The PERFECT Consortium

Project PERFECT Intellectual Output 1
White Paper

Exploring the Purchasing and Supply Management Skills Concept

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Erasmus+

Section: Trends and Future Requirements in PSM

1. Methodology

In order to find out about current economic or technological trends and, therefore, future requirements for purchasing organisations and skills purchasers will need in the future, it has been searched for up-to-date studies and articles on the internet. As German and English search terms, such as "trends in purchasing", "purchasing requirements" and "purchaser of the future", are used, German and English results appeared. The texts are read and scanned regarding developments, trends, future requirements in PSM and required skills/competences/characteristics/know-how are derived. As can be seen in appendix 4, several English keywords are named for all sources to summarise the important aspects.

These key findings are categorised as follows:

- Technology:
    - Expert in technology and management
    - E-procurement: e-auctions, e-tenders
    - New technology (e.g. 3D-printing)
    - Adjust structures and processes to digitalization/automation x4
    - Early integration of procurement for new technologies/new product development x2
    - Electronic buying systems
    - Technical understanding
    - Open to new technologies and changes (change management)
    - Digital reporting
    - Cloud based computing
    - Mobile technologies
    - Virtual reality
    - Handling of digital, smart information
    - Digital procurement portfolio
- Social skills/communication:
    - Social networks
    - Language skills, Communication skills in several languages x2
    - Negotiations
    - Internal communication
    - Moderation
    - Working in teams
    - Increasing level of supplier collaboration
    - Restructuring existing supplier relationships
    - Cross-functional teams
    - Collaborative Optimization, collaboration tools
    - Focus on strategic value of relationships
    - Share knowledge
    - Networking
    - Manage internal and external interfaces
    - Collaborate with 3rd party stakeholders
    - Build and improve beneficial cooperation in all directions
- International Relations:

- Global Connectivity
- International alliances (standards, global markets/language/culture knowledge)
- Shift in buying regions (less in regional markets, more in China, India, Eastern Europe)
- Know-how in international business
- Global competition
- Outsourcing
- Deal with growing regions
- Monitor geopolitical developments

- **Ways of thinking: open to change/adaptable:**
  - Open-minded
  - Change management (organisation, awareness, structures, processes, leadership)
  - Agility, flexibility
  - Adaptability
  - Openness
  - Multi-divisional
  - Interdisciplinary qualifications
  - Complex organisations
  - Increasing complexity (e.g. cost controlling)
  - Obsolescence Management (e.g. effected by 3D-printing replacing procurement and warehousing)
  - Reaction to market changes

- **Costs Management:**
  - Planning and managing currency and cost risks x2
  - Cost reduction
  - Consolidating spend
  - Spend analysis
  - Cost management (methods, TCO)
  - Transparency of costs x2

- **Strategy/Analytical thinking**
  - Data analyst
  - Complexity
  - Analytical thinking x3
  - Statistics
  - Modern analytics (e.g. regression analysis, predictive modelling)
  - Strategic thinking, think ahead
  - Integration in strategic decisions
  - Thinking in processes
  - Visualisation
  - Cross-functional integration
  - Scenario analysis
  - Connectivity and efficient use of data for collaborations and to manage supply chains more intelligent

- **Risk Management:**
  - Professional risk management x3
  - Failure management
  - Identify/analyse/evaluate risks and opportunities, Best Cost
  - Early warning systems for risk management
  - Awareness of quality and supply risk by global sourcing x2

- **Awareness/knowledge:**
  - Awareness of open and ongoing topics
  - Far-reaching knowledge about products, markets
  - Business and economical knowledge
  - Basic knowledge of logistics/SCM
  - Expert knowledge
  - Environmental awareness

- Further qualification/training (e.g. methods for cost reduction Design to Cost and Target Costing, strategic and tactic negotiation, culture, international contract and insolvency law)
- Permanent training
- Forecasting, market research

- Innovation:
    - Open innovation
    - Out-of-the-box thinking
    - Innovation-/ Crowd-Sourcing
    - Creativity
    - Product innovation
    - Drive innovation with suppliers x2
    - Intrapreneurship
    - Thinking in alternatives
    - Growth driver
    - Value creation
    - Trend-setter
    - Increase in efficiency

- Initiative:
    - Initiate
    - "Entrepreneurship"

- Miscellaneous:
    - Growing education requirements and career opportunities
    - Initiative
    - Talents shortage
    - Controlling
    - Guidelines
    - Discipline

- Specific PSM/SCM/Logistic practices:
    - Interface logistic service providers
    - Crowdsourcing x2
    - Inventory management
    - Manage supply chains
    - Inter-divisional: purchasing, R&D, production
    - Quality management x2
    - Verify offers, tenders
    - Supplier development
    - Cyclic forecasting, cooperate with sales dept.
    - SWOT analysis
    - Frame and optimise global supply chains (transparency, Country concept)
    - Sustainability, compliance, marketing of such activities proactive
    - Early warning systems
    - KPIs
    - Procurement controlling
    - Cross-silo-optimisation
    - Collaborative Network Sourcing
    - SRM
    - Scenario technique
    - Variable planning processes
    - Standardise processes
    - Differentiate strategic and operational purchasing
    - Growing importance of procurement
    - Reduction of Maverick Buying
    - Procurement of integrated solutions
    - Responsibility for industry 4.0 implementation

- Dealing with big data, assistance systems, augmented reality x2
- Outside-in view
- Contract management
- Combination of procurement and R&D
- Long-term financial planning
- Scarce resources
- Dynamic, volatile markets
- Sustainability relevance
- Supply networking

2. Results

After an analysis of a variety of sources dealing with economic and technical development, a list of trends was established. These trends can be separated into eight main categories, with each category closely connected to the others. They are as follows: adaptability, new technology and practices, innovation, social skills and communication, international relations, strategy and analytical thinking, cost and risk management, and awareness/knowledge.

The first of the groups, adaptability, is arguably the most important. It is essential that professionals in a purchasing position are able to be open-minded and adaptable to whatever obstacles they encounter in their job. These challenges could come from a variety of avenues, including organizational changes, technological advances, changes in leadership, market changes, or improvements in processes. Through all of these variations it is essential that a manager remains flexible and is able to continue to be an effective worker. This is increasingly important in organizations that utilize complex methods to complete tasks such as cost controlling.

Closely related to the aforementioned topic is new technology and practices. While it is important to be able to react to these new improvements, it is also important to be educated on these changes as they are developed. Such developments include the utilization of the internet for procurement, tenders, and transactions. Additionally, digital reporting, cloud based computing, virtual reality, 3D-printing, and mobile technologies are just some of the other technological advances that are currently being established. Being able to understand these new technologies and their importance, as well the ability to integrate them into the purchasing company's existing practices is increasingly important.

Not only is it useful to be able to react to changes, it is also important to actively seek them, as well. Out-of-the-box thinking and creativity are greatly valued in purchasing, as they often lead to the creation of these new technologies and practices. Thinking in alternatives, intrapreneurship, and value creation are all skills that a manager can utilize in order to help the company work more effectively

and efficiently. Beyond just the individual purchasing company, however, it is important to be able to drive innovation with suppliers, as well.

With this innovation, a degree of strategic thinking is required to be able to integrate it with existing practices. Being able to work with a high degree of complexity and employ analytical thinking at all times is of the utmost important for an effective purchasing professional. The capability to analyse possible scenarios early on using methods such as visualization, regression analysis, and predictive modelling is very useful. With that said, a deep understanding of statistics is essential.

More specifically, analytical thinking is especially important in the areas of risk management and cost reduction. The ability to identify, analyse, and evaluate risks is a skill that successful purchasing firms value. In addition, being able to consolidate and reduce spending can be a great asset to a purchasing company. The capability to perform spending analyses and manage currency and cost risks is very useful in this regard. And finally, the ability to maintain a degree of transparency with costs is another asset that purchasing firms can take advantage of in the future.

Especially related to cost and risk management is the growing importance of international relations. The acknowledgement of global connectivity and the value of international alliances is essential. With that, it is helpful to be able to understand how international business is conducted. Also, relating to a previously mentioned set of skills, being able to adapt to global changes such as shifts in buying regions, international growth, global competition, the utilization of outsourcing, and geopolitical developments is of the utmost importance.

In order to participate in these international exchanges, it is also important to possess excellent social skills. Being able to communicate effectively in several languages makes it much easier to participate in negotiations, networking, and the general exchange of knowledge. Even more prominent than in international relations, however, is the ability to work collectively domestically. Firms that take advantage of cross-functional teams are able to collaborate both within and outside of the company quite effectively. Fostering relationships between 3rd party stakeholders and suppliers is beneficial to the firm, as well.

And, finally, a general skill that can be applied to each of the categories that have already been mentioned is awareness. A manager with basic knowledge in a variety of areas can be quite beneficial to a purchasing firm. The ability to understand a wide range of products, markets, and business/economic structures cannot be undermined. This knowledge can come from a variety of sources, from formal training to research to just general knowledge. The capability to learn and the desire to continue learning are crucial skills that a purchasing manager should possess.

As was discussed above, the valued skills and abilities of future purchasing organizations are all related. The ability to adapt to new technology and improvements fosters an environment where innovation can occur. Then, the ability to strategically integrate these new practices into the company can lead to more effective cost and risk management. Of course, none of this would be possible without growth and collaboration that is generated through positive international and domestic communication. But, above all, it is the ability to constantly learn and be aware of what is happening within the company and around the world that makes a purchasing professional so effective.

IPSERA In addition to the analysis shown above, participants the 2016 IPSERA Educator's Conference were involved in a workshop which was tasked with iidentifying future challenges in PSM. This discussion was broken down into a number of sub- discussion points as follows:

1. 2030 Scenario 1: best case ("the green economy")
2. Common ground between both scenarios
3. 2030 Scenario 2: worst case
4. Any other material/ideas

The results of this discussion were as follows:

1. 2030 Scenario 1: best case ("the green economy")

In the green economy, procurement will have a diverse stakeholder understanding and will procure for the "common good". The lifetime value of what is procured will be assessed. International trade will be eased by a worldwide authority and supplier management will be key (e.g. to get access to resources). Procurement employees have common interfaces, integrated IT systems at their disposal and have a balanced set of incentives. Telework has become much more accepted and a norm. New financial services providers have come up (e.g. peer to peer finance).

2. Common ground between both scenarios

In 2030, procurement employees have to be able to handle big data analytics. In a world of increasing scarcity and power concentration (e.g. M&A leading to near or actual monopolies), and political instability, the ground for negotiations deteriorates. Moreover, new legislation needs to be understood (e.g. if cyber-physical systems create new potential liabilities; e.g. autonomous vehicles' components – who is liable for an accident?). Compliance gets an ever increasing topic, as conversations are under constant surveillance and might be easily misunderstood and scrutinized later. As machine intelligence increases, some PSM core activities might erode (e.g. the negotiation).

3. 2030 Scenario 2: worst case

In scenario 2 we have >2 degree Celsius global warming. Therefore, coastal territories are under water, the world faces severe overpopulation, >100 million refugees, increased housing/wealth/income inequality, air issues and food shortages. This has become a sellers' market and supply chains are highly disrupted. Also, multinational companies (MNCs) get increasingly anonymous with very limited liability.

4. Any other ideas/material

- To look at the ethical/philosophical side behind automation/increasing machine usage: What do we want as a society?

- Consider CIPS program in the UK as inspiration for curriculum.

- Consider whether private/public procurement topics might be taught together or separate (one participant mentioned that it is great to mix private/public procurement students).

- Consider how procurement internships, mentoring and placements might fit into curriculum.

- Consider how higher education (HE) and training can go seamlessly hand in hand.

There are a number of developments in technology, the political environment and natural resources that will affect procurement 2030 in any case, whereas the "best" versus "worst" highlights specific additional components.

Appendix – References PSM future requirements

Study	Keywords
German sources	
Beschaffung aktuell 03 2015: Einkauf 4.0 und die vierte industrielle Revolution Teil 1, S. 20-21	Open-minded Multi-divisional Change management (organisation, awareness, structures, processes, leadership) Initiate Expert in technology and management Interface logistic service providers open innovation crowdsourcing inventory management Obsolescence Management (e.g. effected by 3D-printing replacing procurement and warehousing) awareness of open and ongoing topics interdisciplinary qualifications
Beschaffung aktuell 03 2015: Einkauf 2020 – powered by eSolutions, S. 22-23	Global Connectivity Handling of big data, smart data Reaction to market changes Handling of digital, smart information Collaborate with 3rd party stakeholders e-procurement: e-auctions, e-tenders manage supply chains controlling forecasting, market research connectivity and efficient use of data for collaborations and to manage supply chains more intelligent
PWC: Einkauf – Die neue Macht in den Unternehmen, Juli 2014	Intrapreneurship Inter-divisional: purchasing, R&D, production Quality management Product innovation New technology (e.g. 3D-printing) Expert knowledge Digitalisation (e-business, suppliers linked to IT-systems) Increasing complexity (e.g. cost controlling) Planning and managing currency and cost risks Verify offers, tenders
polariXpartner: Die Zukunft des Einkaufs (2013 – 2015)	Supplier development Global sourcing increase in efficiency trend-setter growth driver cost management (methods, TCO) transparency of costs awareness of financial risks (currency, raw material prices) cyclic forecasting, cooperate with sales dept. scenario analysis SWOT analysis International alliances (standards, global markets/language/culture knowledge) Frame and optimise global supply chains (transparency, identify/analyse/evaluate risks and opportunities, Best Cost Country concept) Early warning systems for risk management Further qualification/training (e.g. methods for cost reduction Design to Cost and Target Costing, strategic and tactic negotiation, culture, international contract and insolvency law) Sustainability, compliance, marketing of such activities proactive
ATKearney: Procurement 2020+, 10 Mega-Trends, die den Einkauf verändern werden	Permanent training Transparency Digitalisation, automation Statistics Visualisation Early warning systems KPIs Procurement controlling Modern analytics (e.g. regression analysis, predictive modelling) Collaborative Optimization, collaboration tools Cross-silo-optimisation Collaborative Network Sourcing Cross-functional integration Social networks SRM

	Professional risk management Innovation-/ Crowd-Sourcing Out-of-the-box thinking Agility, flexibility
Lünendonk: Procurement Excellence 2011, Die Zukunft des Einkaufs	Strategic thinking, think ahead Szenario technique Monitor geopolitical developments Variable planning processes Early integration of procurement for new technologies/new product development Quality management Risk management Language skills, Communication skills in several languages Standardise processes Differentiate strategic and operational purchasing Analytical thinking Negotiations Far-reaching knowledge about products, markets Internal communication Moderation Working in teams Business and economical knowledge Thinking in processes Basic knowledge of logistics/SCM Deal with growing regions Build and improve beneficial cooperation in all directions Thinking in alternatives
Spring Procurement GmbH/Wirtschaftsuniversität Wien: Studie Zukunft Einkauf - Trends in der Beschaffung	Growing importance of procurement integration in strategic decisions growing education requirements and career opportunities reduction of Maverick Buying guidelines discipline involvement in product development electronical buying systems shift in buying regions (less in regional markets, more in China, India, Eastern Europe) awareness of quality and supply risk by global sourcing language skills know-how in international business environmental awareness
Studie Einkauf 4.0 – Digitalisierung des Einkaufs, 2016	Digitalisation, Automation of functional processes Complexity Procurement of integrated solutions Manage internal and external interfaces Technical understanding Data analyst Responsibility for industry 4.0 implementation Share knowledge Networking Open to new technologies and changes (change management) Failure management Adjust structures and processes to digitalisation Dealing with big data, assistance systems, augmented reality Digital procurement portfolio Outside-in view
English sources	
The Deloitte Global CPO Survey 2016	consolidating spend increasing level of supplier collaboration restructuring existing supplier relationships cognitive analytics crowdsourcing digital reporting cloud based computing mobile technologies spend analysis contract management cost reduction risk management/mitigation Drive innovation with suppliers
Procurement Leaders: Interview: Josh Ghaim, Johnson & Johnson's chief technology officer	combination of procurement and R&D supplier-enabled innovation value creation openness long-term financial planning focus on strategic value of relationships

Handfield et al.: An organizational entrepreneurship model of supply management integration and performance outcomes, 2008	"Entrepreneurship"
World Economic Forum: New Vision for Education: Fostering Social and Emotional Learning through Technology, 2016 ➔ good source for learning methods	Creativity Initiative Adaptability Virtual reality Advanced analytics
L. Schneider, C.M.Wallenburg: 50 Years of research on organizing the purchasing function: Do we need anymore? Journal of Purchasing & Supply Management 19 (2013) 144–164	Cross-functional teams Complex organisations Talents shortage Scarce resources Global competition Dynamic, volatile markets Sustainability relevance Supply networking outsourcing

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