
Purchasing and supply management skills and personality traits across roles: a job advertisements perspective

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Abstract: This paper contributes to a growing trajectory of research on purchasing and supply management skills and requirements and uses job advertisements as a novel source of data and research perspective. Our findings broadly corroborate the extant literature in showing which skills are required across different hierarchical organisational levels. Our analysis also identified the key and hitherto underexplored personality traits required by PSM professionals. At a holistic level, the findings show that employers have a clear and consistent view of PSM personality: being conscientious and able to work independently, willing to travel, flexible, proactive and stress-resistant. However, traits generally associated with innovativeness, such as intellectual

curiosity, boundary spanning, sociability or teamwork and cooperation, were not found in the data. Although advertisements for junior buyers featured less combined skills, a higher number of advertisements than those for more senior jobs featured at least one personality trait and they were more heavily emphasised.

Keywords: purchasing and supply management skills; personality traits; Big Five model of personality; job advertisements; conscientiousness; purchasing and supply management professionals.

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1 Introduction

Purchasing and supply management (PSM) professionals are responsible for defining and implementing category strategy, managing supply risks, establishing long-term relationships and leveraging innovation capabilities, while simultaneously ensuring that all operative tasks are completed and striving to reduce costs (Feisel et al., 2011). Six areas of expertise have been identified in order to fulfil these demanding and sometimes conflicting tasks: technical (basic administrative skills), advanced PSM skills (category management, sophisticated procurement levers), interpersonal (interaction with people in teams), internal enterprise (market analysis and internal relationships), External enterprise (external relationships management) and strategic business skills (broader strategic issues and risk management) (Tassabehji and Moorhouse, 2008). Such skills can also be ordered hierarchically, evolving from PSM skills towards generic managerial skills (Giunipero, 2000) and shows that the skillset required varies with seniority (Mulder et al., 2005), for example, an assistant buyer relies primarily on practical purchasing skills while a purchasing manager leverages management, information processing and communication skills.

As the role of industrial PSM professionals becomes increasingly important, so do the challenges and complexity associated with actually performing PSM activities (Giunipero et al., 2006). These challenges are further exacerbated by the pace of change and need to rapidly and consistently reskill to develop talent for economic reasons across specific countries, e.g., the USA (Morath, 2021) and the UK (Allas et al., 2020), as well as at the level of industries and individual companies, e.g., Amazon has created a \$700 million fund to reskill 100,000 workers, Orange a €1.5 billion fund and PwC one of \$3 billion (Chopra-McGowan and Reddy, 2020). A WEF study in 2018 found that 54% of workers will need reskilling before 2022, with them requiring skills such as creativity, originality and initiative, critical thinking, persuasion, negotiation, resilience, flexibility and problem-solving to increase their value (WEF, 2018). In an attempt to deal with this, the ILO (n.d.) has adopted the Centenary Declaration for the Future of Work, in which member states are called upon to establish lifelong learning systems and this is seen as a joint responsibility between governments, and employers' and workers' organisations (ILO, 2019). This agenda has also been identified in the PSM literature (Van Hoek et al., 2020) in which PSM talent is seen as being critical to the development of new PSM capabilities and fostering this talent will require focused leadership to create lifelong learning opportunities for PSM professionals. There is an existing trajectory of research that looks at a range of the requirements that PSM professionals need to meet these challenges (e.g., Bals et al., 2019), but is mainly based on purchasing community inputs and self-reporting and therefore may be at a heightened risk of respondent bias. To further strengthen the field's confidence in the findings and conclusions of the extant literature concerning the required purchasing skills and their hierarchy, it is necessary to obtain input from a broader range of informants, and this paper provides such an alternative perspective by using data from 432 job adverts for four purchasing hierarchical levels (as outlined by Mulder et al., 2005). The results of secondary data analyses, like online job advertisements, are a vital and relevant source of highly up-to-date and available information. These results provide readers with a firm understanding of what employers require from employees (e.g., Shou and Wang, 2015; Stek et al., 2021).

The contribution of this paper is twofold. First, we explore whether a different mix of more complex skills is required with increasing PSM seniority, and our empirical findings largely corroborate those of the extant literature. However, we also show that employers use professional experience and relevant industry experience requirements as proxies for the required skill level. Second, during the coding process, we identified a series of requirements in about 75% of the advertisements that could not be assigned to any existing skill or competence group taken from the literature. After analysis, the vast majority of these referred to PSM personality traits, and so we complement the existing stream of PSM skills and competencies papers (e.g., Bals et al., 2019; Tassabehji and Moorhouse, 2008) by looking specifically at traits and addressing this gap in the literature. Further, the recognition of the increased necessity and demand for reskilling and that talent development cannot be limited to just training (Van Hoek et al., 2020) means that underlying traits are critical in ensuring that current and future professionals can fully meet these challenges. The paper has a robust theoretical underpinning by using relevant trait theory and an adaptation of the Big Five model of personality traits (Barrick and Mount, 1991) which allowed a clearer perspective of desirable PSM's personality traits to emerge: autonomy, reliability, diligence, consistency (conscientiousness), stress resistance (emotional stability), willingness to travel, open-mindedness (openness to experience), flexibility (agreeableness) and proactivity (extraversion). In addition, we did not find any advertisements that required significantly different personality traits, and there were no significant differences among hierarchical levels, except for conscientiousness which decreases with seniority. This broad consensus across these personality traits and their mix suggest that employers still view PSM as a primarily transactional and operative activity, yet there is a need to support PSM's growth towards a function of strategic importance.

The paper is organised as follows. First, we provide a review of the extant literature on PSM skills and complement them with the personality traits classification model. This is followed by a methodology outlining the coding process showing the a priori codes. The findings section is divided into two parts, the first summarises PSM skills and competencies along with the four hierarchical levels, and the second classifies the required buyer personality traits. The discussion section shows how these findings relate to the extant literature and the implications for practice before concluding with some relevant opportunities for further research.

2 Literature review

2.1 Knowledge, skills, abilities and others

The literature demonstrates considerable ambiguity and often conflation between the terms used to define what employees need to perform their job tasks (Delamare-Le Deist and Winterton, 2005). Several different approaches have been used, but the Knowledge, skills, abilities and others (KSAO) framework provides a robust holistic view of job analysis and descriptions (Williamson et al., 2013) and, when these are synergistically combined across all employees, organisational core competencies can be generated (Lahti, 1999). Such an approach distinguishes between the extent an employee has learned or acquired information that directly relates to the performance of a job (*knowledge*), the potential to execute tasks (*skills and abilities*), which are underpinned

by *other* personal characteristics such as individual traits, motives and interest that indicate an employee's probable behaviour (Lahti, 1999; Levine, 1983; Mansfield, 2004). As these aspects are closely linked and function together in the performance of tasks, analysing the relationships between the various KSAO's and resultant behaviours is also seen in various studies (e.g., Kaplan et al., 2014).

2.2 KSAO in PSM

An effectively functioning PSM department is critical for an organisation's success (Carter and Narasimhan, 1996). A significant evolution of PSM roles and tasks over the last two decades, seen in the move from operationally focused clerical activities towards strategic supply chain management (SCM) ones (Kraljic, 1983), requires a different set of KSAOs, which have been studied in various ways. For example, Hohenstein et al. (2014) provide a comprehensive literature overview of human resource management in SCM. More specifically, the most cited papers in the PSM area are shown in Table 1. We use an early study by Kolchin and Giunipero (1993), who divide PSM skills and competencies into two basic groups: PSM specific and generic managerial, to structure this analysis of the studies which followed. Giunipero and Kolchin (2000), Carr and Smeltzer (2000), Gammelgaard and Larson (2011), Mulder et al. (2005), and Tassabehji and Moorhouse (2008) provide more refined classifications, reflecting the increasing maturity and complexity of PSM activities. A more recent study (Bals et al., 2019) compares current PSM activity requirements with those identified by Tassabehji and Moorhouse (2008) and identifies some additional KSAOs.

Table 1 Overview of buyer skills and competencies classifications

<i>Skill groups (Kolchin and Giunipero, 1993)</i>	<i>PSM skill groups</i>	<i>Generic (management) skill groups</i>
Giunipero (2000)	<ul style="list-style-type: none"> • Strategic purchasing skills • Quantitative purchasing skills 	<ul style="list-style-type: none"> • Process management • Team skills • Decision-making • Behavioural skills • Negotiation skills
Carr and Smeltzer (2000)	<ul style="list-style-type: none"> • Technical skills 	<ul style="list-style-type: none"> • Skills techniques • Behaviour Skills
Gammelgaard and Larson (2011)	<ul style="list-style-type: none"> • Quantitative/technological skills • SCM core skills 	<ul style="list-style-type: none"> • Interpersonal/managerial basic skills
Mulder et al. (2005)	<ul style="list-style-type: none"> • Practical purchasing • Initial purchasing 	<ul style="list-style-type: none"> • Information and communication • Management
Tassabehji and Moorhouse (2008)	<ul style="list-style-type: none"> • Technical skills (incl. advanced procurement process skills) • External enterprise skills 	<ul style="list-style-type: none"> • Interpersonal skills • Internal enterprise skills • Strategic skills
Bals et al. (2019)	<ul style="list-style-type: none"> • Technical skills • External enterprise skills 	<ul style="list-style-type: none"> • Interpersonal skills • Internal enterprise skills • Strategic business skills

This PSM literature also shows that different KSAOs are needed to perform activities at different hierarchical levels (Giunipero, 2000; Mulder et al., 2005; Tassabehji and Moorhouse, 2008; see: Table 2). PSM professionals first acquire initial PSM skills (Mulder et al., 2005), then leverage interpersonal and negotiation skills (Giunipero, 2000; Tassabehji and Moorhouse, 2008) in the early stages of their careers before moving on to advanced procurement, decision-making, internal and external coordination skills (Giunipero, 2000; Tassabehji and Moorhouse, 2008), finally mastering the management and strategic business skills (Mulder et al., 2005; Tassabehji and Moorhouse, 2008) required for more senior PSM positions. These distinctions, however, were mainly substantiated by PSM professionals' interviews and surveys, and their validity has not yet been tested through alternative data sources such as job descriptions or advertisements, observation or experiments.

Table 2 PSM skills by hierarchical level

<i>Position</i>	<i>Most-used skill groups</i>	<i>Least-used skill groups</i>
Assistant buyer	Practical purchasing	Initial purchasing, management
Buyer	Practical purchasing, Information and communication	Management
Senior buyer	Initial purchasing, Information and communication, management	Practical purchasing
Purchasing manager	Information and communication, management	Practical purchasing

Source: Adapted from Mulder et al. (2005)

2.3 Personality traits

As shown above, the majority of the extant KSAO literature does not focus on the other personal characteristics such as individual traits, motives and interest that indicate an employee's probable behaviour (Mansfield, 2004), and this is a research gap that needs addressing to build a more holistic understanding of the requirements for PSM professionals. Personality traits can be seen as: "... the dispositions to exhibit a certain kind of response across various situations" [Rauch and Frese, (2007), p.355] and: "... the ways in which we generally describe a person" [Shrestha, (2017), p.1), typically representing the other (from the KSAO framework) personal characteristic of job incumbents (Muchinsky, 2012). The formal development of trait theory is generally agreed to have begun with Allport (1937), who identified three main trait types (cardinal, primary and secondary). The theory was further elaborated by Eysenck (1952, 1970, 1982), who used factor analysis to show that the behaviour of hospitalised military service personnel could be represented by two dimensions: introversion/extroversion and neuroticism/stability. Cattell (1965) disagreed with the limitations of understanding personality as being represented by only two dimensions of behaviour and started to collect data from a wide range of participants to generate sixteen personality trait factors. More recent trait theory developments include the Big Five model of personality traits, which will be discussed in more detail later in this section.

Trait theory has been used in several different academically and functionally orientated fields, e.g., in project management (Creasy and Anantatmula, 2013); inventory management (Strohhecker and Größler, 2013); quality management (Lounsbury et al.,

2014); engineering (Williamson et al., 2013) and SCM, where Timmer and Kaufmann (2019) look at dark personality traits in coping with adverse supply chain events.

Many benefits of trait identification and development have been shown; as valid predictors of job performance and satisfaction for a wide range of jobs and job groups (Salgado, 1997, 2002), as critical facilitators for recruitment, selection, training, development and mentoring (Muchinsky, 2012), to enhance the calibre of an organisation's human resource capital (Williamson et al., 2013). Because personality traits are more job-specific than other individual characteristics (e.g., demographics), they can be positively related to job performance (Tett et al., 2006).

Within the PSM field, van Hoek (2020) identifies the increased need for lifelong learning capabilities and also executive leadership as a driver of PSM capability development and other fields of study have related traits that fall into the different categories of the Big Five model to these two requirements. Those with high levels of conscientiousness lead to greater degrees of organisation and self-control (McCrae and Costa 1999), openness to experience relates to being self-governed (Hmel and Pincus, 2002) and autonomy (Koestner and Losier, 1996) and agreeableness are related to training success (Salgado, 1997). Key facets of these traits, specifically taking responsibility and planning, have been shown as key characteristics required in lifelong learning (Love, 2011). In addition, emotional stability has been positively related to leadership emergence and effectiveness (Judge et al., 2002a), which could foster talent development.

Active talent development, by both, recruiting and then retaining those that have the best chance to develop the skills required to ensure organisational success and survival (Breaugh, 2013) is a key requirement for all organisations. Personality measures, often in psychometric testing, are increasingly being used in the hiring process to evaluate job applicants' suitability (Rothstein and Goffin, 2006). For example, in 2001, 26% of large US employers used pre-hire assessments, but in 2013 this had risen to 57% (Weber, 2015). It demonstrates that employers see the value in focusing on the characteristics of a prospective employee (Newell and Newell, 2002) and that the critical criteria are: "... personality traits, communication (especially verbal) skills, with less emphasis, technical skills" [Callaghan and Thompson, (2002), p.239], which stem from personality (in the form of a 'good attitude'), rather than something which can be taught. It shows that an organisation should focus on getting the 'right' person with the personality traits that best fit their organisation, as their ability to develop these whilst in employment may be more limited.

As shown in our analysis of the extant literature, skills and abilities are well-researched in PSM, but the focus on personality traits is far more limited (Timmer and Kaufmann, 2019). In the PSM literature, traits are sometimes omitted (e.g., Mulder et al., 2005) or mentioned as a prerequisite for certain buyer types, for example, the trait of empathy for the 'stimulator' buyer type (Bichon et al., 2009). In most of the extant literature, traits are seen as a part of another skill group: communicativeness and persuasiveness among Interpersonal skills (Tassabehji and Moorhouse, 2008), patience and flexibility into Behavioural skills (Carr and Smeltzer, 2000), leadership into Team skills and creativity among Behavioural skills (Giunipero, 2000), integrity, honesty, enthusiasm or carefulness in Personal skills (Wu et al., 2013), ambition, organising or self-discipline, included within the factors of interpersonal/managerial skills (Gammelgaard and Larson, 2011). Although Myers et al. (2004) find that social skills

positively influence SCM managers' performance; their social skills approach is limited to interpersonal skills. Killen and Kamauff (1995) separate buyer personal attributes from Product knowledge, Principles of PSM and Interpersonal skills and argue that integrity, initiative, self-esteem, and decision-making are vital personal attributes. Faes et al. (2001) examine buyer's profiles, mostly based on their traits, finding that the essential traits are based on the buyer's own opinion: integrity and honesty, self-confidence, adaptability, extroversion, or self-discipline.

2.4 Big Five model of personality traits

To address the complexity of human personality, a comprehensive framework, named the Big Five model, was developed to attribute major personality traits to five broad categories (Goldberg, 1990). There is a consensus that all standard personality traits can be described within its five broad trait categories, and this means that the Big Five model is the most widely used framework to structure personality studies (Brandstätter, 2011; Gosling et al., 2003). The traits and typical operationalisations are shown in Table 3.

Table 3 The Big Five dimensions adapted from Goldberg (1990), John and Srivastava (1999), Barrick and Mount (1991) and Judge et al. (1999)

<i>Big Five personality trait continuum</i>	<i>Typically operationalised as:</i>
Openness to experience (culture, intellectual activities)	<ul style="list-style-type: none"> • Associated with imagination, culture, intellectual curiosity and artistic sensitivity
Versus	<ul style="list-style-type: none"> • Seeking out intense, euphoric experiences
Closed to experience	<ul style="list-style-type: none"> • Preference of variety
Conscientiousness (conscience, conformity)	<ul style="list-style-type: none"> • Being careful, thorough, responsible and planned
Versus	<ul style="list-style-type: none"> • Organisation and efficiency
Lack of direction	<ul style="list-style-type: none"> • Self-discipline • Aim for achievement
Extraversion	<ul style="list-style-type: none"> • Optimism, spontaneity
Versus	<ul style="list-style-type: none"> • Energy
Introversion	<ul style="list-style-type: none"> • Sociability • Talkativeness • Attention-seeking
Agreeableness	<ul style="list-style-type: none"> • Compassionate, trusting, likeable
Versus	<ul style="list-style-type: none"> • Cooperative
Antagonism	<ul style="list-style-type: none"> • Well-tempered
Emotional stability	<ul style="list-style-type: none"> • Impulse control
versus	<ul style="list-style-type: none"> • Calmness
Neuroticism	

The model's wide use and clear outcome implications mean it has a well-established construct content (De Raad, 2000). A significant amount of empirical research linking personality with success in the workplace has used the model (Costa and McCrae, 1992),

and it has been validated: "...against many different criteria, including: job performance (Salgado, 1997), job satisfaction (Judge et al., 2002b), career success (Judge et al., 1999), life satisfaction (DeNeve and Cooper, 1998) and academic performance (Lounsbury et al., (2003), p.201]" and also on the effect of employment tenure (Woods et al., 2018). Such analyses provide valuable insights. For example, high conscientiousness scores are an excellent generic predictor of occupational success, high extraversion and agreeableness are particularly relevant for successful salespeople (Barrick and Mount, 1991), extraversion leads to better performance in training, while conscientiousness suggests superior job performance (Hurtz and Donovan, 2000).

In addition, the model has been replicated across a wide range of industry, organisational and functional settings (De Raad, 2000), for example, education (Lounsbury et al., 2009) and concerning service workers (Licata et al., 2003). The Big Five model has also been applied in the wider SCM field. Brauner et al. (2013) experimentally examine logistic performance tasks using a web game, although they did not find any significant differences and performance only varied according to gender and technical self-efficacy. Similarly, Periat et al. (2007) use personality traits as predictors of customer orientation in logistics, finding that openness to experience, agreeableness, and conscientiousness are positively related and can be used to select customer-oriented logistics personnel. They also find that the importance of individual traits varies based on employee's seniority, highlighting the importance of extraversion for managers. On the other hand, openness to experience and agreeableness are more critical to frontline employees, but conscientiousness is equally important across the seniority levels.

We have therefore identified two main gaps in the extant PSM literature, which our research addresses. First, the field lacks hierarchically ordered skills model taken from an alternative data perspective (e.g., job advertisements) and second, a theoretically underpinned, hierarchically ordered set of personality trait requirements across a range of PSM roles. This results in the distillation of three research questions:

RQ1 How do overall skill requirements differ across hierarchical levels?

RQ2 Which personality traits are required by PSM professionals?

RQ3 How do these personality traits differ across hierarchical levels?

3 Research methodology

Existing PSM skills and competencies research is both conceptual (e.g., Anderson and Katz, 1998; Feisel et al., 2007) and empirical, with the main data sources being in-depth purchasing professional interviews (Bals et al., 2019; Giunipero, 2000; Tassabehji and Moorhouse, 2008) or surveys (Faes et al., 2001; Mulder et al., 2005). While purchasing professionals are undoubtedly knowledgeable informants, there may be self-reporting (e.g., Jenatabadi et al., 2013) or social desirability bias (e.g., Mortensen et al., 2008). Therefore, alternative perspectives will help complement our understanding of what PSM skills and competencies are required.

Sodhi and Son (2010) show that analysing job advertisements is a well-established research method. Most studies use sample sizes of between 400 and 2,000 advertisements depending on the industry and geographical location and employ geographical or economic segmentation criteria in the primary analysis. Older studies (e.g., Todd et al.,

1995) use newspaper job postings, while more recent papers (e.g., Chao and Shih, 2005) use job board websites. This paper closely follows the methodology employed by Schlee and Harich (2010), who use similar techniques to evaluate marketing-related jobs' knowledge and skill requirements.

3.1 Data collection

The job postings were collected from January and May 2017 in the Czech Republic to avoid any cross-cultural differences that might result from searching across job advertisements from multiple countries. The Czech Republic was selected for this exploratory research as it is a developed, export-oriented OECD member state with a well-diversified economy and a significant industrial footprint compared to the rest of the European union (EU) (31.5 % of GDP value-added in 2020; World Bank, 2021) which avoids an over bias towards service sector procurement. Furthermore, the country has relatively low portion of SMEs, a number of large companies headquartered in the Czech Republic (Czech Top 100, n.d.), and one of the largest shares of value add by foreign-controlled enterprises in the EU (43.3 %, while the EU average is 25 %; Eurostat, 2019) which ensures that there is a broad range of PSM jobs. Therefore, our results should be generalisable for all industrialised countries.

Three job advertisement websites were searched: Prace.cz, Jobs.cz and Monster.cz. The former two advertise more generalist jobs, while the latter is oriented towards professional and senior jobs. The keyword 'nákup' was searched, roughly equivalent to both 'procurement' and 'purchasing'. Each posting was given an ID, and the posting title, name of organisation, industry (manufacturing, retail, or services), date of posting; source, position and job advertisement text were saved. We eliminated duplicate postings, i.e., those on multiple sites, in multiple branches of the same company, or the same job advertised by different agencies, and postings for supply chain positions that were not primarily focused on PSM activities, such as logistics or warehouse managers. In total, we collected 432 job postings.

3.2 Method of analysis

Thematic analysis is a qualitative research method that identifies patterns within the gathered data (Boyatzis, 1998). It is an iterative process where the initial codes and analysis are often refined or completed with emerging themes. The thematic analysis approach is suitable in this research context because the sample data contain many equivalents for the same skill or personality trait and because a precise context is vital.

The original intention of this research (as per RQ1) was to identify general skills and competencies in a specific set of job advertisements, and the initial coding process resulted in labelling any personality traits as 'other' requirements, as per the usual approach in skills and competencies research in PSM and as discussed in the literature review. However, after the initial coding of the first batch of postings, we found many more 'other' requirements than traditional skills, resulting in the development of RQ2. This process identified a series of personality traits deemed relevant for PSM practitioners, and these were then categorised according to the Big Five personality traits model (Barrick and Mount, 1991). First, we confirmed that the model fits the Czech environment, as some languages might feature a different number of trait categories than five (e.g., Hřebíčková and Ostendorf, 1995). Subsequently, we created an initial coding

protocol that we progressively refined and adapted to the PSM context through an iterative and interpretive thematic analysis process. For RQ3, which looks at the relationship between traits and the buyer's position within the hierarchy, we used a *priori* codes adapted from Mulder et al. (2005): junior buyer, buyer, strategic buyer, and purchasing manager, where the postings were assigned according to their title. Chi-square tests and independent-sample t-test were used to assess differences in advertisement composition across seniority levels. For this purpose, we also merged the higher seniority level categories (buyer, senior buyer and purchasing manager) to focus on the differences between junior and higher seniority positions.

3.3 Data coding

Due to the context importance in interpreting the personality traits (Sodhi and Son, 2010) we coded the data manually. To minimise bias, we operationalised every code through a coding table which included the identification number of the advertisement, advertised position, industry of the posting company (manufacturing, retail or services), and required skills and traits (Boyatzis, 1998). Three members of the team collected the advertisement independently (e.g., Schlee and Harich, 2010), using pre-developed common and unified references (e.g., Bernardin and Buckley, 1981). We reviewed the coding criteria after approximately 10% of the data. No significant adjustments were necessary, though we added keywords for each sub-category to facilitate the coding process. We achieved 87% inter-rater reliability, and all differences were resolved through subsequent group discussions.

4 Findings

This section is organised as follows: first, we provide a descriptive analysis of the dataset described in the previous section. Then, we analyse the data to address each of the three research questions established in Section 2.

4.1 Descriptive analysis

Descriptive data analysis is summarised in Table 4.

Buyer job postings make up 44% of the analysed sample while the other three are roughly evenly distributed and, considering the strong industrial base in the Czech Republic, it is not surprising that the manufacturing sector dominates.

4.1.1 Skills by hierarchical position (research question 1)

When looking at the number of required skills per job advertisement (Table 5), junior buyers require, on average, seven skills, while strategic buyers require 11, which is more than buyers or purchasing managers. This suggests that the senior buyer role is considered a highly specialised position which employers seek to define as precisely as possible.

The average number of required skills per advertisement (Table 6) shows that technical skills dominate, with 3.4 skills per advertisement containing both generic skills, such as computer literacy and PSM-specific skills, such as purchasing process or product

knowledge. Personality traits form the second most represented group, which underlines their importance for employers and strengthens the rationale for our focus on them in this paper. Although they are not the focus of this research, for completeness, we identified two requirements which we categorised under ‘others’; foreign language proficiency (78%) and relevant job experience (57%) and these were present in 93% of advertisements.

Table 4 Descriptive analysis

Job postings analysed	431	
Individual codes	3 877	
Average codes per job posting	8.97	
Standard deviation	3.29	
<i>Job advertisements distribution</i>	<i>Cases (Percentages)</i>	<i>Standard deviation</i>
Junior buyer	70 (16.2 %)	2.59
Buyer	190 (44 %)	2.58
Senior buyer	100 (23.4 %)	3.60
Purchasing manager	71 (16.4 %)	3.54
<i>Sector</i>		
Manufacturing	256 (60.7 %)	3.50
Retail	132 (30.5 %)	3.14
Services	38 (8.8 %)	2.65

Table 5 Average number of skills and traits per position

<i>Position</i>	<i>Junior Buyer</i>	<i>Buyer</i>	<i>Senior Buyer</i>	<i>Purchasing Manager</i>	<i>Total</i>
Average number of skills and traits	7	8.5	11	9.5	9

Table 6 Average number of requirements per job posting and skill group

<i>Skill group</i>	<i>Technical skills</i>	<i>Inter-personal skills</i>	<i>Internal enterprise skills</i>	<i>External enterprise skills</i>	<i>Strategic skills</i>	<i>Personal traits</i>	<i>Others</i>
Average number of skills and traits.	3.4	1.0	0.4	0.4	0.6	1.7	1.4
Number of adverts where the skill appeared at least once.	94.44 %	67.59 %	32.87 %	30.09 %	46.06%	74.54%	92.82%

Taking a hierarchical perspective, Table 7 (skill distribution) shows that employers require mostly specific Technical skills from Junior Buyers and specify the most personality traits (30% of all category requirements), which they use as a substitute for the experience-based skills. Understandably, previous job experience is not an issue (0.1

per posting on average). Somewhat surprisingly, there is no significant leap seen at the buyer level in technical skills, which still represent 40% of the competencies required. Strategic buyers, on the other hand, show a quantitatively and qualitatively different skill mix. The required technical competencies can be labelled as advanced procurement skills (as per Tassabehji and Moorhouse; 2008), such as blueprint reading, ERP systems knowledge or project management. Strategic business skills, like broader market understanding, are also seen as important. For purchasing managers, the complete skill set is required in more than 50% of advertisements.

Table 7 Average number of skills required in one group by position

<i>Skill group</i>	<i>Technical skills</i>	<i>Interpersonal skills</i>	<i>Internal enterprise skills</i>	<i>External enterprise skills</i>	<i>Strategic skills</i>	<i>Personal traits</i>	<i>Others</i>
Junior buyer	2.46	0.84	0.27	0.10	0.19	2.14	0.96
Buyer	3.59	0.79	0.23	0.21	0.52	1.72	1.44
Strategic buyer	4.35	1.28	0.48	0.66	0.95	1.56	1.60
Purchasing manager	2.51	1.42	1.01	0.87	0.68	1.37	1.68
Total average	3.41	1.02	0.42	0.41	0.59	1.69	1.44

In summary, our analysis corroborates and refines the extant literature predictions that different purchasing hierarchical positions require different skill sets. The data shows that senior positions not only do require more skills, they also require more complex skills, for example, advanced procurement skills needed by senior buyers compared to the generic and rudimentary skills required by junior buyers. The lack of requirements for more advanced skill groups is then substituted by a higher number of personal traits mentioned by the employers.

4.1.2 Desirable buyer personality traits (research question 2)

As shown in the literature review, PSM personality traits are under-researched in the extant literature, but at least one personality trait is identified in over 74% of job postings, with an average of 1.7 traits per posting, and this provides a stable, practice-based, rationale for our study. Table 8 summarises the percentage of occurrences in job postings.

Table 8 Average number of traits per postings and percentage of postings for each of the Big five subgroups

<i>Trait group</i>	<i>Agreeableness</i>	<i>Conscientiousness</i>	<i>Emotional stability</i>	<i>Extraversion</i>	<i>Openness to experience</i>	<i>Total</i>
Appearance in job postings	19.68%	54.17%	13.19%	17.59%	23.38%	19.68%

Conscientiousness, as being compliant, careful, thorough, responsible, and planned (Barrick and Mount, 1991), is by far the most desirable PSM sub-category and

encompasses heterogeneous traits such as independence ('ability to perform tasks in the best interests of the company without permanent supervision, advice or assistance'), responsibility, process or system compliance, risk aversion, diligence, dependability and consistency (Table 9). It is followed by Openness to experience, which is associated with imagination, culture, curiosity and artistic sensitivity and is perhaps the hardest to operationalise (Barrick and Mount, 1991). It is also referred to as intellectual activities or culture (Goldberg, 1990). In the PSM job advertisements, it is embodied by two dominant traits: willingness to travel (69 mentions) and willingness to learn and self-improve (31 mentions). The agreeableness subgroup describes the degree to which an individual is cooperative, trusting and likeable (Judge et al., 1999) and is represented by a single trait: flexibility, which is the ability to adapt to changes and situational demands, willingness to compromise and to meet to one's commitments (Goldberg, 1990). It was mentioned in almost 20% of job postings (83 mentions).

Table 9 Conscientiousness personality traits in job postings

<i>Trait</i>	<i>Number of mentions</i>	<i>Percentage of postings</i>
Independent	110	25.46%
Responsible	92	21.30%
Compliant	60	13.89%
Risk-averse	46	10.65%
Diligent	25	5.79%
Dependable	22	5.09%
Consistent	21	4.86%
Task-oriented	17	3.94%
Others	14	3.24%

Several traits make up the extraversion subgroup: sociability, general positive attitude, activity and energy Judge et al. (1999) and spirit, gregariousness, spontaneity, and playfulness (Goldberg, 1990). Proactivity dominates this list with 55 mentions out of 77, reflecting anticipatory, self-initiated behaviour, initiative-taking and ambition. Emotional stability is the least required group exhibited by stress resistance (57 mentions) and is defined as the ability to work under pressure and cope with different levels of stress.

4.1.3 Desirability of personality traits across hierarchical levels (research question 3)

In this section, we use Chi-square and Independent sample tests to see whether the number of personal traits differs across the hierarchical levels for junior buyers and more senior levels. First, we constructed a dichotomous dummy variable on the occurrence of traits within an advertisement (with values 'no' for zero traits and 'yes' for one and more traits present within an advertisement) and ran a Chi-square test on the hierarchical levels. The results in Table 10 suggest no significant relation between positions and occurrence of traits with $\chi^2(3, N = 431) = 7.407, p = 0.06$.

A more detailed analysis of the findings in Table 10 suggests that the advertisements for Junior Buyers would contain personal traits in more than 87% of cases, while it is approximately 70%–75% in the other groups. To counter this, we created another dichotomy dummy variable for seniority with values 'junior buyer' and 'buyer and

above' and reran the Chi-square test (presented in the bottom part of Table 10). This time, there is a significant difference with $X^2(1, N = 431) = 6.837, p = 0.009$. Therefore, we conclude that junior buyers are required to possess certain personal traits than those in higher positions within the hierarchy (87.1% of advertisements instead of 72.3%).

Table 10 Chi-square tests of independence for personality traits across the hierarchy

Position	N	Occurrence of traits (%)		Chi-square tests of independence
		No	Yes	
Junior buyer	70	12.9	87.1	$X^2(3, N = 431) = 7.407$ $p = 0.06$
Buyer	190	27.4	72.6	
Senior buyer	100	26	74.0	
Purchasing manager	71	31	69.0	$X^2(1, N = 431) = 6.837$ $p = 0.009$
Junior buyer	70	12.9	87.1	
Buyer and higher	361	22.7	72.3	

We then decided to test whether, in the advertisements that contain at least one personality trait, the average number of personal traits differs for junior and higher positions. Independent samples t-test was used, with the results presented in Table 11. The difference in means for seniority was not significant, $t(320) = 1.145, p = 0.253$ despite juniors ($M = 2.46; SD = 1.421$) attaining higher values than higher seniority buyers ($M = 2.23; SD = 1.404$).

Table 11 Total personal traits and skills and traits combined for advertisements at different hierarchical levels

Characteristic	N	Mean	St. dev.	Independent samples t-test
<i>Total personal traits</i>				
Junior buyer	70	2.46	1.42	$t(320) = 1.145$ $p = 0.253$
Buyer and higher	361	2.23	1.4	
<i>Skills and traits combined</i>				
Junior buyer	70	7.33	2.54	$t(109.077) = 7.773$ $p < 0.000$
Buyer and higher	361	10.29	3.2	

We can also see that the average number of PSM and personal traits combined for the higher seniority positions ($M = 10.29; SD = 3.195$) is significantly higher $t(109.077) = 7.773, p < 0.000$ than that for junior buyers ($M = 7.33; SD = 2.541$). It leads us to conclude that, despite the average number of personal traits in an advertisement, it is not significantly different for junior and higher seniority buyers. The traits are still more important for junior buyers, as the average number of skills and traits combined is higher for the higher seniority positions, and therefore the traits take up more space within an average advertisement (approx. 33% for the juniors and 22% for higher seniority).

We also checked whether the composition of the personality traits grouped by the Big Five model is different for junior and higher seniority levels (see: Table 12). We found that only the average number of conscientiousness requirements per advertisement is significantly higher with $t(88.262) = 3.417, p = 0.001$ for junior buyers ($M = 1.41; SD = 1.291$) than higher seniority levels ($M = 0.85; SD = 1.069$) (see: Table 12 for t-tests

results of the other Big Five trait groups). This leads us to conclude that the only significant difference in the composition of the personal traits within an advertisement based on hierarchical position is the higher number of conscientiousness traits required for junior buyer jobs.

Table 12 Mean number of trait groups by hierarchy

<i>Trait groups</i>	<i>N</i>	<i>Mean</i>	<i>St. dev.</i>	<i>Independent samples t-test</i>
<i>Agreeableness</i>				
Junior buyer	70	0.16	0.367	$t(107.588) = -1.087$
Buyer and higher	361	0.21	0.422	$p = 0.279$
<i>Conscientiousness</i>				
Junior buyer	70	1.41	1.291	$t(88.262) = 3.417$
Buyer and higher	361	0.85	1.069	$p = 0.013$
<i>Emotional stability</i>				
Junior buyer	70	0.1	0.302	$t(429) = -0.869$
Buyer and higher	361	0.14	0.346	$p = 0.385$
<i>Extraversion</i>				
Junior buyer	70	0.21	0.447	$t(429) = 0.836$
Buyer and higher	361	0.17	0.378	$p = 0.404$
<i>Openness to experience</i>				
Junior buyer	70	0.26	0.472	$t(429) = 0.326$
Buyer and higher	361	0.24	0.439	$p = 0.745$

Table 13 presents the percentages of advertisements containing various conscientiousness traits by seniority levels. While some are almost equally present in both seniority levels (e.g., being responsible, risk-averse or diligent), others are around twice as likely to be present in the advertisements for junior buyers (e.g., being independent, compliant and dependable). It suggests a particular profile is expected from a junior buyer, i.e., being careful and organised, but at the same time independent and dependable.

Table 13 Percentage of advertisements featuring specific traits within the conscientiousness by hierarchy

<i>Trait</i>	<i>Junior buyer (%)</i>	<i>Buyer and higher (%)</i>	<i>Total (%)</i>
Independent	42.86	22.16	25.46
Responsible	24.9	20.78	21.30
Compliant	24.29	11.91	13.89
Risk-averse	11.43	10.53	10.65
Diligent	4.29	6.09	5.79
Dependable	11.43	3.88	5.09
Consistent	4.29	4.99	4.86
Task oriented	10.00	2.77	3.94

5 Discussion and implications for theory and practice

This paper explores the skills and traits required for four purchasing hierarchy levels in 431 job postings in the Czech Republic. The selected data collection method deviates from previous studies which are based on surveys (e.g., Giunipero et al., 2006; Mulder et al., 2005) or in-depth interviews (Bals et al., 2019; Tassabehji and Moorhouse, 2008) and which may therefore be affected by self-reporting and social desirability biases.

In addressing RQ1, our findings corroborate the extant literature by showing that the required PSM skills and competencies vary across different hierarchical levels (e.g., Mulder et al., 2005; Tassabehji and Moorhouse, 2008) and that these differences are both quantitative (e.g., importance) and qualitative (e.g., type) in nature. While junior buyer requirements are limited to a few generic technical skills (e.g., computer literacy or driver's licence) which correspond to administrative tasks (Mulder et al., 2005), such as ordering and purchasing process follow-up, senior buyers and purchasing managers require a fuller and broader range of skills. Furthermore, buyers and senior buyers require advanced purchasing skills (Tassabehji and Moorhouse, 2008), such as category management, ERP knowledge or project management skills. The importance of technical skills, coupled with the relatively low importance of internal and external enterprise skills, suggests that the buyer role is perceived as predominantly functionally bounded, with limited cross-functional interaction with other departments. Strategic buyers require more technical and strategic business skills than purchasing managers, which can be explained by needing generic management skills (Giunipero et al., 2006) such as internal enterprise and interpersonal skills (Tassabehji and Moorhouse, 2008), but not to be category experts.

Turning attention specifically to the junior buyer requirements, the focus on simple technical skills sharply deviates from the extant literature recommendation of hiring for future-proof skills and tapping into specific talent pools to close future skill gaps (Wagner and van Hoek, 2013). We may only speculate about the reasons for this demise, perhaps past experience when well-formed PSM graduates were rare and PSM jobs were not seen as attractive to 'top' talent, the overemphasis on current, more operationally-orientated needs to the detriment of the future, or the lack of awareness of PSM evolution and the required skill set.

As discussed earlier in the paper, our initial objective for the research was to explore PSM skills for specific hierarchical positions. However, a closer analysis of the collected data revealed the significant number and mix of personality traits required by PSM professionals, which warranted further analysis and resulted in the distillation of RQ2. Our findings show that employers have a clear and consistent view of PSM personality: conscientiousness and being able to work independently, willing to travel, flexible, proactive and stress-resistant. Judging by the frequency of occurrence, conscientiousness is the most required personality trait for PSM professionals. Previous research from other job areas, including SCM, suggests that conscientiousness has a positive impact on job performance and is therefore desirable for most professional environments, with a notable exception being the Sales context, where extraversion is seen as the essential trait (Barrick and Mount, 1991; Peria et al., 2007). From this perspective, the importance of conscientiousness in a PSM context is warranted, especially when we consider it is embodied by the ability to work independently, with responsibility and compliance. Of concern is our finding that traits typically associated with innovativeness, such as

intellectual curiosity, with boundary spanning, such as sociability, or teamwork, such as cooperation, are missing from PSM job advertisements. Finally, despite many calls for PSM to take on a more strategic role within the broader organisational context (e.g., Giunipero et al., 2006), self-confidence was only mentioned seven times and ambition twice. These findings are particularly worrying in the context of Procurement 4.0 which necessitates a PSM focus on innovation management, partnerships, cross-functional teams, digital transformation initiatives, or holistic thinking (e.g., Batran et al., 2017; Bals et al., 2019). Our focus on personality traits complements the systematic and holistic development of talent, which has been identified as an emerging and pressing problem for PSM (e.g., van Hoek, 2020). Hiring for personality and subsequently training for skills may be warranted from the organisational perspective, as the literature review highlighted several benefits of trait identification and development, e.g., job performance and satisfaction for a wide range of jobs and job groups or enhancement of the calibre of an organisation's human resource capital. To reap these benefits, organisations should therefore strive to attract, recruit, and retain procurement professionals with the 'right' personality traits for a given procurement context.

Reflecting the hierarchical nature of this research's original intention, we looked at personality traits across job roles to address RQ3. We found that (on average), advertisements for Junior buyers featured less combined skills, suggesting companies do not expect those with limited experience to possess many of these in abundance. However, a higher number of advertisements (87.1%) for junior buyer jobs than more senior jobs (72.3%) featured at least one personality trait. Therefore, companies are looking for people who fit a specific psychological profile rather than a skill set when hiring for less senior positions. While the average number of personal traits is the same across the hierarchical levels, as junior job advertisements feature fewer skills and traits, those traits are of more relative importance, with approximately 33% of requirements being personality traits for junior jobs compared to only 22% for more senior jobs. Furthermore, when looking at the composition of personality traits required at different seniority levels and using the Big Five model, we found that conscientiousness is required more for junior jobs. Out of the traits represented in this category, some were present more often in the junior buyer advertisements, i.e., being independent, compliant and dependable.

Our research can also be beneficial for job applicants in PSM, as they can modify any applications to reflect the requirements and demands of employers. For example, graduates applying for junior buyers' positions could put their personality traits in their resume, favouring those that reflect conscientiousness, such as responsibility, orderliness, or carefulness. In addition, PSM educators can use these findings to inform and enhance their curriculum by focusing on personality trait development, as these are particularly relevant in more junior (i.e., post-graduation) employment. Specifically, traits related to conscientiousness should be central to personal development, as those traits are required even more often in advertisements for junior jobs, which are most relevant to college and university graduates. Similarly, higher education institutions offering PSM education should also offer courses focusing on developing positive personality traits in their curricula. Current research in PSM related education shows that developing personal traits is seen more like an afterthought in the curricula which tend to be more practically focused (e.g., Lutz et al., 2014), and soft skills and personal traits are developed only in a relatively small portion of PSM related courses or even internships. We believe that

based on the requirements of the job market, developing positive traits should take a more central role in future PSM education and be reflected in their curricula.

6 Conclusions, limitations and future research

This paper used a novel source of data and research perspective for the PSM field in analysing job advertisements to identify the skills required across different hierarchical levels. It also identified the key and hitherto underexplored personality traits required by PSM professionals across and within individual job role levels. The novelty of the research means it is inevitably exploratory and opens up further unexplored questions and avenues for further research. For example, researching the personality traits of successful buyers (perhaps similar to the works of Martin (2011) on sales staff) would be very beneficial. Such research could involve a more focused psychological perspective of individual traits and a more comprehensive set of objectives that certain traits could impact. Along similar lines, future research may investigate whether the job posting requirements of ‘performing’ companies differ from the rest. Additionally, our research is geographically limited to the Czech Republic, and, of course, other countries and cultures might have different recruitment practices and other aspects of job postings. For example, the vast majority of postings in our research required at least some English or German language proficiency level, which would be different in countries where these were the native languages. As with all job advertisements, the extent of the effect of human resource specialists or agencies, which effectively manage the recruitment process and very often write the job postings, cannot be fully identified. Further research may usefully explore the interrelationship between the human resource function and PSM in recruitment activities.

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Notes

- 1 Dictionary definitions – 'characteristic' refers to a distinguishing feature or quality. A 'skill' is defined as the ability, coming from one's knowledge, practice, aptitude, etc. to do something well. A 'trait' is depicted as a distinguishing characteristic or quality, especially of a person's nature. And 'competence' has to do with the quality of being competent; adequacy; possession of required skill, knowledge, qualification or capacity.