2 in

linear regression models: an exploratory

meta-analysis. *Institute of Management, Department of Marketing*, 1-12.

Rosing, K., & Jungmann, F. (2015). Leadership and Aging. In.

Roy Matthew, H. (1998). Developing trust: the importance of cognitive flexibility and co-operative contexts. *Management Decision, 36*(9), 561-567. doi:10.1108/00251749810239441

Samuels, P., & Gilchrist, M. (2014). *Simple Linear Regression*.

Sánchez-Rodríguez, C., Hemsworth, D., & Martínez-Lorente, A. (2005). The Effect of Supplier Development Initiatives on Purchasing Performance: A Structural Model. *Supply Chain Management-an International Journal - SUPPLY CHAIN MANAG, 10*, 289-301. doi:10.1108/13598540510612767

Sartor, M., Orzes, G., Nassimbeni, G., Jia, F., & Lamming, R. (2015). International Purchasing Offices in China Roles and resource/capability requirements. *Internationl Journal of Operations and Production Management, 35*, 1125-1157.

Schiele, H. (2007a). Supply-Management Maturity, Cost Savings and Purchasing Absorptive Capacity. *Journal of Purchasing and Supply Management, 13*, 274-293. doi:10.1016/j.pursup.2007.10.002

Schiele, H. (2007b). Supply-management maturity, cost savings and purchasing absorptive capacity: Testing the procurement–performance link. *Journal of Purchasing and Supply Management, 13*(4), 274-293.

Schiele, H., Ellis, S., Eßig, M., Henke, J., & Kull, T. (2015). Managing supplier satisfaction: Social capital and resource dependence frameworks. *Australasian Marketing Journal (AMJ), 23*. doi:10.1016/j.ausmj.2015.04.008

Shenton, A. (2004). Strategies for Ensuring Trustworthiness in Qualitative Research Projects. *Education for Information, 22*, 63-75. doi:10.3233/EFI-2004-22201

Shou, Y., & Wang, W. (2015). Multidimensional competences of supply chain managers: an empirical study. *Enterprise information systems, 11*(1), 58-74.

Shou, Y., & Wang, W. (2017). Multidimensional competences of supply chain managers: an empirical study. *Enterprise Information Systems, 11*, 58-74. doi:10.1080/17517575.2015.1080303

Sinha, A., Millhiser, W. P., & He, Y. (2016). Matching supply with demand in supply chain management education. *The International Journal of Logistics Management, 27*(3), 837-861.

Sinha, A., P. Millhiser, W., & He, Y. (2016). Matching supply with demand in supply chain management education. *The International Journal of Logistics Management, 27*, 837-861. doi:10.1108/IJLM-03-2015-0058

Taber, K. (2017). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education*, 1-24. doi:10.1007/s11165-016-9602-2

Tassabehji, R., & Moorhouse, A. (2008a). The changing role of procurement: Developing professional effectiveness. *Journal of Purchasing and Supply Management, 14*(1), 55-68.

Tassabehji, R., & Moorhouse, A. (2008b). The Changing Role of Procurement: Developing Professional Effectiveness. *Journal of Purchasing and Supply Management, 14*, 55-68. doi:10.1016/j.pursup.2008.01.005

Tatham, P., Wu, Y., Kovács, G., & Butcher, T. (2017). Supply chain management skills to sense and seize opportunities. *The International Journal of Logistics Management, 28*(2), 266-289.

Teller, C., Kotzab, H., Grant, D., & Holweg, C. (2016). The Importance of Key Supplier Relationship Management in Supply Chains. *International Journal of Retail & Distribution Management, 44*, 1-16. doi:10.1108/IJRDM-05-2015-0072

Thai, V. V. (2012). Competency requirements for professionals in logistics and supply chain management. *International Journal of Logistics Research and Applications, 15*(2), 109-126. doi:10.1080/13675567.2012.694859

Thomason, L. (2019). The simple regression model

In *Regression Analysis with Cross-Selectional Data*. http://www.swlearning.com/pdfs/chapter/0324289782_2.PDF.

Tian, Y., & Peng, Y. (2010). *Impact of Communication on Supplier Integration and Organizational Performance*.

Torn, R., & Schiele, H. (2017). THE FUTURE OF PURCHASING AND INDUSTRY 4.0: How Purchasing can Progress and Benefit the Fourth Industrial RevolutionTHE FUTURE OF PURCHASING AND INDUSTRY 4.0: How Purchasing can Progress and Benefit the Fourth Industrial Revolution. *Faculty of Behavioural, Management and Social Sciences Department of Technology Management and Supply*.

Torres-Carrion, P., González González, C., Aciar, S., & Rodriguez, G. (2018). *Methodology for Systematic Literature Review applied to Engineering and Education*.

Twomey, P., & Kroll, M. (2008). How to use linear regression and correlation in quantitative method comparison studies. *International journal of clinical practice, 62*, 529-538. doi:10.1111/j.1742-1241.2008.01709.x

Upton, D. M. (1995). Flexibility as process mobility: The management of plant capabilities for quick response manufacturing. *Journal of Operations Management, 12*(3), 205-224. doi:https://doi.org/10.1016/0272-6963(95)00004-C

von der Gracht, H., C. Giunipero, L., & Schüller, M. (2016). *Future-proof procurement – Now or never: The big procurement transformation (English version)*.

Wilson, K., & Barbat, V. (2015). The supply chain manager as political-entrepreneur? *Industrial Marketing Management, 49*, 67-79. doi:https://doi.org/10.1016/j.indmarman.2015.05.034

Wu, Y., Huang, S., Goh, M., & Hsieh, Y. J. (2013). Global logistics management curriculum: Perspective from practitioners in Taiwan. *Supply Chain Management: An International Journal, 18*, 376-388. doi:10.1108/SCM-04-2012-0145

Youngdahl, W., Ramaswamy, K., & Dash, K. (2010). Service Offshoring: The Evolution of Offshore Operations. *International Journal of Operations & Production Management, 30*, 798-820. doi:10.1108/01443571011068171

Zacher, H., Rosing, K., & Frese, M. (2011). Age and leadership: The moderating role of legacy beliefs. *The Leadership Quarterly, 22*, 43-50. doi:10.1016/j.leaqua.2010.12.006

Zheng, J., Knight, L., Harland, C., Humby, S., & James, K. (2007). An analysis of research into the future of purchasing and supply management. *Journal of Purchasing and Supply Management, 13*, 69-83. doi:10.1016/j.pursup.2007.03.004

Zimmerman, B. J. (2000). Attaining Self-Regulation: A Social Cognitive Perspective. *Handbook of Self-Regulation*, 13-39.

7.0 Appendix

7.1 Independent samples t-test results

Participants sector

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Participants's sector	Equal variances assumed	4,506	,034	-,892	562	,373	-,067	,075	-,215	,081
	Equal variances not assumed			-,882	439,793	,378	-,067	,076	-,216	,082

Participants educational level

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
My highest completed educational level is:	Equal variances assumed	,280	,597	1,930	562	,054	,181	,094	-,003	,366
	Equal variances not assumed			1,878	415,486	,061	,181	,096	-,008	,371

Participants professional focus

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
[Due to my actions we achieved higher than average cost reductions.] Cost reductions can be the most important objective for organisations or your function / department. Is your perfomance focussed on cost reductions? Grade to what extent you agree thes	Equal variances assumed	2,551	,111	-1,604	562	,109	-,123	,077	-,274	,028
	Equal variances not assumed			-1,664	507,978	,097	-,123	,074	-,269	,022
[Due to my actions we achieved a higher than average level of quality.] Quality standards and quality improvement can be the most important objective for organisations or your function / department. Is your perfomance focussed on quality? Grade to what	Equal variances assumed	,898	,344	-2,151	562	,032	-,138	,064	-,263	-,012
	Equal variances not assumed			-2,147	453,250	,032	-,138	,064	-,264	-,012
[Due to my actions we achieved a higher than average level of sustainability.] Being environmental friendly, being sustainable and working on a sustainable supply chain can be very important objectives for organisations or your function / department. Is	Equal variances assumed	5,239	,022	-1,676	562	,094	-,125	,075	-,272	,022
	Equal variances not assumed			-1,717	491,248	,087	-,125	,073	-,268	,018
[Due to my actions we improved the supply delivery process.] Having a reliable, safe delivery of supplies can be very important objectives for organisations or your function / department. Is your perfomance focussed on delivery of supplies? Grade to wha	Equal variances assumed	2,582	,109	-,595	562	,552	-,042	,071	-,181	,097
	Equal variances not assumed			-,610	491,509	,542	-,042	,069	-,177	,093
[Due to my actions product and process improvements have been implemented.] Buying innovation or devellopingg innovation with suppliers can be a very important objective for organisations or your function / department. Is your perfomance focussed on innov	Equal variances assumed	,685	,408	-3,734	562	,000	-,280	,075	-,427	-,133
	Equal variances not assumed			-3,748	461,470	,000	-,280	,075	-,427	-,133
[Due to my actions my organisation obtained long-term competitive advantage.] Working on a competive advantage can be a very important objective for organisations or your function / department. Is your perfomance focussed on long-term competitive advanta	Equal variances assumed	2,547	,111	-1,180	562	,238	-,085	,072	-,227	,057
	Equal variances not assumed			-1,206	487,575	,228	-,085	,071	-,224	,054
[Due to my actions we achieved higher suppliers-satisfaction.] Working on supplier satisfaction can be a very important objective for organisations or your function / department. Is your perfomance focussed on supplier satisfaction? Grade to what extent	Equal variances assumed	,282	,596	-,567	562	,571	-,038	,066	-,168	,093
	Equal variances not assumed			-,571	466,697	,568	-,038	,066	-,167	,092

Intrapersonal competencies

Independent Samples Test

		Variances		t-test for Equality of Means						
									Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
[Holistic Thinking Holistic	Equal variances assumed	0,003	0,953	-4,362	562	0,000	-0,386	0,088	-0,559	-0,212
thinking involves understanding	Equal variances not assumed			-4,361	455,792	0,000	-0,386	0,088	-0,559	-0,212
[Ability to Solve Problems] [is	Equal variances assumed	10,451	0,001	-2,059	562	0,040	-0,140	0,068	-0,274	-0,006
this task important for your current	Equal variances not assumed			-2,100	485,378	0,036	-0,140	0,067	-0,271	-0,009
[Result-orientated action-taking	Equal variances assumed	3,637	0,057	-3,449	562	0,001	-0,239	0,069	-0,374	-0,103
Aiming on effectiveness] [is this task	Equal variances not assumed			-3,491	473,489	0,001	-0,239	0,068	-0,373	-0,104
[Conscientiousness Being	Equal variances assumed	0,538	0,464	-2,339	562	0,020	-0,174	0,075	-0,321	-0,028
trustworthy in professional life] [is this task	Equal variances not assumed			-2,350	462,621	0,019	-0,174	0,074	-0,320	-0,029

Independent Samples Test

		Variances		t-test for Equality of Means						
									Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
[Holistic Thinking Holistic	Equal variances assumed	0,003	0,953	-4,362	562	0,000	-0,386	0,088	-0,559	-0,212
thinking involves understanding	Equal variances not assumed			-4,361	455,792	0,000	-0,386	0,088	-0,559	-0,212
[Ability to Solve Problems] [is	Equal variances assumed	10,451	0,001	-2,059	562	0,040	-0,140	0,068	-0,274	-0,006
this task important for your current	Equal variances not assumed			-2,100	485,378	0,036	-0,140	0,067	-0,271	-0,009
[Result-orientated action-taking	Equal variances assumed	3,637	0,057	-3,449	562	0,001	-0,239	0,069	-0,374	-0,103
Aiming on effectiveness] [is this task	Equal variances not assumed			-3,491	473,489	0,001	-0,239	0,068	-0,373	-0,104
[Conscientiousness Being	Equal variances assumed	0,538	0,464	-2,339	562	0,020	-0,174	0,075	-0,321	-0,028
trustworthy in professional life] [is this task	Equal variances not assumed			-2,350	462,621	0,019	-0,174	0,074	-0,320	-0,029

[Proactivity Being anticipatory, change-oriented and self-initiated	Equal variances assumed	4,378	0,037	-2,084	562	0,038	-0,142	0,068	-0,276	-0,008
	Equal variances not assumed			-2,105	470,396	0,036	-0,142	0,068	-0,275	-0,009
[Inventiveness Being imaginativeness] [is this task important for your current	Equal variances assumed	7,243	0,007	-3,644	562	0,000	-0,290	0,080	-0,447	-0,134
	Equal variances not assumed			-3,763	502,198	0,000	-0,290	0,077	-0,442	-0,139
[Capacity to be empathetic Capacity to listen and understand] [is this task	Equal variances assumed	0,366	0,546	-2,013	562	0,045	-0,158	0,078	-0,312	-0,004
	Equal variances not assumed			-2,013	456,020	0,045	-0,158	0,078	-0,312	-0,004
[Loyalty Being trustworthy in professional life] [is this task important for	Equal variances assumed	3,367	0,067	-3,160	562	0,002	-0,235	0,074	-0,380	-0,089
	Equal variances not assumed			-3,126	439,817	0,002	-0,235	0,075	-0,382	-0,087
[Honesty Being trustworthy in professional life] [is this task important for	Equal variances assumed	0,428	0,513	-1,987	562	0,047	-0,141	0,071	-0,280	-0,002
	Equal variances not assumed			-1,948	426,029	0,052	-0,141	0,072	-0,283	0,001
[Self-assurance Being assertive and having self esteem] [is this	Equal variances assumed	2,254	0,134	-3,171	562	0,002	-0,219	0,069	-0,354	-0,083
	Equal variances not assumed			-3,205	471,585	0,001	-0,219	0,068	-0,353	-0,085
[Willingness to take risks] [is this task important for your current job?]	Equal variances assumed	0,722	0,396	-1,589	562	0,113	-0,134	0,084	-0,299	0,032
	Equal variances not assumed			-1,599	465,806	0,110	-0,134	0,084	-0,298	0,031

Interpersonal competencies

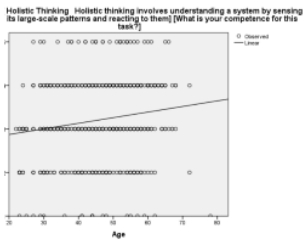
Independent Samples Test

		Variances		t-test for Equality of Means						
									Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
[Communication Skills Having the skills and knowledge of how to	Equal variances assumed	9,340	0,002	-3,938	562	0,000	-0,284	0,072	-0,426	-0,143
	Equal variances not assumed			-3,956	462,541	0,000	-0,284	0,072	-0,426	-0,143
[Team Member Skills The ability to work in a group of persons acting together	Equal variances assumed	1,308	0,253	-3,315	562	0,001	-0,286	0,086	-0,455	-0,116
	Equal variances not assumed			-3,312	454,646	0,001	-0,286	0,086	-0,455	-0,116
[Leadership Managing employees in teams.] [is this task important for your current	Equal variances assumed	0,338	0,561	-1,289	562	0,198	-0,159	0,124	-0,402	0,083
	Equal variances not assumed			-1,294	460,883	0,196	-0,159	0,123	-0,401	0,083
[Training Staff Improve the knowledge and skills of employees by training.] [is this	Equal variances assumed	0,021	0,885	-1,718	562	0,086	-0,204	0,119	-0,438	0,029
	Equal variances not assumed			-1,737	471,976	0,083	-0,204	0,118	-0,435	0,027
[Building Relations Networking and relations management] [is this task	Equal variances assumed	0,170	0,681	-2,506	562	0,013	-0,189	0,075	-0,337	-0,041
	Equal variances not assumed			-2,512	459,770	0,012	-0,189	0,075	-0,337	-0,041
[Cross-cultural Awareness Skills The ability to become aware of cultural	Equal variances assumed	0,001	0,972	-3,113	562	0,002	-0,324	0,104	-0,528	-0,119
	Equal variances not assumed			-3,105	451,944	0,002	-0,324	0,104	-0,528	-0,119
[Power of Persuasion Having influential skills] [is this task important for	Equal variances assumed	4,644	0,032	-4,405	562	0,000	-0,327	0,074	-0,473	-0,181
	Equal variances not assumed			-4,365	442,243	0,000	-0,327	0,075	-0,474	-0,180

Holistc Thinking

Coefficients

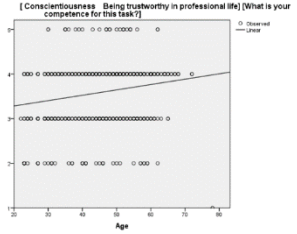
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.013	.003	.156	3.738	.000
(Constant)	2.615	.162		16.119	.000



Conscientiouness

Coefficients

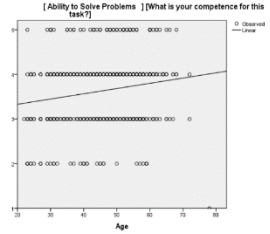
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.012	.003	.194	4.678	.000
(Constant)	3.044	.121		25.115	.000



Problem solving

Coefficients

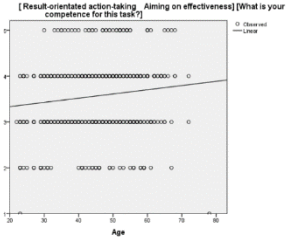
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.012	.003	.176	4.236	.000
(Constant)	3.096	.131		23.692	.000



Result oriented action taking

Coefficients

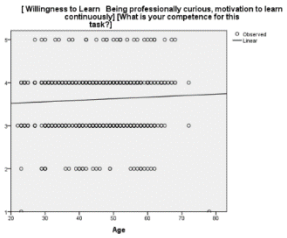
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.009	.003	.136	3.248	.001
(Constant)	3.150	.133		23.622	.000



Willingness to Learn

Coefficients

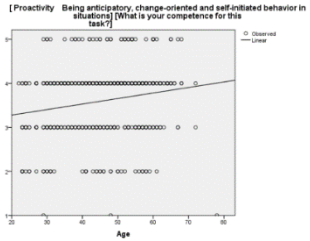
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.004	.003	.059	1.403	.161
(Constant)	3.449	.119		28.928	.000



Proactivity

Coefficients

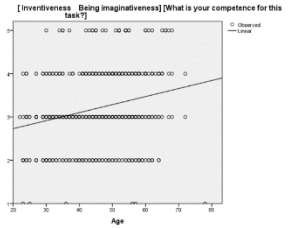
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.013	.003	.188	4.532	.000
(Constant)	3.027	.130		23.212	.000



Inventiveness

Coefficients

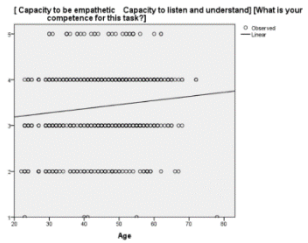
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.019	.003	.240	5.858	.000
(Constant)	2.359	.149		15.802	.000



Empathy

Coefficients

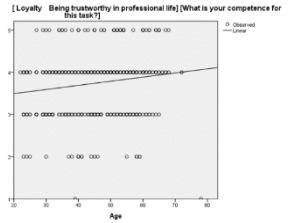
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.009	.003	.124	2.955	.003
(Constant)	3.009	.143		21.073	.000



Loyalty

Coefficients

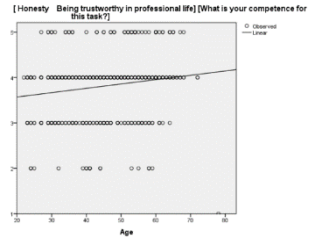
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.010	.002	.164	3.953	.000
(Constant)	3.299	.117		28.285	.000



Honesty

Coefficients

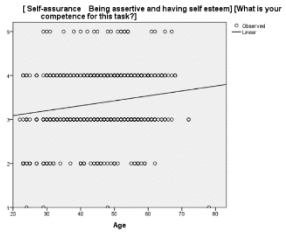
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.010	.002	.171	4.123	.000
(Constant)	3.380	.109		30.929	.000



Self-assurance

Coefficients

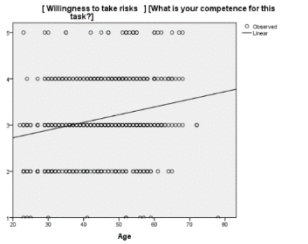
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.011	.003	.167	4.018	.000
(Constant)	2.864	.132		21.768	.000



Willingness to take risks

Coefficients

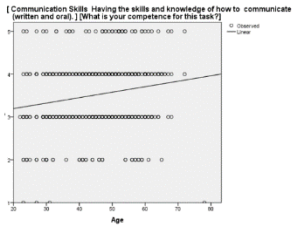
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.017	.003	.217	5.279	.000
(Constant)	2.393	.148		16.120	.000



Communication skills

Coefficients

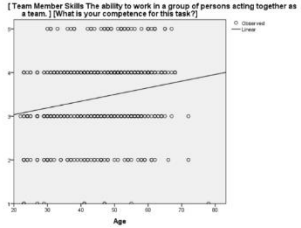
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.013	.003	.185	4.457	.000
(Constant)	2.940	.135		21.751	.000



Team member skills

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.015	.003	.207	5.009	.000
(Constant)	2.729	.144		18.915	.000



Leadership

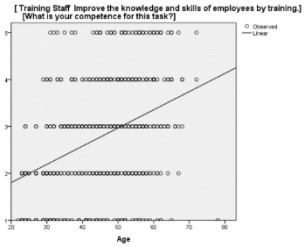
Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.034	.004	.339	8.542	.000
(Constant)	1.310	.188		6.952	.000

Training staff

Coefficients

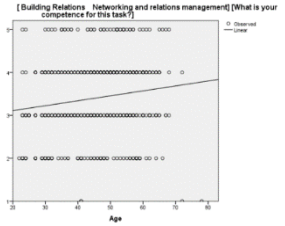
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.039	.004	.367	9.352	.000
(Constant)	1.025	.196		5.242	.000



Building relations

Coefficients

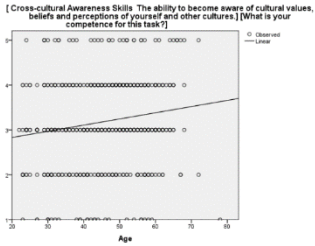
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.012	.003	.150	3.606	.000
(Constant)	2.878	.151		19.084	.000



Cross-cultural awareness

Coefficients

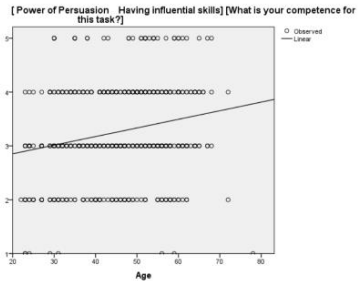
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Age	.014	.004	.159	3.815	.000
(Constant)	2.556	.170		15.017	.000



Persuation

Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Age	.016	.003	.209	5.074	.000
(Constant)	2.534	.148		17.070	.000



The human aspect in Purchasing and Supply Management

Can intrapersonal and interpersonal competencies be developed?

Klaas Stek (klaas.stek@utwente.nl)
University of Twente

Rafal Wisniewski
University of Twente

Prof. Dr.Holger Schiele
University of Twente

Summary

This paper examines the development potential of the most important intrapersonal and interpersonal PSM competencies, which are becoming increasingly important in the profession. In the first stage of the research, we determine these competencies based on a systematic literature review. Further, we conduct an ANOVA to identify competencies, which do not develop over time and are therefore regarded as personal traits. Finally, a polynomial regression analysis is applied. The results identify personal traits and professional experience as predicting variables for intrapersonal and interpersonal PSM competency development. We advise purchasing organisations to recruit PSM personnel with high levels of the identified personal traits. Our research shows evidence that these traits are serving as proxy for the further development of intrapersonal and interpersonal skills over time.

Keywords: PSM Competencies development

Submission category: Working paper

Intrapersonal and interpersonal competencies the key to future success in PSM

The purchasing and supply management (PSM) profession evolves rapidly from a transactional, operational function into a strategic role and therefore, the profile of PSM manager is undergoing important changes (e.g. Bals, Schulze, Kelly, & Stek, 2019; Feisel, Hartmann, & Giunipero, 2011; Kiratli, Rozemeijer, Hilken, de Ruyter, & de Jong, 2016; Knight, Tu, & Preston, 2014). Today, purchasing is regarded as a function, which can increase a firm's competitive advantage by "improving cost savings, increasing the quality of products and processes and advancing innovation capability (Feisel et al., 2011, p. 55), sustainability goals and relationship with suppliers (Zheng, Knight, Harland, Humby, &

James, 2007, p. 73).

As a result of the changing procurement role as well as an increased emphasis on the PSM function, the ideal skill set for a "world class" procurement professional also changed (Giunipero & Pearcy, 2000, p. 6). Although technical competencies are still regarded to as being crucial to the job, interpersonal and intrapersonal skills are expected to become the future key to success in PSM (Bals et al., 2019). Various authors stressed out this importance of intrapersonal and interpersonal competencies, by arguing that the profession is becoming increasingly human-centred (Bals et al., 2019; Feisel et al., 2011). As Feisel et al. (2011, p. 63) state, "in recent years, the importance of the human aspect to the PSM function has been increasingly recognized" (Feisel et al., 2011). They are required at every organisational level for effective procurement management (Von der Gracht, Giunipero, & Schueller, 2016, p. 4).

The reason for the effect on the success in PSM is that organisations are becoming increasingly aware of the value of assets of intangible resources (Elias & Scarbrough, 2004; Jasimuddin, Klein, & Connell, 2005; Nonaka & Takeuchi, 1995; Smith, 2001) on which the Knowledge Based View (KBV) (Grant, 1996) is based as derived from the Resource Based View (RBV) (Barney, 1991, 2012). The RBV theory suggests that organisations can be conceptualised as bundles of resources. Some of these resources can be just developed internally and therefore provide a competitive advantage through specific differentiation within the market (Haesli & Boxall, 2005). The competitive advantages of firms stem from 'core' competencies, which are based on the distinctive knowledge created within them over time. Much of this knowledge is embodied in the firm's human resources (Haesli & Boxall, 2005; Wright, Dunford, & Snell, 2001). As a result, employees and their competencies become an important strategic and competitive asset to organisations as they also serve as an organisations 'memory system', through creating social networks as well as knowledge and skills transfer (Currie & Kerrin, 2003; Swart & Kinnie, 2003).

One important issue arising in this context is concerned with the development potential of intrapersonal and interpersonal competencies. Within the literature, there is a discourse on this topic. While some authors claim that these skills can be developed, others view them as attributes with little development potential (Bailly & Léné, 2012; Bergh, Van Staden, Joubert, Krüger, Pickworth, Roos, Schurink, Du Preez, Grey, & Lindeque, 2006; Gillard, 2009). Hoyle and Davisson (2011), claim that these skills are not entirely in an individual's control: "some behaviours are governed by biological needs and therefore not routinely under the direct control of the individual. Other behaviours have become associated with cues in the environment (i.e., conditioned) and, as a result, typically are produced by those cues rather than a conscious decision by the individual" (Hoyle & Davisson, 2011, p. 3).

The importance of this issue is underlined by the fact that corporate training is currently a $50-billion-dollar industry (Kyllonen, 2013, p. 20). Besides that, cognitive tests are accounted for only 20 percent of educational attainment's effect on future success, meaning that the focus should clearly be on gaining knowledge regarding developing intrapersonal and interpersonal competencies (Kyllonen, 2013, p. 22).

This study examines the development potential of intrapersonal and interpersonal

competencies required in PSM. In the first stage of this paper, we investigate whether intrapersonal and interpersonal competencies, which are important for the PSM function, can be developed over time. Accordingly, the following research question is proposed:

- *RQ 1: Can intrapersonal and interpersonal competencies, which are associated with success in PSM, be developed?*

Next, we identify which factors influencing intrapersonal and interpersonal competencies development. For this purpose, we conduct an ANOVA to find competencies, which do not develop over time and therefore are regarded as personal traits, rather than developable competencies. Furthermore, the effect of professional experience on competency development is examined. Various authors confirm the importance of experience on competency development (Aserkar, Kumthekar, & Inamdar, 2017; Čiarniene, Kumpikaite, & Vienazindiene, 2010; Elmuti, 2004; Feisel et al., 2011). On that basis, we propose the following research question:

- *RQ 2: Is there a positive relationship between the level of personal traits as well as the level of professional experience and competency development?*

Distinguishing between personality traits and competencies and discussing the importance of professional experience on competency development

According to Arnold, Nolda, and Nuissl (2001), a competence refers to the capacity of a person to act and is more holistic, comprising not only content or subject knowledge and ability, but also core and generic abilities (Arnold et al., 2001). Nadler and Tushman (1999) underline the importance of competencies and argue that organisations need to become proficient in certain core competencies in order to succeed (Nadler & Tushman, 1999). Le Deist & Winterton (2005) claim that a competence does not consist of just one layer, but is a result of a multidimensional inter-function. Just if an individual masters all the components, meaning having the required knowledge and skills as well as showing a proactive attitude (behaviour), it can be spoken from a competence (Le Deist & Winterton, 2005). Although there is a discourse on the question whether intrapersonal and interpersonal competencies can be developed, for most researchers these competencies are developable (Bailly & Léné, 2012; Bergh et al., 2006; Gillard, 2009). Consequently, it can be hypothesised certain factors such as a set of crucial personality traits and professional experience positively attribute to intrapersonal and interpersonal competency development.

Personality traits are typically defined as descriptions of people in terms of relatively stable patterns of behaviour, thoughts, and emotions (Parks-Leduc, Feldman, & Bardi, 2014). The difference between competencies and personal traits is that unlike personal traits, competencies are not necessarily equivalent to actual behaviour of an individual. A combination of competencies and traits can therefore help to better understand the value of an employee (Yukl, 2012). Extensive research on the question whether personality traits can be developed has been conducted (Mroczek & Spiro, 2003; Roberts & Takahashi, 2011;

Soto, John, Gosling, & Potter, 2011).

The overall conclusion is that personality traits are complex constructs, which are not easily interfered with. Some studies suggest that while some traits may develop over time, others may even decline (Soto et al., 2011). Caspi and Roberts (2001) claim that in most of the cases the developmental trajectory is not the same for each individual, due to the great impact of factors like the environmental impact, genetic makeup and the personality changing activities (Caspi & Roberts, 2001). As a consequence, "these individual differences in external and internal factors are likely to produce individual differences in the developmental trajectories of traits" (Mroczek & Spiro, 2003, p. 154). Unlike intrapersonal and interpersonal competencies, personality traits are not as well developable by organisations and very individual-dependent. According to Mumford, Zaccaro, Harding, Jacobs, and Fleishman (2000), in the skill-based model, "skills are seen as developing as a function of the interaction between traits and experience" (Mumford et al., 2000).

Various researchers confirm the positive effect of professional experience on intrapersonal and interpersonal competencies development (Aserkar et al., 2017; Čiarniene et al., 2010; Elmuti, 2004; Feisel et al., 2011). A study conducted by Brown and Ahmed (2009) suggests that especially transferable competencies such as communication skills, ability to solve problems, team working, personal effectiveness or decision makings skills are positively affected by professional experience (Brown & Ahmed, 2009). Because of these findings, we hypothesise the following:

- Hypothesis: professional experience positively influences intrapersonal and interpersonal competency development.

Research Methodology: Investigating intrapersonal and interpersonal competency development

For this study a PSM competency survey was held amongst European PSM professionals (*n*=581), ranking their intrapersonal and interpersonal competencies levels. The survey consists of a self-evaluation survey of 581 European PSM professionals, including operative, direct and indirect buyers, tactical and strategic buyers, purchasing engineers, innovation buyers, CPO's and contract managers. The survey has three major objectives: (1) to rank the professional focuses costs, quality, delivery, innovation and sustained competitive advantage. (2) to evaluate the purchaser on 88 PSM related skills items (3) to state the level of PSM success the participant self-assessed the achieved individual success in costs reductions, quality improvement, securing safe delivery, ensuring to have access to the innovations of the supplier, enforcing supplier satisfaction, and to achieve sustained competitive advantage.

Furthermore, a systematic literature review was applied in order to identify the most important intrapersonal and interpersonal PSM competencies. As a result, these competencies were chosen from the dataset for further analysis. Within the literature, a wide range of articles PSM competencies articles can be found. To identify the most valuable and reliable literature, the search is limited to the database of Scopus and Web of Science. Only

a few selected articles, which were not derived from these search engines, were used for the competence identification process (Bals et al., 2019; Perfect, 2017).

This literature review assesses literature from the field of PSM. The identification of intrapersonal and interpersonal competencies, which are leading to success in procurement, is strictly limited to this domain. For further information regarding the competencies and for more insights on competence development, literature from the domains of Psychology, HRM, Management, Industrial Training and Organisational Behaviour, is used. This literature is not directly concerned with PSM issues, but does still provide valuable and insightful information (Lau, 2010; Mol, 2003; Paglis Dwyer & G. Green, 2002). The final sample consists of 51 articles, which are directly linked to the topic and scope of this research. The final set of the most important intrapersonal and interpersonal PSM competencies is shown in Table 1.

Table 1 – Systematic literature review results on the most important intrapersonal and interpersonal competencies in PSM

Skill	Frequency	Sources
Intrapersonal competencies		
Conscientiousness	5	[6], [10], [11], [12], [16]
Empathy	4	[1], [9], [17], [30]
Holistic thinking	4	[1], [2], [32], [12]
Honesty	5	[1], [5], [9], [17], [30]
Inventiveness	5	[13],[14], [15], [16], [38]
Loyalty	4	[1], [7], [9], [17]
Proactivity	4	[1], [5], [13], [14], [48]
Problem solving	6	[1], [4], [6], [7], [8], [9],
Result driven	7	[1], [4], [5], [6], [9], [41], [47]
Self-assurance	5	[5], [18], [19], [20], [30]
Willingness to learn	4	[4], [13], [48], [49]
Willingness to take risks	5	[14], [18], [21], [22], [47]
Interpersonal competencies		
Building relations	7	[22], [30], [32], [33], [34], [35], [36],
Communication	12	[1], [3], [4], [5], [6], [7], [14], [17], [27], [30], [38] [47],
Cross-cultural aware	6	[5], [9], [22], [31], [32], [37],
Leadership	7	[4], [5], [7], [28], [29], [30], [47],
Persuasion	7	[4], [14], [30], [38], [46], [50], [51]
Team ability	10	[1], [2], [5], [6], [7], [9], [14], [30], [41], [47]
Training staff	6	[7], [22], [31], [38], [46], [47]

(1) (Lau,2010), (2) (Gammelgaard & Larson, 2001), (3) (Cacciolatti et al, 2017), (4) (Knight et al., 2014), (5) (Larson, 2009) (6) (Jordan & Bak, 2016), (7) (Tatham, Wu, Kovács, & Butcher, 2017), (8) (Bak & Boulocher-Passet, 2013), (9) (Thai, 2012), (10) (Pulakos, Arad, Donovan, & Plamondon, 2000) (11) (Eltantawy, Giunipero, & Fox, 2009), (12) (Upton, 1995), (13) (Lumpkin & Dess, 2001), (14) (Giunipero, Denslow, & Eltantawy, 2005), (15) (Sinha, Millhiser, & He, 2016), (16) (Allal-Chérif & Maira, 2011), (17) (Faes, Knight, & Matthyssens, 2001), (18) (Axelrod, 2017), (19) (Paglis Dwyer & G. Green, 2002), (20) (Caetano, Vala, & Leyens, 2001), (21) (Murphy & Poist, 2006), (22) (Harvey & Richey, 2001), (23) (Giunipero & Pearcy, 2000), (24) (Lim, 2019), (25) (Elmuti, 2004), (26) (Iyer, 2005), (27) (Shou & Wang, 2015), (28) (Kouzes JM & Challenge, 2002), (29) (Mangan, 2005) (30) (Giunipero, Handfield, & Eltantawy, 2006), (31) (Rahman & Qing, 2014), (32) (Bals et al., 2019) (33) (Teller, Kotzab, Grant, & Holweg, 2016), (34) (Lages, Lancastre, & Lages, 2008), (35) (Fynes, De Burca, & Mangan, 2008), (36) (Giunipero & Flint, 2001), (37) (Youngdahl, Ramaswamy, & Dash, 2010), (38) (Tassabehji & Moorhouse, 2008), (39) (Andersen & Rask, 2003), (40) (Schiele, 2007), (41) (Prajogo & Sohal, 2013) (42) (Mehra & Inman, 2004), (43) (Essex, Subramanian, & Gunasekaran, 2015), (44) (Parker & Anderson, 2002), (45) (Sartor, Orzes, Nassimbeni, Jia, & Lamming, 2015), (46) (Large & Giménez, 2006), (47) (Wu, Huang, Goh, & Hsieh, 2013), (48) (Bandyopadhyay, 2004) (49) (Wilson & Barbat, 2015), (50) (Andersen & Rask, 2003), (51) (Carr & Pearson, 2002)

The intrapersonal and interpersonal competencies identified through the systematic literature review are selected for an ANOVA. The results revealed that willingness to learn, holistic thinking and empathy show insignificant results. These competencies did not change significantly with increased professional experience levels. Hence, these therefore can be viewed as personal traits. Consequently, we assume that these competencies are innate character traits, which seems to divide the study population into two parts. As mentioned in the previous section, personal traits are regarded as very difficult to develop (Caspi & Roberts, 2001; Mroczek & Spiro, 2003).

Next, a polynomial regression analysis is applied. Polynomial modelling permits to examine complex relationships between component measures and an outcome variable. This technique allows the examination of curvilinear terms so that an accurate picture of the relationships can be made (Venkatesh & Gopal, 2010). Throughout the analysis, we follow the methodological steps as displayed by Shanock, Baran, Gentry, Pattison, and Heggestad (2010) Shanock et al. (2010) (Shanock et al., 2010). As mentioned in the previous section, this study aims to investigate the relationship between personal traits as well as professional experience on intrapersonal and interpersonal competencies development. Based on ANOVA, we identify three personality traits, namely: willingness to learn, holistic thinking and empathy. The mean of these factors represents the *y-axis* in the polynomial regression analysis. The *x-axis* represents the professional experience of the study participants.

As argued by Shanock et al. (2010), before conducting a polynomial regression analysis, a large enough discrepancy of data has to be ensured. Without this information, it is not clear whether there are discrepancies in the sample, which is needed for valid results. In order to the polynomial regression analysis to be valid, a discrepancy of at least ten percent is required. For this purpose, we follow the method presented by Fleenor, McCauley, and Brutus (1996). First, we standardize the scores for each predictor variable (x = years of professional experience and y = mean of entrepreneurial PSM competencies). Participants with values above or below half standard deviation are considered to have discrepant values. Secondly, we determine the percentages of values, which agree, and values with discrepant values in each direction. Table 3 displays the discrepancy values. The discrepancies are nearly equal and far above the minimum requirement of ten percent. For conducing the polynomial regression analysis, we have created three variables. Variable x represents the years of professional experience of the study participants, variable y represents the mean of all 'innate' entrepreneurial PSM competencies and variable z represents all remaining intrapersonal and interpersonal PSM competencies. All independent variables have been

centred on a 5-point Likert scale, as proposed by (Shanock et al., 2010). Centring the values aids interpretation and reduces the potential for multicollinearity. For interpretation of the results, we have plot the three-dimensional response surface and examined its features. This procedure has been conducted by using the graphic function in Excel.

Table 2: Discrepancy values for polynomial regression analysis – Level of agreement in z-value levels of the independent variables

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< -0.5	211	37,4	37,4	37,4
	-0.49 to 0.49	173	30,7	30,7	68,1
	> 0.5	180	31,9	31,9	100,0
	Total	564	100,0	100,0	

Research findings: Polynomial regression analysis confirms significant development of intrapersonal and interpersonal competencies

As described in the methodology section, the study started with an ANOVA to measure the hypothesised intrapersonal and interpersonal competencies development. From nineteen competencies, which were analysed, 'willingness to learn', 'holistic thinking' and 'empathy' have insignificant betas; hence, these do not change over time with an increased professional experience level. Therefore, we concluded that these variables can be viewed as personal traits rather than developable competencies. According to several authors, personal traits are difficult to change and depend rather on environmental and individual-dependent factors than on active training and development (Caspi & Roberts, 2001; Mroczek & Spiro, 2003).

In the polynomial regression analysis, we use the mean of these personal traits to form the latent variable for the polynomial analysis, which will be projected on the *y*-axis (personal traits). The latent variable for the analysis is the level of participant's professional experience will be the basis of the *x*-axis (professional experience). In order to conduct the polynomial regression analysis accordingly to the method presented by Shanock et al. (2010), we created a 5-point Likert scale and divided the study population into five groups based on participants years of professional experience (1-8 [-2], 9-16 [-1], 17-24 [0], 25-32 [1] and 33-40 [2] years). Each group represents eight years of professional experience.

The mean of the remaining sixteen competencies, which had significant ANOVA results and are therefore considered as developable competencies, is used to form the dependent outcome variable (*z*). The final polynomial regression analysis model is presented in figure 1. The exact values for each plot within the model are displayed in table 3. Furthermore, table 4 shows the results for slopes and curves testing.

Table 3: Points to Plot table

	Points to Plot X – Years of Professional Experience				
Y - Personal Traits	**-2**	**-1**	**0**	**1**	**2**
2	4,22	4,45	4,61	4,71	4,74
1	3,61	3,81	3,96	4,01	4,01
0	2,96	3,13	3,23	3,27	3,25
-1	2,27	2,42	2,49	2,51	2,45
-2	1,55	1,67	1,72	1,70	1,62

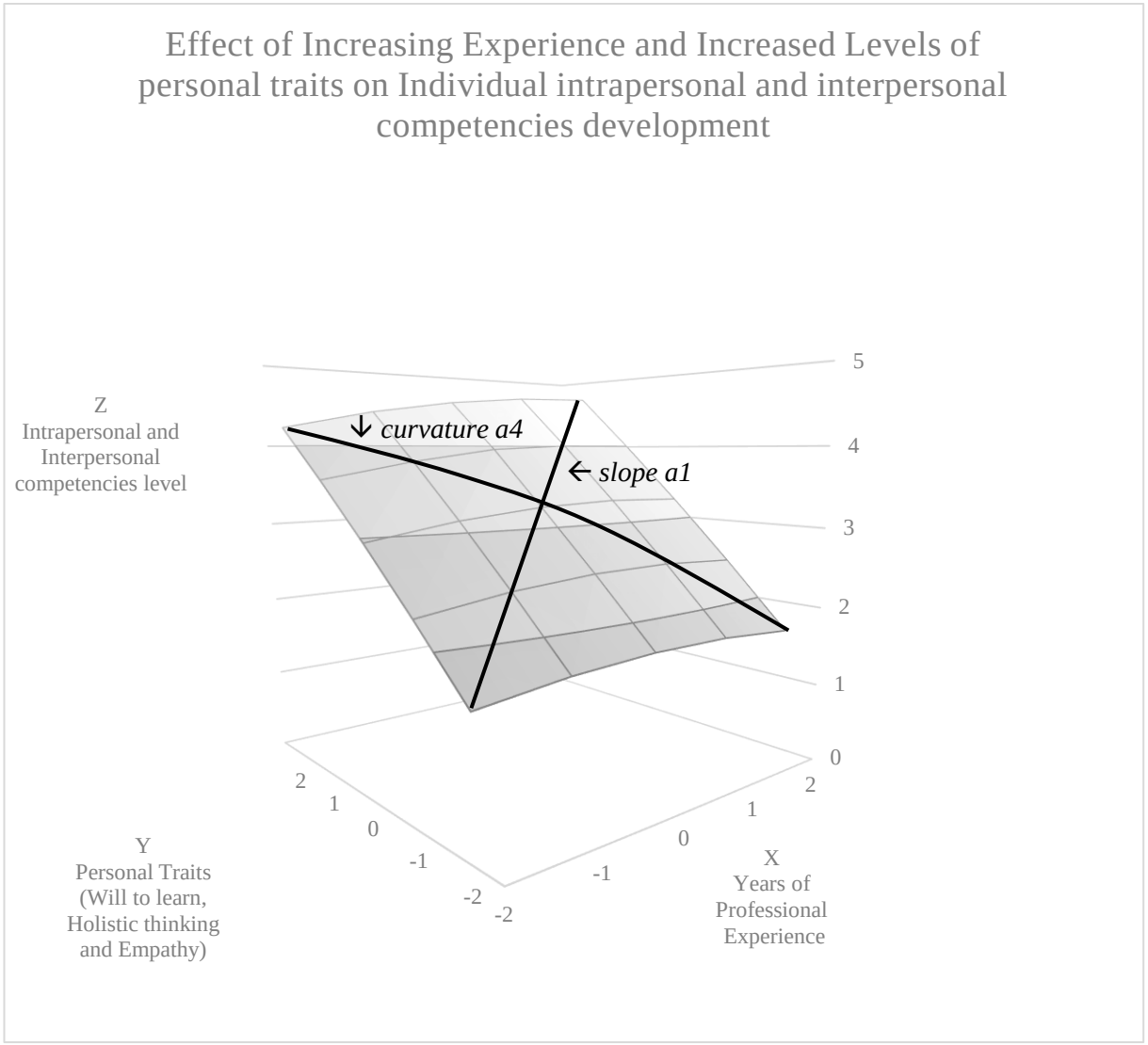


Figure 1: Polynomial regression analysis results

Table 4: Testing slopes and curves

	Intrapersonal and interpersonal competencies level			
	Coefficient	Standard Error	*Test statistic (t)*	*Sign.*
Effects along balanced line (PT=PE or x=y)				
Slope (**a1** = b1 + b2)	.80	.04	21.197	.000
Curvature (a2 = b3 + b4)	-.02	.03	-0.684	.494
Effects along balanced line (PR= -PE or x=-y)				
Slope (a3 = b1 – b2)	-.65	.05	-12.108	.000
Curvature (**a4** = b3 – b4 + b5)	-.08	.04	-2.128	.034

Notes: PT = Personal Traits; PE = Professional Experience; a1 and a2 represent the slope of each surface along the x=y line (i.e. PT=PE), while a3 and a4 represent the slope of each surface along the x=-y line (PT=-PE), where b1, b2, b3, b4, and b5 are the unstandardized coefficients on PT, PE, PT^2, PE*PE, and PE^2, respectively; table is based on (Shanock et al., 2010).

The results, that are displayed in table 3 and are plotted in figure 1, show that the line of perfect agreement as related to intrapersonal and interpersonal competencies level (*z)* has a positive and significant slope, which proves that agreement between the level of personal traits and professional experience is significantly important. The lowest level of intrapersonal and interpersonal competencies can be observed when personal traits (willingness to learn', 'holistic thinking' and 'empathy') and professional experience are low. These levels are becoming increasingly higher toward the back of the graph (figure 1), where the levels of personal traits and professional experience are both in agreement and high.

The results also indicate that personal traits seem to be of importance for the intrapersonal and interpersonal competency development. If this is the case, these competencies grow with increasing years of experience. Individuals with high levels of personal traits are expected to develop their relative high levels of the remaining intrapersonal and interpersonal competencies with increasing professional experience.

Table 3 displays the testing slopes and curves. The slopes *a1*, *a3* and the curvature *a4* have significant results. Table 3 shows the significance of the slope (a_1) on the diagonal $x = y$. This significant slope (a_1) is ascending from slope *a1* from (-2, -2, 1.55) to (2, 2, 4.74) is significant (see figure 1). This means that an increased level of years of professional experience if and only if combined with increased levels of personal traits are significantly leading to higher intrapersonal and interpersonal competence levels.

The curvature *a4* shows the degree of discrepancy between personal traits and years of professional experience (Shanock et al., 2010). The *a4* value in our example is significantly negative. It indicates a decreased of intrapersonal and interpersonal competencies level when the discrepancy between personal traits and professional experience increased. Thus, when both independent variables *x* and *y* are not combined on the slope *a1*, the dependent variable level *z* will decrease.

Discussion

In this paper, we examined the development potential of the most important intrapersonal and interpersonal PSM competencies required in PSM. As research has shown, 'human'

skills are becoming increasingly important to the profession, thus, a study on the development potential of these competencies provides a valuable contribution.

We hypothesize in this paper that intrapersonal and interpersonal PSM competencies can be developed (Bailly & Léné, 2012; Bergh et al., 2006; Gillard, 2009). Besides three variables, which are therefore labelled as personal traits, the hypothesis can be confirmed. Sixteen competencies have shown to develop with increasing professional experience.

Through literature review, we also confirm a positive relationship between professional experience and competency development (e.g. Aserkar et al., 2017; Čiarniene et al., 2010; Elmuti, 2004; Feisel et al., 2011). Participating purchasers with more professional experience are therefore expected to achieve higher levels of intrapersonal and interpersonal competencies.

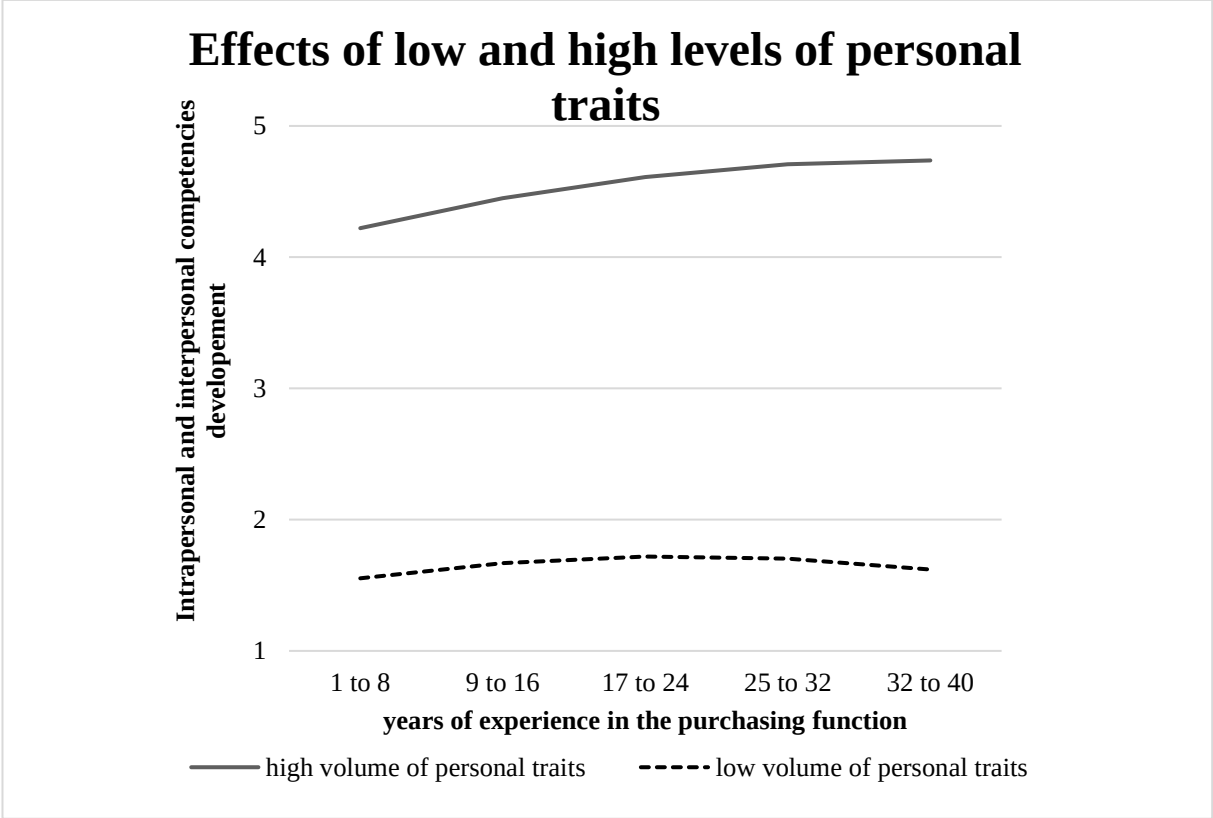


Figure 2: Effects of low and high levels of personal traits (Willingness to learn; Holistic thinking and Empathy) and the increasing years of professional experience on individual intrapersonal and interpersonal competencies development

The polynomial regression analysis results confirm the strength of the two predicting layers: personal traits and professional experience, with a bigger impact of personal traits. Figure 2 displays the lines $y=2$ and $y=-2$ and shows the large differences in the expected level of intrapersonal and interpersonal competencies, when taking the factor personal trait into consideration. Furthermore, Figure 2 shows that strong levels of personal traits and professional experience lead to a stronger development of intrapersonal and interpersonal

competencies. We find that if the level of personal traits is high, the level of intrapersonal and interpersonal PSM competencies increases with increasing professional experience. On the other hand, if the level of personal traits is low, intrapersonal and interpersonal competencies are expected to decline with increasing professional experience. This finding underlines the importance of personal traits and professional experience on intrapersonal and interpersonal competency development.

Managerial implications and future research recommendations

Based on the findings, we conclude that purchasing departments aiming for a PSM team with high levels of intrapersonal and interpersonal competencies have to recruit employees with high levels of the personal traits willingness to learn, holistic thinking and empathy. Our analysis shows evidence that these variables do not increase with rising professional experience and can be therefore seen as unchangeable personality traits rather than developable competencies.

Willingness to learn, holistic thinking and empathy seem to be proxy's for intrapersonal and interpersonal PSM competencies development. It seems that individual purchasers, who have high levels of these traits, develop other intrapersonal and interpersonal competencies. PSM organisations who are able to identify and employ such individuals are expected to improve their 'human' resources, which are becoming increasingly important in PSM. Moreover, sixteen out of nineteen competencies analysed had significant ANOVA results, which means that these competencies are expected to be developable. Organizations who require high levels intrapersonal and interpersonal competencies are advised to consider training and development programs for improving the competencies of the employees.

In order to validate the results of this research, we advise to further investigate this topic in the future. Especially the question how to identify individuals with high levels of personal traits is becoming an emerging issue. The findings of this paper can serve as a starting point for further investigation. Another important topic which was not covered in this study is training and development methods for developing intrapersonal and interpersonal competencies. Current literature does not provide adequate results and a sophisticated study on this issue is recommended. Factors such as corporate training may accelerate the development of these competencies, especially the transferrable competencies mentioned in this paper. These competencies are expected to be greatly impacted by training.

REFERENCES

Arnold, R., Nolda, S., & Nuissl, E. (2001). Worterbuch Erwachsenen-padagogik

Aserkar, R., Kumthekar, N., & Inamdar, S. (2017). Training and development needs of logistics and supply chain professionals in South Asia. *International Journal of Shipping and Transport Logistics, 9*, 85. doi:10.1504/IJSTL.2017.080576

Bailly, F., & Léné, A. (2012). The personification of the service labour process and the rise of soft skills: A French case study. *Employee Relations, 35*. doi:10.1108/01425451311279429

Bals, L., Schulze, H., Kelly, S., & Stek, K. (2019). Purchasing and supply management (PSM) competencies: Current and future requirements. *Journal of Purchasing and Supply Management, 25*(5), 100572.

Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of management, 17*(1), 99-120.

Barney, J. B. (2012). Purchasing, supply chain management and sustained competitive advantage: The relevance of resource-based theory. *Journal of Supply Chain Management, 48*(2), 3-6.

Bergh, A.-M., Van Staden, C., Joubert, P. M., Krüger, C., Pickworth, G. E., Roos, J. L., . . . Lindeque, B. G. (2006). Medical students' perceptions of their development of 'soft skills' Part II: The development of 'soft skills' through 'guiding and growing'. *South African Family Practice, 48*(8), 15-15d.

Brown, G., & Ahmed, Y. (2009). The value of work placements. *Enhancing the Learner Experience in Higher Education, 1*, 19. doi:10.14234/elehe.v1i1.4

Caspi, A., & Roberts, B. (2001). Personality Development Across the Life Course:The Argument for Change and Continuity. *Psychological Inquiry, 12*, 49-66. doi:10.1207/S15327965PLI1202_01

Čiarniene, R., Kumpikaite, V., & Vienazindiene, M. (2010). Development of students' competencies: Comparable analysis. *Economics & Management, 10*.

Currie, G., & Kerrin, M. (2003). 'HRM and Knowledge Management – Enhancing Shared Learning in a Pharmaceutical Company'. *International Journal of Human Resource Management - INT J HUM RESOUR MANAG, 14*, 1027-1045. doi:10.1080/0958519032000124641

Elias, J., & Scarbrough, H. (2004). Evaluating human capital: an exploratory study of management practice. *Human Resource Management Journal, 14*(4), 21-40.

Elmuti, D. (2004). Can management be taught? *Management Decision, 42*(3/4), 439-453. doi:10.1108/00251740410523240

Feisel, E., Hartmann, E., & Giunipero, L. C. (2011). The importance of the human aspect in the supply function: Strategies for developing PSM proficiency. *Journal of Purchasing and Supply Management, 17*(1), 54-67.

Fleenor, J., McCauley, C., & Brutus, S. (1996). Self–other agreement and leader effectiveness. *The Leadership Quarterly, 7*, 487-506. doi:10.1016/S1048-9843(96)90003-X

Gillard, S. (2009). Soft Skills and Technical Expertise of Effective Project Managers. *Issues in Informing Science and Information Technology, 6*. doi:10.28945/1092

Giunipero, L. C., & Pearcy, D. H. (2000). World-class purchasing skills: an empirical investigation. *Journal of Supply Chain Management, 36*(3), 4-13.

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal, 17*(S2), 109-122.

Haesli, A., & Boxall, P. (2005). When knowledge management meets HR strategy: An exploration of personalization-retention and codification-recruitment configurations. *International Journal of Human Resource Management - INT J HUM RESOUR MANAG, 16*, 1955-1975. doi:10.1080/09585190500314680

Hoyle, R. H., & Davisson, E. L. (2011). Assessment of Self-Regulation and Related Constructs: Prospects and Challenges. *NRC Workshop on Assessment of 21st Century Skills*.

Jasimuddin, S. M., Klein, J. H., & Connell, C. (2005). The paradox of using tacit and explicit knowledge: strategies to face dilemmas. *Management Decision, 43*(1), 102-112.

Kiratli, N., Rozemeijer, F., Hilken, T., de Ruyter, K., & de Jong, A. (2016). Climate setting in sourcing teams: Developing a measurement scale for team creativity climate. *Journal of Purchasing and Supply Management, 22*(3), 196-204.

Knight, L., Tu, Y.-H., & Preston, J. (2014). Integrating skills profiling and purchasing portfolio management: An opportunity for building purchasing capability. *International Journal of Production Economics, 147*, 271–283. doi:10.1016/j.ijpe.2013.06.013

Kyllonen, P. C. (2013). Soft Skills for the Workplace. *Change: The Magazine of Higher Learning, 45*(6), 16-23. doi:10.1080/00091383.2013.841516

Lau, A. (2010). Training needs of purchasing and supply management personnel in Hong Kong. *Journal of European Industrial Training, 34*, 400-415. doi:10.1108/03090591011049783

Le Deist, F. D., & Winterton, J. (2005). What is competence? *Human Resource Development International*, 27-46.

Mol, M. (2003). Purchasing's Strategic Relevance. *Journal of Purchasing and Supply Management, 9*, 43-50. doi:10.1016/S0969-7012(02)00033-3

Mroczek, D., & Spiro, A. (2003). Modeling Intraindividual Change in Personality Traits: Findings From the Normative Aging Study. *The journals of gerontology. Series B, Psychological sciences and social sciences, 58*, P153-165. doi:10.1093/geronb/58.3.P153

Mumford, M., Zaccaro, S., Harding, F., Jacobs, T. O., & Fleishman, E. (2000). Leadership Skills for a Changing World: Solving Complex Social Problems. *The Leadership Quarterly, 11*, 11-35. doi:10.1016/S1048-9843(99)00041-7

Nadler, D. A., & Tushman, M. L. (1999). The organization of the future: Strategic imperatives and core competencies for the 21st century. *Organizational Dynamics, 28*(1), 45-60. doi:https://doi.org/10.1016/S0090-2616(00)80006-6

Nonaka, I., & Takeuchi, H. (1995). *The Knowledge-Creating Company: How Japanese Companies create the Dynamics of Innovation*. New York: Oxford University Press.

Paglis Dwyer, L., & G. Green, S. (2002). Leadership self-efficacy and managers' motivation for leading change. *Journal of Organizational Behavior, 23*, 215-235. doi:10.1002/job.137

Parks-Leduc, L., Feldman, G., & Bardi, A. (2014). Personality traits and personal values: A meta-analysis. *Personality and Social Psychology Review, 19*. doi:10.1177/1088868314538548

Perfect, P. (2017). European Survey on Purchasing Competences. Purchasing skills leading to success. *White Paper*.

Roberts, B., & Takahashi, Y. (2011). Personality Trait Development in Adulthood: Patterns and Implications. *The Japanese Journal of Personality, 20*, 1-10. doi:10.2132/personality.20.1

Shanock, L. R., Baran, B. E., Gentry, W. A., Pattison, S. C., & Heggestad, E. D. (2010). Polynomial regression with response surface analysis: A powerful approach for examining moderation and overcoming limitations of difference scores. *Journal of Business and Psychology, 25*(4), 543-554.

Smith, E. (2001). The role of tacit and explicit knowledge in the workplace. *Journal of Knowledge Management, 5*(4), 311-321.

Soto, C., John, O., Gosling, S., & Potter, J. (2011). Age Differences in Personality Traits From 10 to 65: Big Five Domains and Facets in a Large Cross-Sectional Sample. *Journal of Personality and Social Psychology, 100*, 330-348. doi:10.1037/a0021717

Swart, J., & Kinnie, N. (2003). Sharing in Knowledge-Intensive Firms. *Human Resource Management Journal*, *13*, 60-75. doi:10.1111/j.1748-8583.2003.tb00091.x

Venkatesh, V., & Gopal, S. (2010). Expectation Disconfirmation and Technology Adoption: Polynomial Modeling and Response Surface Analysis. *MIS Quarterly*, *34*, 281-303. doi:10.2307/20721428

Von der Gracht, H., Giunipero, L. C., & Schueller, M. (2016). *Future-proof procurement; Now or never: the big procurement transformation*. Retrieved from https://advisory.kpmg.us/articles/2017/future-proof-procurement.html

Wright, P. M., Dunford, B. B., & Snell, S. A. (2001). Human resources and the resource based view of the firm. *Journal of Management*, *27*(6), 701-721. doi:10.1177/014920630102700607

Yukl, G. (2012). Effective Leadership Behavior: What We Know and What Questions Need More Attention. *Academy of Management Perspectives*, *26*, 66-85. doi:10.5465/amp.2012.0088

Zheng, J., Knight, L., Harland, C., Humby, S., & James, K. (2007). An analysis of research into the future of purchasing and supply management. *Journal of Purchasing and Supply Management*, *13*(1), 69-83.

Appendix

Table 5: ANOVA Results (dependent variable: Years of Professional Experience)

ANOVA

		Sum of Squares	DF	Mean Square	F	Sig.
Holistic thinking	Between Groups	35,583	36	,988	1,142	,265
	Within Groups	455,969	527	,865		
	Total	491,551	563			
Willingness to learn	Between Groups	16,351	36	,454	,983	,500
	Within Groups	243,612	527	,462		
	Total	259,963	563			
Capacity to be empathetic	Between Groups	27,958	36	,777	1,172	,231
	Within Groups	349,290	527	,663		
	Total	377,248	563			
[Holistic Thinking Holistic thinking involves understanding a system by sensing its large-scale patterns and reacting to them] [What is your competence for this task?]	Between Groups	35,583	36	,988	1,142	,265
	Within Groups	455,969	527	,865		
	Total	491,551	563			
[Capacity to be empathetic Capacity to listen and understand] [What is your competence for this task?]	Between Groups	27,958	36	,777	1,172	,231
	Within Groups	349,290	527	,663		
	Total	377,248	563			
[Willingness to Learn Being professionally curious, motivation to learn continuously] [What is your competence for this task?]	Between Groups	16,351	36	,454	,983	,500
	Within Groups	243,612	527	,462		
	Total	259,963	563			
[Proactivity Being anticipatory, change-oriented and self-initiated behavior in	Between Groups	36,653	36	1,018	1,885	,002
	Within Groups	284,586	527	,540		
	Total	321,239	563			

situations] [What is your competence for this task?]						
[Inventiveness Being imaginativeness] [What is your competence for this task?]	Between Groups	46,762	36	1,299	1,783	,004
	Within Groups	383,967	527	,729		
	Total	430,729	563			
[Capacity to be empathetic Capacity to listen and understand] [What is your competence for this task?]	Between Groups	27,958	36	,777	1,172	,231
	Within Groups	349,290	527	,663		
	Total	377,248	563			
[Loyalty Being trustworthy in professional life] [What is your competence for this task?]	Between Groups	26,125	36	,726	1,673	,010
	Within Groups	228,618	527	,434		
	Total	254,743	563			
[Honesty Being trustworthy in professional life] [What is your competence for this task?]	Between Groups	24,214	36	,673	1,773	,004
	Within Groups	199,975	527	,379		
	Total	224,190	563			
[Self-assurance Being assertive and having self esteem] [What is your competence for this task?]	Between Groups	33,122	36	,920	1,664	,010
	Within Groups	291,437	527	,553		
	Total	324,559	563			
[Willingness to take risks] [What is your competence for this task?]	Between Groups	50,442	36	1,401	1,990	,001
	Within Groups	371,138	527	,704		
	Total	421,580	563			
[Communication Skills Having the skills and knowledge of how to communicate (written and oral).] [What is your competence for this task?]	Between Groups	38,738	36	1,076	1,854	,002
	Within Groups	305,914	527	,580		
	Total	344,652	563			

[Team Member Skills The ability to work in a group of persons acting together as a team.] [What is your competence for this task?]	Between Groups	50,205	36	1,395	2,124	,000
	Within Groups	346,098	527	,657		
	Total	396,303	563			
[Leadership Managing employees in teams.] [What is your competence for this task?]	Between Groups	139,639	36	3,879	3,458	,000
	Within Groups	591,169	527	1,122		
	Total	730,809	563			
[Training Staff Improve the knowledge and skills of employees by training.] [What is your competence for this task?]	Between Groups	142,692	36	3,964	3,150	,000
	Within Groups	663,067	527	1,258		
	Total	805,759	563			
[Building Relations Networking and relations management] [What is your competence for this task?]	Between Groups	39,922	36	1,109	1,522	,029
	Within Groups	384,097	527	,729		
	Total	424,020	563			
[Cross-cultural Awareness Skills The ability to become aware of cultural values, beliefs and perceptions of yourself and other cultures.] [What is your competence for this task?]	Between Groups	65,898	36	1,831	2,029	,001
	Within Groups	475,554	527	,902		
	Total	541,452	563			
[Power of Persuasion Having influential skills] [What is your competence for this task?]	Between Groups	50,585	36	1,405	2,004	,001
	Within Groups	369,521	527	,701		
	Total	420,106	563			