Doctoral School of Business and Management

THESIS SUMMARY

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Opportunities to support procurement decisions and balance processes - a novel diagnostic tool

to PhD Thesis

Supervisor:

Krisztina Demeter, DSc

Budapest, 2024

Department of Supply Chain Management

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1.   RELEVANCE OF THE TOPIC AND OBJECTIVE OF RESEARCH

As a former purchasing professional, my interest in and orientation towards procurement[1] was evident. Procurement, (Figure 1), is simultaneously valuable part of the supply chain and "*the first step in the value chain*" (Çankaya & Sezen, 2019, p. 100). This positioning justifies the importance of this research field and the immense volume of studies, research, and literature connected to it and its various topics.

   Having the research field established I turned to the literature searching for comprehensive purchasing models that help procurement operations and the decisions of purchasing managers. Nevertheless, although insightful, the articles gathered and analysed during the literature review concerning purchasing models may not cover the entire spectrum of factors encapsulated in the elaborated 4F4D (Four Forces and Four Drivers) model discussed in this thesis. In other words, the analysed models or concepts lack factors that should be represented to ensure a holistic view, considering all elements

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[1] The terms "procurement" and "purchasing" are used interchangeably and can indicate both the organization and the activity, depending on the context.

and parts of real-life purchasing processes. However, at the same time, this analysis should be conducted solely at the procurement activities level (not at the supply chain level) to distinguish the operating areas (the functional units such as procurement, warehousing, logistics, etc.) from each other (Cousins, 2002), while still considering the complexity of the purchasing environment. By possessing and applying a diagnostic tool exclusively for procurement, the revealed weaknesses and inefficiencies could be linked to the contingency factors of purchasing processes, potentially facilitating resolutions.

Figure 1: Procurement's interpretation domain
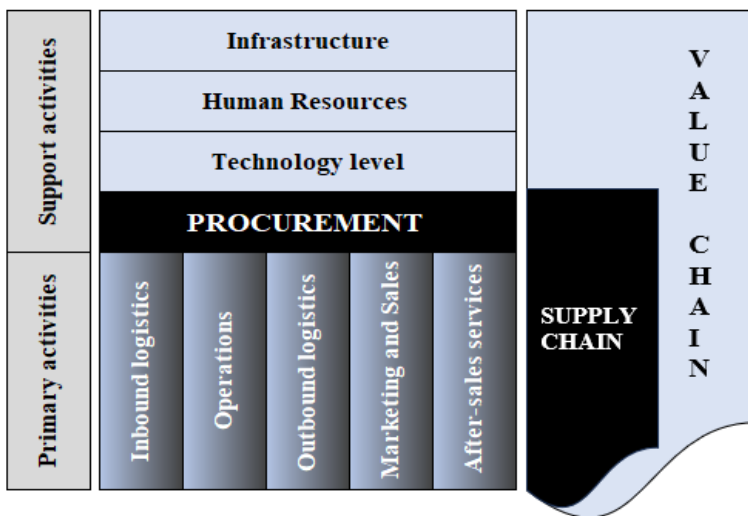
Source: Author's construction adapted from Porter (1985)

However, considering that **no easily applicable model is available to aid leaders in procurement decisions (as confirmed by the literature review and based on the case studies), this presents a gap in purchasing management.**

Therefore, in response to this gap and today's challenges (i.e., the ongoing paradigm shift in terms of digitalization and collaboration schemes), the key objective of the study was to develop and validate a tool that enables the visualization of purchasing phenomenon within its complex environment and the understanding of procurement processes along their contingency factors. The thesis seeks answers to the following research objective:

<u>Research objective:</u> **To develop and validate a purchasing model that can assist management decisions and balance purchasing procedures.**

To reach this objective, besides the literature review, an examination of actual practice (including tools used) was necessary to reveal a model (framework) with a holistic viewpoint and potential diagnostic function. Subsequently, validation and applicability testing of the elaborated 4F4D model were required. Therefore, the thesis, through three research phases and primary data, has mapped the actual status of purchasing activities from multiple angles, as the elaborated articles will illustrate. Based on this research, four articles were

developed and included in this thesis. Figure 2 outlines their main features.

Figure 2: Overview of the articles included in the Thesis

ARTICLES						
#	Article title	Short title (topic)	Journal	Year	Category	Language
A	**Guidance on How to Balance the Purchasing Environment and Processes to Save Resources – A Validity Examination of a Holistic Model**	**Validity**	Cogent Business & Management	2024	**Q2** (JSR)	English
B	**Applicability of a Strategic Tool to Reveal and Classify Problems and Mitigate Risks in Purchasing**	**Applicability**	Economics & Working Capital	2023	– (former category: **B** MTA)	English
C	**Features of Supplier Management and Its Mechanisms – Insights into Hungarian Practice. How to Enhance the Effectiveness of Procurement Procedures**	**Supplier Management (SM)**	Budapest Management Review	2019	**A** (MTA)	English
D	**Digitalization Aspects of Procurement Organizations in Supply Chains**	**Digitalization**	LOGISTICS TRENDS	2022	**A** (MTA)	Hungarian

Source: Author's construction

Note: The formulated research objective outlines the main orientation, while specific research questions will be presented in each article included in the thesis.

The resolution of the main objective can be found in Article A (literature review and model validation), while the answers to questions regarding the present status of purchasing are addressed in Article B (case study descriptions and model applicability), Article C (Supplier Management aspects), and Article D (IT and digitalization aspects).

The articles included in the thesis are interrelated with each other and the developed framework, ensuring *"topic coherence"* across the discussed concepts. Additionally, the various methodologies applied in the research, along with the different topics and questions analysed based solely on primary data, contribute to the diversity of the studies included in the thesis. This approach emphasizes the *"differentiation"* between the articles while maintaining synergies among them.

The primary goal of procurement is to effectively manage the purchasing organization, which can be achieved through efficient purchasing processes. Therefore, it is essential to identify weaknesses and balance operations. One of the key strengths of the 4F4D model lies in its *"relevance"* and applicability, as it clearly classifies factors into forces and drivers regardless of specific contexts. This structured approach provides a consistent framework for analysing and implementing purchasing processes. The model's holistic perspective and clear structure enhance understanding of the complex dynamics within purchasing, thereby underscoring its value in the procurement landscape.

2. RESEARCH METHODOLOGY

This chapter describes the applied methods during the research. Following the approach of combining methodologies, I employed both qualitative (case study) and quantitative (survey) methods, as suggested by Sjoerdsma and Van Weele (2015), Foerstl *et al. (*2013), and Kothari et al. (2005). A multi-method mixture minimizes the disadvantages of either approach while benefiting from the constructive nature of qualitative methodology and the analytical potential of quantitative methodology. Therefore, the use of multiple methodologies strengthens the robustness of the results (Huber, Sweeney, & Smyth, 2005).

2.1. Case study research

Connected articles: Article A (Validity – interviews' part) and Article B (Applicability)

I applied case study research using semi-structured deep interviews because it provides an opportunity for a profound exploration and understanding of the context under discussion and inductive theory based on the processed case. This method is typically a step-by-step theoretical research form where the

goal is to understand a real-life phenomenon while encompassing important contextual conditions (Yin, 1994).

I adopted a multiple-case study approach following Yin's (2012) methodology. In addition, after examining the cases individually, I applied a cross-case synthesis method. The sampling strategy was theory-based, aiming to identify a sample that best aligns with the theory under examination. Therefore, I selected leading companies within their respective industries, expecting well-established procurement organizations where purchasing procedures rest on integrated regulations and practice-based workflows exist because large companies are more complex in terms of organizational structures (Foerstl et al., 2013).

Considering that business decisions are made by top executives, such as the heads of purchasing, and their professional competencies are essential for managing processes, the target individuals for interviews were the top leaders of each purchasing organization under study (such as CPO - Chief Procurement Officer, procurement director, or head of procurement).

The length of interviews was 80 minutes on average, all were audio-recorded, and detailed notes were taken. Consent statements regarding data processing were collected from all participants in written form.

2.2. Survey research

Connected articles: Article A (Validity - survey's part), Article C (SM), and Article D (Digitalization)

In my research, I employed both closed-ended questions and Likert-type scales to standardize responses, ensuring equal interpretation of the answers and facilitating analysis (Sandelowski, 2000). The questions included in the questionnaires were connected to the factors of the 4F4D model, as well as topics of strategy, cross-functional integration, supplier management and IT solutions as factors/drivers of the model.

Prior to the launch of the surveys, the questionnaires were tested by professionals with extensive purchasing experience working at multinational companies. Their feedback indicated that no modifications were necessary, and they confirmed the absence of unclear questions or sections in the surveys. After the pilot surveys, respondents were invited (in both survey research) to complete the questionnaires on an online platform. Data analysis was conducted on the Qualtrics platform and using IBM SPSS.

Figure 3 depicts the research features in terms of dates of research, data collection modes and methods of analysis, number of participants and their positions' particularities, the keywords and scope of research, as well as the list of the connected literature.

Figure 3: Features of research

RESEARCH FEATURES	SURVEY (Supplier Management)	CASE STUDY	SURVEY (4F4D Model)
Research time interval	Q4 2017 - Q2 2018	Q2 2021 - Q1 2022	Q2 2022 - Q1 2023
Data collection	questionnaire (Qualtrics)	semi-structured interview	questionnaire (Qualtrics)
Methodology of data analysis	IBM SPSS	cross-case synthesis	IBM SPSS
No. of participants (FTE)	57	5	128
Participants	purchasing leaders (80%) and professionals (20%)	purchasing top executives	purchasing professionals
Keywords	Supplier Management Digitalization	Model validation Model applicability	Model validation
Scope	Examination of purchasing status (concerning SM, digitalization)	Validation of a purchasing tool, test of applicability	Validation of a purchasing tool
Connected articles	Article C (SM), Article D (Digitalization)	Article A (Validity), Article B (Applicability)	Article A (Validity)

Source: Author's construction

3. REVIEW OF ARTICLES AND THEIR RESULTS

This chapter provides a brief summary (goals and results) of each article included in this study, displaying the interconnections among the four articles and the elaborated model.

3.1. Article A (Validity)

This article aimed to validate the 4F4D model from the correctness and completeness perspectives, which model was designed as a guidance on how to balance the purchasing environment and processes. The validation study comprises case studies and survey research conducted at five multinational companies, involving over 130 purchasing professionals.

Research and all the analyses proved the model's validity in terms of correctness (in shape), completeness (in elements), and applicability (in practice). In particular: interviewees (purchasing leaders) confirmed the model's accuracy, comprehensiveness, and balanced nature, acknowledging its practical applicability. Meanwhile, survey respondents (purchasing associates from the same organizations) approved

the elements and their classification, confirming completeness by not identifying any deficiencies in the model's arrangement.

3.2. Article B (Applicability)

Purchasing decisions, which have strong financial and production impacts, operate under continuous risks and exerting power due to the necessity of securing supply. The best solution to minimize such risks is to make proper (strategic) purchasing decisions, which involves identifying the factors that influence the procedures. Therefore, the key objective of this article was to demonstrate and test the practical applicability of the 4F4D model. The paper aimed to mitigate risks by identifying and classifying/grouping the factors that affect, influence, or determine business and purchasing procedures, as well as operations, KPIs, and financial outcomes. The applied methodology was case study research, in which semi-structured deep interviews were conducted with five heads of purchasing organizations at selected multinational/large companies (the same participants as in Article A).

As confirmed during the interviews by the purchasing executives, there is no useful tool available to leaders for revealing and classifying the existing (internal and external)

problems in purchasing that affect decision-making. They also validated the applicability of the developed model. In addition to testing the model's applicability, the article provides detailed practical examples and demonstrates the linkage between existing (revealed) deficiencies and the model's factors (drivers). These cases can help managers recognize weaknesses in their own organizations and can also serve as a compass for scholars exploring new research directions.

3.3. Article C (Supplier Management)

This article revolves around Supplier Management (SM) as both a practice/activity and a theoretical framework for handling suppliers. It presents the findings of research investigating the actual practice of SM within the surveyed procurement organizations. Given that the management of relationships, as well as the selection and evaluation of suppliers, are seen as crucial strategic issues (Araz & Ozkarahan, 2007), there are several methods (systems and concepts) for evaluating suppliers and their performance and efficiency.

Considering that the research revealed some deficiencies, the paper formulates suggestions for a more efficient SM practice. It argues that the procurement processes related to SM exhibit deficiencies that may originate from its component parts, such as supplier evaluation and selection, cooperation, and IT solutions.

3.4. Article D (Digitalization)

This article, written based on survey research, argues that one possible way to reduce risks is through the application of well-designed and efficient procedures. However, these processes require IT/electronic systems and applications, as well as automated processes. Therefore, this paper analyses the gaps in the procurement processes concerning IT solutions and digitalized processes.

According to the research findings, the adoption of necessary applications and systems remains relatively low, with many processes still relying on paper without adequate IT support. The article's theoretical contribution lies in examining the digitalization aspects of procurement practices through conducted research, presenting the findings, and reviewing pertinent literature.

4. CLOSING REMARKS

This thesis is built upon the development of a comprehensive purchasing model, which has been validated through assessments of its completeness, correctness, and practical applicability. Additionally, it examines current procurement practices by depicting real-life purchasing procedures, analysing their overall status, and specifically considering features related to IT/digitalization and supplier management. Given the significance of the purchasing processes, the thesis provides a broad perspective on the procurement environment, emphasizing the interconnectedness of the papers and concepts ("*as a whole")* under investigation.

The results from the research presented in the papers *"consistently"* confirmed the hypotheses across all studies:

- **Article A (Validity):** The research, which involved over 130 purchasing professionals, demonstrated the model's validity in terms of correctness, completeness, and applicability. Purchasing leaders affirmed the model's accuracy, comprehensiveness, and balanced nature, recognizing its practical applicability. Additionally, purchasing associates validated the elements and their classifications, confirming the

model's completeness by identifying no deficiencies in its arrangement.

- **Article B (Applicability):** The research, which included five case studies of multinational companies, identified both the weaknesses and strengths of current purchasing activities across different organizations, while also confirming the practical applicability of the 4F4D model.

- **Article C (SM) and Article D (Digitalization):** These articles analysed purchasing activities from the perspectives of supplier management and IT/digitalization. The findings highlighted significant deficiencies in current practices related to these areas.

In summary, this collection of articles collectively contributes to a deeper understanding of procurement processes through the lens of the 4F4D model. Each article addresses critical aspects of procurement, from validating the model and exploring supplier management to assessing the impact of digital solutions on procurement efficiency. The insights derived from both qualitative and quantitative analyses provide a comprehensive view of the challenges and opportunities within procurement organizations. The findings underscore the importance of strategic alignment and the need for a robust

framework that facilitates effective decision-making in procurement. By identifying key forces and drivers that influence procurement activities, the research not only validates the 4F4D model's applicability but also offers practical implications for organizations aiming to enhance their procurement strategies.

In addition, the study emphasizes that *"novelty"* in a conceptual framework can arise not only from introducing new elements but also from offering a fresh perspective and arrangement of existing ones. This concept is analogous to a recipe, where using familiar ingredients in different quantities or combinations can result in something entirely new. Similarly, although the individual factors of the model are established elements that have been studied previously, the innovation lies in their unique combination and structural arrangement within the model. The specific arrangement, classification (as either forces or drivers), and interrelations among these factors enhance the model's comprehensiveness in reflecting real-life procurement procedures. This study underscores that the model's simplicity and transparency significantly improve its practical applicability. Consequently, the thesis strives to maintain a focus on practical significance, as emphasized by Arjan J. van Weele & van Raaij (2014).

Thus, the model can serve as a practical toolkit for diagnosing and addressing common procurement challenges. By applying the 4F4D model, purchasing departments can identify key areas for improvement, such as enhancing IT workflows and fostering better cross-functional integration. Its application can lead to more streamlined operations, improved supplier relationships, and reduced process lead times. Consequently, implementing the model's recommendations can result in a more agile procurement process.

Additionally, the model can be utilized as an effective training tool for purchasing professionals. By providing a structured framework, it helps them understand the intricacies of procurement dynamics and equips them with the necessary skills to navigate and optimize purchasing processes. This holistic approach not only enhances individual competencies but also contributes to the overall strategic alignment of the procurement function within organizations.

The thesis also provides in-depth insights into the actual purchasing practices of large multinational companies through the testing of this holistic model. The depicted examples can assist leaders, professionals, and scholars in drawing conclusions and learning from real-world applications. By adopting the model, purchasing departments can indirectly benefit society by promoting more efficient and sustainable

procurement practices. This, in turn, could lead to improved resource allocation, reduced waste, and ultimately, products and services that are better aligned with societal needs and ethical standards.

Ultimately, this thesis (and synthesis of research) emphasizes that continuous improvement in procurement practices is essential for achieving operational efficiency and competitiveness in today's volatile business environment. The model encourages organizations to reflect on their procurement strategies and practices, fostering a culture of continuous improvement. By embracing the principles outlined in the 4F4D model, companies can not only enhance their operational efficiencies but also contribute to broader societal goals, such as environmental sustainability and social responsibility. This alignment between business objectives and societal expectations underscores the model's relevance in today's dynamic procurement landscape.

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