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Araştırma Makalesi / Research Article

Developing a Purchasing Strategy Taxonomy Based on Competitive Priorities*

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Abstract

This exploratory study aims to develop a taxonomy of purchasing strategies at the purchase category level. We define strategies based on competitive priorities, an approach that is common in operations management literature, but very novel in purchasing. Analysing data collected from 318 manufacturing firms in ten countries through the use of cluster analysis, we identify five purchase category strategies: "Emphasise All, Cost Management, Product Innovation, Delivery Reliability, and Emphasise Nothing". We subsequently investigate how this purchase category strategy taxonomy is related to the Kraljic matrix, a purchasing portfolio model utilised frequently in practice. We find that some strategies are more likely to be implemented in certain quadrants of the matrix but that within each quadrant, it is possible to implement various purchase category strategies in an effective way. This finding empirically validates our argument that existing portfolio models alone do not provide sufficient guidance for defining appropriate strategies.

Keywords: *Purchasing, competitive priorities, Kraljic matrix, cluster analysis.*

Rekabetçi Önceliklere Dayalı Satınalma Stratejisi Taksonomisinin Geliştirilmesi

Öz

Bu araştırma, satınalma kategorisi düzeyinde satınalma stratejileri taksonomisi geliştirmeyi amaçlamaktadır. Stratejiler, üretim yönetimi literatüründe yaygın ancak satınalmada çok yeni olan bir yaklaşım olan rekabetçi öncelikler bazında tanımlanmaktadır. On ülkedeki 318 imalat firmasından toplanan veriler kümeleme analizi ile incelenerek beş satınalma kategorisi stratejisi belirlenmiştir: "Tümünü Vurgula, Maliyet Yönetimi, Ürün Yenilikçiliği, Teslimat Güvenilirliği ve Hiçbir Şey Vurgulama". Daha sonra bu satınalma stratejisi taksonomisinin organizasyonlarda sıklıkla kullanılan bir satınalma portföy modeli olan Kraljic matrisi ile ilişkisi incelenmiştir Bulgular göstermektedir ki bazı stratejilerin matrisin belirli bir bölümünde uygulanması daha olasıdır, ancak her bölümün içinde çeşitli satınalma kategorisi stratejilerini etkili bir şekilde uygulamak da mümkündür. Bu bulgu, sadece mevcut portföy modellerinin kullanımının satınalma stratejilerini tanımlamak için yeterli rehberlik sağlamadığı iddiasını ampirik olarak doğrulamaktadır.

Anahtar Kelimeler: *Satınalma, rekabetçi öncelikler, Kralij matrisi, kümeleme analizi.*

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INTRODUCTION

In a growing number of organizations, purchasing has transformed from a purely tactical and operational function into a strategic one (Brandon-Jones and Knoppen, 2018; Luzzini and Ronchi, 2016). This transformation is the result of an increasing understanding that purchasing and supply management can contribute to business performance in various dimensions, such as financial performance (González-Benito, 2007), innovation performance (Luzzini *et al*., 2015), and environmental performance (Arora *et al*., 2020; Krause *et al*., 2009). To benefit from these performance effects, it is crucial for firms to successfully manage the variety of products and services that they purchase, applying distinctive purchasing strategies and supplier management approaches for each so-called purchase category (Kraljic, 1983; Montgomery *et al*., 2018).

Consistent with this finding, defining the variety and richness of purchasing strategies and the different conditions under which they are effective has been a top priority on purchasing professionals' agenda for quite some time now (Kraljic, 1983; Luzzini *et al*., 2012; Pagell *et al*., 2010). The importance of variety has also been acknowledged by the scholars. In his seminal paper, Kraljic (1983) proposed a purchasing portfolio based on two contingencies, purchase importance and supply risk, and defined four types of purchase categories: strategic, leverage, bottleneck, and non-critical. He suggested a focus on efficiency for non-critical items, the assurance of supply for bottleneck items, competitive bidding for leverage items, and strategic partnership for strategic items. His model also inspired many other, similar portfolio models that are widely adopted in practice (Gelderman and van Weele, 2005; Montgomery *et al*., 2018; Pagell *et al*., 2010).

However, these models have been criticised for identifying only a limited set of purchasing strategies (Caniëls and Gelderman 2007; Krause *et al*., 2009; Montgomery *et al*., 2018) and for focusing on a limited set of contingencies (Dabhilkar *et al*., 2016; Luzzini *et al*., 2012; Pagell *et al*., 2010). In fact, in practice, to manage the variety of purchase categories and the associated complexities, firms are already implementing multiple purchasing strategies within each portfolio quadrant of the Kraljic model (Gelderman and van Weele, 2005) and distinguishing between different competitive priorities. For instance, Vodafone and Sonoco use purchase category segmentation models, which incorporate not only purchase importance and supply risk, but also innovation objective and suppliers' technical capabilities (Procurement Strategy Council, 2007). Similarly, Krause *et al*. (2009) and Pagell *et al*. (2010) find that when firms emphasise sustainability in their purchase categories, they implement practices other than the ones suggested by Kraljic (1983). These examples from practice clearly illustrate that the contingencies identified in current portfolio models do not fully reflect the complexities faced today and must be complemented through the consideration of additional dimensions.

The above examples also suggest an alternative approach to defining purchase category strategies: focusing on the "strategic intent" or, in other words, the competitive priorities such as cost, quality, delivery, innovation, and sustainability (Krause *et al*., 2001; Watts *et al*., 1992). Contingency theory suggests that an important antecedent of strategy is contextual characteristics (Ginsberg and Venkatraman, 1985) but that such characteristics do not exclusively determine purchasing strategies per se. An alternative approach to defining strategies is to focus on strategic intent rather than on internal and external contextual factors (Hamel and Prahalad, 1989). Strategic intent signals what the firm aims to accomplish in the competitive market given a set of contingencies and is therefore a more direct predictor of different practices and processes.

In operations strategy, strategic intent has been measured using competitive priorities, which have been found to successfully predict differences in operations practices adopted (Kathuria, 2000; Miller and Roth, 1994). As the operations and purchasing functions of firms are highly interlinked (Baier *et al*., 2008; González-Benito, 2007), it has been suggested that the same competitive priorities are also valid in the purchasing context (Ateş *et al*., 2018; Krause *et al*., 2001; Luzzini *et al*., 2012; Pagell and Krause, 2002). Watts *et al* (1992) argue that the first step before deciding on certain purchasing practices is to define

purchasing objectives, which must be consistent with operations objectives. However, surprisingly, there have been very few attempts to define and empirically validate purchasing strategies through the examination of such competitive priorities. Following this stream of research and applying it to the purchase category level, in the present research, we aim to develop a purchasing strategy taxonomy on the basis of competitive priorities. Additionally, we investigate the conditions under which these strategies are effective.

Extant literature offers at best slight modifications of the Kraljic model and the majority of the studies are based on case studies (Luzzini *et al*., 2012; Montgomery *et al*., 2018). Responding to this gap, this research contributes to the literature about purchasing portfolio models by examining the role of competitive priorities, a factor that was hitherto neglected, and also investigating this issue using a comprehensive data set from multiple countries representing a variety of purchase categories.

1. LITERATURE REVIEW

1.1. Competitive Priorities in Operations and Purchasing

In their influential research about operations strategy, Miller and Roth (1994) argue that firms adopt different combinations of competitive priorities – objectives pursued in operations to gain competitive advantage (Kathuria *et al*., 2010). These particular combinations of competitive priorities constitute distinct operations strategies that impact practices, processes, and performance (Christiansen *et al*., 2003; Kathuria, 2000). One of the key debates regarding competitive priorities concerns the question of whether there is a trade-off between different competitive priorities or priorities can be emphasised simultaneously (Hayes and Wheelwright, 1984; Skinner, 1985). Although the earliest works suggest that it is not possible for firms to excel in multiple competitive priorities simultaneously (Hayes and Wheelwright, 1984; Skinner, 1985), recent evidence indicates that more and more firms are striving for excellence in multiple objectives (Kathuria *et al*., 2018). The development of taxonomies through the adoption of a configurational approach allows for a combination of these two perspectives and empirical tests of whether certain strategies are characterised by a focus on a single competitive priority whereas others are characterized by the pursuit of multiple competitive priorities.

Before discussing the association between operations and purchasing strategies, we first identify the most commonly observed operations strategies in earlier taxonomies, by an examination of the studies citing the pioneering work of Miller and Roth (1994). We uncovered six other empirical taxonomy studies and six types of operations strategies.

In the first type of operations strategy, many or all competitive priorities are emphasised to a great extent (e.g., Do all [Kathuria, 2000], Manufacturers pursuing excellence [Martín-Peña, Díaz-Garrido 2008]). This type of strategy appears to be more consistent with the notion of cumulative capabilities than the trade-off notion, as firms attempt to excel in many dimensions and still be world class. We use the common label “Emphasise All” for this strategy. In contrast, in the second type of operations strategy, none of the competitive priorities are emphasised to a great or moderate extent, indicating a lack of strategic orientation (e.g., Idlers [Frohlich and Dixon 2001], Low emphasisers [Zhao *et al*., 2006]). We label this strategy “Emphasise Nothing”. Such strategies can be observed in small firms, in firms in which there is a lack of strategic planning, or in firms operating in less competitive environments.

In addition to these two strategies, in remaining strategies some competitive priorities are emphasised more than the others. In one of these strategies, which we label “Cost Management”, the sole focus is on cost (e.g., Low price [Christiansen *et al*., 2003], and Caretakers [Miller and Roth 1994]). In the fourth strategy, which we label “Delivery Reliability”, firms prioritise the delivery objective over the cost objective (e.g., Speedy deliverers [Christiansen *et al*., 2003] and Speedy conformers [Kathuria, 2000]). In the fifth strategy, which we label “Lean Management”, firms focus on both cost and delivery, along with quality (e.g., Quality deliverers [Christiansen *et al*., 2003], Specialised contractors [Zhao *et al*., 2006]). Finally, in the sixth type of operations strategy, firms focus on quality and innovation at the expense of

higher costs (e.g., Aesthetic designers [Christiansen *et al*., 2003], Innovators [Miller and Roth 1994]). We label this strategy "Product Innovation".

Given the close link between operations and purchasing (Baier *et al*., 2008; González-Benito, 2007; Luzzini *et al*., 2012), these operations strategies are likely to have counterparts in purchasing. While we thus may expect to find purchasing strategies similar to the six operations strategy types identified above, we explicitly choose to adopt an exploratory approach because of the scarcity of previous research. Although the strong link between operations and purchasing strategies has been suggested in many studies (González-Benito, 2007), competitive priorities have not been empirically tested before in defining purchasing strategies using a configurational approach.

In the next section, building on the contingency theory we discuss how our purchasing strategy taxonomy might relate to purchasing portfolio models. We specifically focus on the Kraljic matrix, which is one of the most widely adopted purchasing portfolio models.

1.2. Competitive Priorities in Operations and Purchasing

One of the most widely used theory in organisational studies is contingency theory whose basic premise is that there is no single best way to manage organisations (Galbraith, 1973; Lawrence and Lorsch, 1967). Ginsberg and Venkatraman (1985) suggest an examination of the contingency relationships of organisational strategy in an input-strategy-output model. According to this model, strategies are influenced by environmental and other contextual variables (input), and environmental fit (output) is achieved when strategies are aligned with input contingencies.

In this study, we adopt this contingency approach and first identify purchase category strategies based on the competitive priorities. Subsequently, to assess environmental fit, we relate the occurrence and the effectiveness of the identified strategies to contextual variables. For these contextual variables, we turn to the literature on purchasing portfolio models and focus on Kraljic (1983) portfolio as it is the most highly utilised purchasing portfolio model. Kraljic (1983) portfolio distinguishes between two variables: purchase importance and supply risk. Purchase importance is considered a fundamental characteristic of the purchasing task and can be defined as the (perceived) impact of purchase on organisational productivity and profitability (Lau *et al*., 1999). Supply risk stems from buying firms' dependence on their suppliers for various reasons, such as the limited number of available suppliers and the suppliers' access to unique assets (Heide and John, 1988). Based on these two contingencies, Kraljic (1983) defines four types of purchase categories: strategic (high importance, high risk), leverage (high importance, low risk), bottleneck (low importance, high risk), and non-critical (low importance, low risk). The model then suggests four main strategies: ensuring efficiency for non-critical items, creating assurance of supply for bottleneck items, applying competitive bidding for leverage items, and building strategic partnerships for strategic items. In this study, we assert that in some quadrants of the Kraljic matrix, certain purchase category strategies might be more likely to be implemented. We also argue that within each Kraljic quadrant, more than one purchase category strategy might be implemented effectively.

Strategies or, in other words, plans of strategic intent, also impact the performance (output) of a system (Ginsberg and Venkatraman, 1985). It is important to assess whether particular purchase category strategies result in higher performance and whether the performance effects change in relation to contingencies. Therefore, after developing our purchase strategy taxonomy and investigating the conditions under which (i.e., in which portfolio quadrants) each of the strategies is being implemented, we also examine the differences in purchase category performance.

2. RESEARCH METHOD

2.1. Sample and Data Collection

We used data from the International Purchasing Survey, which is a multi-country survey project on purchasing strategies and practices (Knoppen *et al*., 2015). A multi-language survey tool was prepared using the TRAPD (Translation, Review, Adjudication, Pre-testing, and Documentation) procedure (Harkness, 2003) while translating the survey to different languages. A general guideline developed by the IPS research team related to company size and industries to be targeted was used, and the respondents were selected by collaborating with the purchasing professionals' national associations in each country (Kauuppi *et al*., 2013; Knoppen *et al*., 2011; Luzzini *et al*., 2015). Data was collected in 2009 and 681 responses were gathered using an online survey with a response rate of 9.5%, which is comparable to that of studies adopting such complex survey tools (e.g., Wu *et al*., 2012). Approximately 83% of the respondents were purchasing managers or higher. In this study, we focused only on manufacturing firms to increase homogeneity. The final data set contains 318 observations. Table 1 illustrates the descriptive statistics.

Table 1: Descriptive Statistics

Number of employees	**Freq.**	**%**	**Countries**	**Freq.**	**%**
less than 100	34	10.7%	Canada	16	5.0%
100-250	71	22.3%	Finland	25	7.9%
250-500	54	17.0%	France	29	9.1%
500-1000	44	13.8%	Germany	40	12.6%
1000-2500	36	11.3%	Italy	37	11.6%
more than 2500	67	21.1%	Netherlands	37	11.6%
not indicated	12	3.8%	Spain	35	11.0%
Total	*318*		Sweden	23	7.2%
			United Kingdom	42	13.2%
Manufacturing sectors	**Freq.**	**%**	United States	34	10.7%
Equipment	78	24.5%	*Total*	*318*	
Chemicals and plastics	33	10.4%			
Metals	32	10.1%			
Food and beverages	28	8.8%			
Other manuf. sectors	70	22.0%			
Manuf. sector, not specified	77	24.2%			
Total	*318*				

2.2. Measurement

The unit of analysis in this study is the purchase category. We define a purchase category as a homogeneous set of products and services that are purchased from the same supply market and have similar product and spend characteristics (Van Weele, 2010). The respondents were asked to choose a purchase category about which they were knowledgeable. There was great variety in the purchase categories chosen, such as raw materials, office supplies, several types of components, and services.

We use operations competitive priorities to operationalise purchase category strategies, an approach also suggested by several previous studies (e.g., Krause *et al*., 2001; González-Benito, 2007).

Table 2: Measurement Items and CFA Results

	Construct and items	Loading
Purchasing competitive priorities	*Cost* (CR=0.68; AVE=0.51)	
	SCOS1. Reducing product/service unit prices	0.67
	SCOS2. Reducing total cost of ownership of purchased inputs	0.76
	Quality (CR=0.76; AVE=0.62)	
	SQUA1. Improving conformance quality of purchased inputs	0.82
	SQUA2. Improving specifications and functionality of purchased inputs	0.75
	Delivery (CR=0.85; AVE=0.73)	
	SDEL1. Improving supplier lead-time	0.9
	SDEL2. Improving supplier accuracy in delivery dates and quantities	0.81
	Innovation (CR=0.79; AVE=0.65)	
	SINN1. Improving time-to-market with suppliers	0.81
	SINN2. Improving introduction rates of new/improved products and services	0.80
	Sustainability (CR=0.87; AVE=0.77)	
	SSUS1. Reducing ecological impact	0.88
	SSUS2. Improving compliance with social and ethical guidelines	0.87
Kraljic dimensions	*Purchase impact* (CR=0.67; AVE=0.41)	
	IMPA1. Category's impact on perceived quality of end products/services	0.65
	IMPA2. Category's impact on the cost of your products/services	0.65
	IMPA3. Category's impact on the quality of your internal processes	0.61
	Supply risk (CR=0.49; AVE=0.25)	
	RISK1. Level of concentration of the supply market	0.59
	RISK 2. The cost of your organization to switch suppliers	0.38
	RISK 3. The extent to which suppliers provide access to unique assets	0.51
Purchase category performance	*Cost performance* (CR=0.69; AVE=0.53)	
	PCOS1. The purchasing price	0.62
	PCOS2. The cost of managing the procurement process	0.82
	Quality performance (CR=0.80; AVE=0.66)	
	PQUA1. The level of supplier conformance to specifications	0.81
	PQUA2. The level of supplier/product service quality	0.82
	Delivery performance (CR=0.88; AVE=0.78)	
	PDEL1. The level of product/service delivery speed from suppliers	0.91
	PDEL2. The level of product/service delivery reliability from suppliers	0.86
	Innovation performance (CR=0.65; AVE=0.50)	
	PINN1. The supplier time-to-market for new/improved products/services	0.86
	PINN2. The level of innovation in products/services from suppliers	0.50
	Sustainability performance (CR=0.84; AVE=0.73)	
	PSUS1. The level of environmental compliance from suppliers	0.91
	PSUS2. The level of social compliance from suppliers	0.79

In addition to traditional competitive priorities of cost, quality, and delivery (Krause *et al*., 2001; Watts *et al*., 1992), in line with recent studies we also examine the competitive priorities of innovation (Luzzini and Ronchi, 2015) and sustainability (Krause *et al*. 2009; Dabhilkar *et al*., 2016). Measurement items for purchasing competitive priorities were developed based on extant literature (i.e., González-Benito, 2007; Pagell and Krause, 2002; Maignon *et al*., 2002). To assess how our resulting purchase strategy taxonomy fits the Kraljic matrix, we examine its two dimensions: purchase importance and supply risk. We define purchase importance as the buyer's assessment of the strategic significance of the purchase, and use measures adopted from Stump and Heide (1996). We define supply risk as the buyer's resource dependence on its suppliers and use measures adopted from Heide and John (1988) and Caniëls and Gelderman (2007). Finally, we examine purchase category performance using measures matching each individual competitive priority and ask the respondents to rate their performance relative to their targets. All measurement items are listed in Table 2.

To examine the unidimensionality and the psychometric properties of the constructs, we conducted a confirmatory factor analysis (CFA) by using the maximum likelihood estimation in LISREL 8.8 software. The fit indices suggested a good model fit. The chi-square test statistic ($\chi 2$=765.82) per degree of freedom was 1.41, which is well below the suggested threshold level of 3.00 (Bollen, Long, 1993). The RMSEA value was 0.041, which is less than the recommended cut-off of 0.05 (Hu, Bentler, 1999).

The suggested threshold level of 0.90 was achieved with the CFI, IFI, and NNFI values, which were 0.96, 0.96, and 0.94, respectively (Bentler, 1990). To evaluate convergent validity, we checked the standardised factor loadings, which are indicated in Table 2, along with the composite reliabilities and AVE values. Factor loadings are recommended to be higher than 0.3 or 0.4 (Handley, Benton, 2012), which was the case for all of the items. All constructs except supply risk had composite reliability values higher than the suggested level of 0.6 (Bagozzi *et al*., 1991), indicating high construct reliability. Out of 16 constructs, 13 had AVE values higher than 0.5 (Fornell and Larcker, 1981), and two constructs had AVE values between 0.4-0.5, which is also considered acceptable (Handley and Benton, 2012). Supply risk construct had a lower AVE value, but considering the other psychometric properties of this construct and the overall fit, we decided to retain the construct in the analysis. Finally, discriminant validity was achieved, as the square root of the AVE of each construct was higher than their correlations with other constructs (Fornel and Larcker 1981) (See Table 3). Overall, the measurement model exhibits good reliability and validity.

Table 3: Correlations

VAR	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
SCOS	**0.71**										
SQUA	0.28	**0.79**									
SDEL	0.25	0.48	**0.85**								
SINN	0.30	0.57	0.53	**0.81**							
SSUS	0.19	0.33	0.16	0.36	**0.88**						
IMPA	0.20	0.25	0.20	0.25	0.09	**0.64**					
RISK	0.09	0.28	0.22	0.30	0.07	0.45	**0.50**				
PCOS	0.11	0.08	0.08	0.08	0.13	0.04	-0.02	**0.73**			
PQUA	0.03	0.05	-0.01	0.01	0.17	0.02	-0.01	0.36	**0.81**		
PDEL	0.02	0.07	-0.06	-0.01	0.19	-0.01	0.03	0.33	0.57	**0.88**	
PINN	-0.01	0.06	0.07	0.09	0.15	0.04	0.10	0.22	0.41	0.51	**0.71**
PSUS	-0.01	0.04	-0.07	0.03	0.34	0.02	0.05	0.15	0.29	0.26	0.34

Note: Values larger than 0.10 are significant at p<0.05, values larger than 0.14 are significant at p<0.01. Bold values on the diagonal are the square root of the Average Variance Extracted (AVE) values.

3. RESULTS

To identify the different purchase category strategy groups based on the purchasing competitive priorities emphasised by firms, we used the cluster analysis technique (Hair *et al*., 2010). We used the MATLAB program to calculate the similarity between data points based on the Mahalanobis distance and the complete linkage method, which accounts for correlations among variables and has been found to generate the most compact clustering solutions (Hair *et al*., 2010). We did not use the Ward method as it has recently been critiqued for causing serious problems in distinguishing between response style (i.e. yea-sayers and nay-sayers) and item content (Van Rosmalen *et al*., 2010). To determine the appropriate number of clusters, we examined the dendrogram and the percentage change in the agglomeration coefficient (Lattin *et al*., 2003). Both measures indicated a five-cluster solution. We also performed a discriminant analysis to validate our taxonomy, which indicated that 83% of the cases are correctly classified, suggesting that there is sufficient differentiation between the purchase category strategy clusters (Frohlich and Dixon, 2001). The results of the cluster analysis are provided in Table 4. As the F-values indicate, all variables significantly differentiated the clusters based on a Scheffe test ($p<0.001$).

Table 4. Cluster Analysis Results

Competitive priorities	C1. Emphasise All	C2. Cost Management	C3. Product Innovation	C4. Delivery Reliability	C5. Emphasise Nothing
Cost	4.48	5.02	4.48	3.53	2.93
Difference	*(2,4,5)*	*(1,3,4,5)*	*(2,4,5)*	*(1,2,3,5)*	*(1,2,3,4)*
Quality	4.35	3.38	4.88	2.98	3.43
Difference	*(2,4,5)*	*(1,3)*	*(2,4,5)*	*(1,3)*	*(1,3)*
Delivery	4.49	3.41	4.10	4.34	2.57
Difference	*(2,5)*	*(1,3,4,5)*	*(2,5)*	*(2,5)*	*(1,2,3,5)*
Innovation	3.59	3.02	4.62	3.53	1.67
Difference	*(2,3,5)*	*(1,3,5)*	*(1,2,4,5)*	*(3,5)*	*(1,2,3,5)*
Sustainability	3.40	2.90	2.08	2.48	2.38
Difference	*(3,4,5)*		*(2)*	*(1)*	*(1)*
N	*144*	*67*	*26*	*60*	*21*

Note: Averages are based on a six-point scale (1: extremely low, 6: extremely high). The numbers in parentheses indicate the clusters from which this cluster is significantly different at the 0.05 level of significance. *** $p < 0.001$.

3.1. Taxonomy of Purchase Category Strategies

Cluster 1: Emphasise all (N=144): In this cluster, all competitive priorities are emphasised more than the average. Although the three traditional competitive priorities – cost, quality, and delivery – appear to take the lead at comparable levels, innovation and sustainability are also emphasised moderately, with the latter even being emphasised the most in this cluster in comparison with other clusters. All competitive priorities are deemed strategically important. We label this cluster "Emphasise All" because there does not appear to be a real trade-off. This cluster is the largest one in our solution and contains various purchase categories such as raw materials, packaging, components, and non-product-related purchases and services.

Cluster 2: Cost management (N=67): This cluster is marked by a strong focus on cost, as reflected by the significantly higher emphasis on this competitive priority in comparison with all other clusters. Cost is also the most emphasised competitive priority within the cluster, clearly outranking the next most emphasised competitive priorities, quality and delivery. Sustainability is the least emphasised competitive priority, yet it is still comparable to the sample mean. We label this cluster "Cost Management" because the main focus is on obtaining products and services at lower prices and achieving lower total costs.

Similarly to the Emphasise All cluster, this cluster contains different types of both direct and indirect purchases.

Cluster 3: Product innovation (N=26): This cluster distinguishes itself from other clusters based on significantly higher emphases on quality and innovation. Within the cluster, cost and delivery competitive priorities are only considered after quality and innovation. Sustainability is hardly considered. In this cluster, purchasing managers strive for high-quality products and services and quick introduction of innovations to the market. We label this cluster "Product Innovation", for which product might refer to both a physical good and a service. This cluster is a relatively small one in our solution. Some of the purchase categories in this cluster are plastic components, metals, electronic boards, and robotics. There are no indirect purchase categories in this cluster.

Cluster 4: Delivery reliability (N=60): In this cluster, delivery reliability is not only the most emphasised competitive priority, but is also emphasised significantly more in this cluster than in the Cost Management and Emphasise Nothing clusters. Cost is emphasised much less than average and is on par with the emphasis on innovation. What is most crucial for purchase categories in this cluster is that goods and services be delivered on time and accurately. Emphasis on quality is quite low; this competitive priority ranks fourth and is followed by sustainability. We label this cluster "Delivery Reliability". The purchase categories observed in this cluster range from raw materials and ingredients to spare parts and packaging.

Cluster 5: Emphasise nothing (N=21): We label this final cluster "Emphasise Nothing" because all competitive priorities are emphasised less than the overall average and significantly less than in many other clusters. There does not appear to be a strategic orientation for these purchase categories. This cluster is the smallest and contains not only direct purchase categories such as commodities but also indirect purchase categories, such as travel and cleaning services.

3.2. Positioning Purchase Category Strategies in the Kraljic Matrix

First, to identify the quadrant of the Kraljic matrix in which a purchase category is located, we divided the observations into a 2X2 matrix by categorising them as low/high purchase importance or low/high supply risk. We defined the cut-off value for purchase importance and supply risk based on the mid-point of the scales. This method resulted in the following purchase category distribution: 64 in the Non-critical, 16 in the Bottleneck, 110 in the Leverage, and 128 in the Strategic quadrant. Second, we performed cross-tabulation analyses to determine the frequency of purchase category strategies in each Kraljic quadrant. Table 5 illustrates the results of this analysis.

Our findings suggest that indeed, all five purchase category strategies are implemented in each quadrant of the Kraljic matrix; however, there are differences from one quadrant to the next. When we compare the frequency of the purchase category strategies in the entire sample, we find that 45.3% of the purchase categories are managed with "Emphasise All", 21.1% are managed with "Cost Management", 8.2.% are managed with "Product Innovation", 18.9% are managed with "Delivery Reliability", and 6.6% are managed with "Emphasise Nothing" strategies. If there were no difference between the Kraljic quadrants in terms of the purchase category strategies implemented, one would expect to observe a more or less similar distribution for each quadrant. Our results suggest that there is no such distribution.

Table 5: Cluster Representation in the Kraljic Matrix

		C1. Emphasise All	C2. Cost Management	C3. Product Innovation	C4. Delivery Reliability	C5. Emphasise Nothing	*Total*
Non-critical							
	N	23	13	2	16	10	64
	%	35.9%(L)	20.3%	3.1%(L)	25%(M)	15.6%(M)	
Bottleneck							
	N	10	2	1	1	2	16
	%	62.5%(M)	12.5%(L)	6.3%(L)	6.3%(L)	12.5%(M)	
Leverage							
	N	54	24	5	19	8	110
	%	49.1%	21.8%	4.5%(L)	17.3%	7.3%	
Strategic							
	N	57	28	18	24	1	128
	%	44.5%	21.9%	14.1%(M)	18.8%	0.8%(L)	
Total							
	N	144	67	26	60	21	318
	%	**45.3%**	**21.1%**	**8.2%**	**18.9%**	**6.6%**	**100%**

In the Non-critical quadrant, Emphasise All and Product Innovation strategies are implemented less (L) than average, whereas Delivery Reliability and Emphasise Nothing strategies are implemented more (M) than average. In the Bottleneck quadrant, there are only 16 purchase categories, and most are managed using an Emphasise All strategy. On the other hand, Cost Management, Product Innovation, and Delivery Reliability strategies are implemented less than average. In the Leverage quadrant, there does not appear to be substantial deviation from the average strategy distribution, with the exception of the Product Innovation strategy, which is implemented slightly less than average. Finally, in the Strategic quadrant, the Product Innovation strategy is implemented substantially more than average. Conversely, the Emphasise Nothing strategy is only observed in one out of 128 purchase categories.

3.3. Purchase Category Performance

As a final step, we compared purchase category performance across the five purchase category strategies and four quadrants of the Kraljic matrix (Table 8). To measure the overall purchase category performance, we calculated a weighted-average score as indicated below (Wi = emphasis on competitive priority i [i = 1, …, 5], Pi = performance in competitive priority i).

$$\text{Po} = \frac{\sum_{i=1}^{5} Wi \times Pi}{\sum_{i=1}^{5} Wi}$$

As the number of observations in some of the groups is too small, we did not conduct an ANOVA test, but instead relied on independent sample t-tests and a more descriptive way of interpretation. Interestingly, we found very few significant performance differences between the purchase category strategies in each quadrant. In the Non-critical quadrant, the Delivery Reliability strategy appears to be less effective than the Cost Management, Emphasise All, and Emphasise Nothing strategies. In the Bottleneck quadrant, we are not able to make any purchasing performance comparisons, as there are too few observations. In the Leverage quadrant, implementing Product Innovation strategy results in the

lowest purchase category performance. The two most successful strategies in this quadrant are Emphasise All and Cost Management. Finally, in the Strategic quadrant, the most successful strategy is Emphasise All, followed by Product Innovation and Cost Management. The least effective strategy in this quadrant is Delivery Reliability strategy.

Table 6: Purchase Category Performance

	C1. Emphasise All	C2. Cost Management	C3. Product Innovation	C4. Delivery Reliability	C5. Emphasise Nothing
Non-critical	4.36 (4)	4.38 (4)	n/a	3.94 (1,2,5)	4.31 (4)
Bottleneck	3.74	n/a	n/a	n/a	n/a
Leverage	4.32 (3)	4.35	3.88 (1)	4.11	4.07
Strategic	4.30 (2,4)	4.06 (1)	4.14	3.98 (1)	n/a

Note: Averages are based on a seven-point scale (1: much worse than target, 7: much better than target). The numbers in parentheses indicate the clusters from which this cluster is significantly different at the 0.10 level of significance (independent-sample t-tests). Performance means are not reported for cluster/Kraljic groups for which there are fewer than five observations.

4. DISCUSSION

In this section, we elaborate on the purchase category strategies by first focusing on the competitive priorities, then examining extensions to the Kraljic matrix, and, finally, investigating performance implications. We also discuss other primary findings.

The Emphasise All cluster illustrates a purchase category strategy in which all purchasing competitive priorities are emphasised at very high levels. Such a strategy is highly consistent with the recent arguments regarding the increasingly strategic role of purchasing. Rather than focusing solely on the traditional cost objective, companies adopt a more holistic approach and strive for excellence in many competitive priorities. The number of observations in this cluster suggests that it is a very popular purchasing strategy. A similar type of strategy has also frequently been noted in operations strategy taxonomies (e.g., Kathuria *et al*., 2020; Zhao *et al*., 2006). Although it is possible to implement this strategy for purchase categories in all quadrants of the Kraljic matrix, our results suggest that it is especially popular in the Bottleneck quadrant. When the purchase importance is low but supply risk is high, firms cannot afford to focus solely on the cost objective. In such cases, it is important to assure supply and survive the "lock-in" situation (Caniëls and Gelderman 2007; Van Weele, 2000). Having to respond to a dynamic and complex environment might necessitate the adoption of a more aggressive approach in which all competitive priorities are pursued (Kathuria *et al*., 2020; Martín-Peña, Díaz-Garrido, 2008). However, implementing an Emphasise All strategy requires extensive resources and programs; therefore, as our results also illustrate, this strategy is not highly preferred for the non-critical items.

The Cost Management cluster appears to reflect traditional purchasing, in which the main consideration is buying products at a low price and obtaining the lowest total cost. As the main goal of purchasing is to gain cost savings, not surprisingly, this strategy is implemented in various purchase categories located in different Kraljic quadrants, with the exception of Bottleneck. As explained above, instead of a pure cost focus, firms need more nuanced purchasing strategies in Bottleneck situations.

In the Product Innovation cluster, there is a clear focus on the competitive priorities of innovation and quality. A much lower emphasis on the cost objective suggests that buying firms are willing to invest more to obtain more innovation from their suppliers. Product Innovation strategies are primarily implemented in the Strategic quadrant. If the firms are dependent on a few suppliers, it makes sense to pursue joint innovation projects with those suppliers, especially if technological uncertainty is also high and the suppliers provide unique access to resources (Luzzini *et al*., 2015; Petersen *et al*., 2005). Although

to a much lesser extent, we also observe that Product Innovation is implemented in the Leverage quadrant, which would probably require a very different approach. As buying firms are more powerful than their suppliers in a leverage situation (Caniëls and Gelderman, 2007), they are more likely to demand that their suppliers provide innovation without a great deal of commitment, whereas for more strategic products, it would be more beneficial to participate in joint innovation projects (Handfield *et al*., 1999; Luzzini *et al*., 2015).

In the Delivery Reliability strategy, the focus is on obtaining purchased products accurately and quickly. This strategy is quite popular in the Non-critical quadrant, in which both purchase importance and supply risk are low. As the financial value of the purchase is low, firms might not have the incentive to devote a great deal of effort into managing such categories, and the primary responsibility of purchasing managers becomes finding the right supplier that can deliver their products accurately and on time (even at higher costs). Conversely, this strategy is also implemented in Leverage and Strategic quadrants, which clearly necessitates the adoption of a different set of purchasing practices. In our sample, the only purchase category managed using this strategy in the Bottleneck quadrant is spare parts.

Finally, in the Emphasise Nothing strategy the absolute level of emphasis is quite low for all competitive priorities. Not surprisingly, such an approach is quite popular in the Non-critical quadrant, in which there is no need to develop strategies at all, but a focus on efficient processing is sufficient (Gelderman and Van Weele, 2003). In our sample, there is only one purchase category in the Strategic quadrant that is managed with the Emphasise Nothing approach. Clearly, such a lack of focus under high-risk and high-purchase-importance conditions is more likely to result in lower performance; hence, this strategy is not popular in the Strategic quadrant.

The Kraljic matrix has been a very popular tool in identifying different purchase situations. However, it has also been criticised because of its heavy reliance on only two dimensions and the possibility of adopting multiple purchasing strategies in the same purchase situation (Dabhilkar *et al*., 2016; Gelderman and Van Weele, 2003; Montgomery *et al*., 2018). Our results also support this notion and suggest that as an additional, complementary layer, differences in competitive priorities must be examined when defining purchase category strategies.

In addition to examining the purchase category and supply market characteristics, we also compared the purchasing performance across clusters. We found hardly any significant differences, despite few preliminary indications of which purchase category strategies are more (less) effective in which situations. Although we did not have a priori assumptions that a particular purchasing strategy would outperform the others, it is common in contingency research to assess the predictive validity of identified strategy clusters by comparing performance differences. However, there has also been considerable debate in the literature regarding whether performance differences can be predicted with configurations (Fiss, 2007). In addition, many of the operations strategy taxonomies do not indicate significant differences in operations and financial performance (e.g., Kathuria, 2000; Martín-Peña and Díaz-Garrido 2008; Zhao *et al*., 2006). It is generally accepted that performance is affected by a multitude of external factors (González-Benito, 2010). Additionally, because strategies are guidelines for organisations with regard to what they want to achieve, strategies based on the competitive priorities of today predict future performance more successfully than past performance (Boyer and Pagell, 2000). These notions can partially explain the small number of significant performance differences identified in this study. The lack of significant differences also indicates that a number of purchasing strategies might be equally effective under similar conditions.

Krause *et al*. (2001) have suggested that the competitive priorities used in operations can also be used to identify purchasing strategies. The purchase category strategies we have identified strongly resemble those discovered in operations strategy taxonomy studies. Out of the six key operations strategies we identified in the Literature Review, five also appear in our purchasing strategy taxonomy. These findings provide empirical evidence for the argument that the competitive priorities are also highly valid in the context of purchasing. In general, we indirectly illustrate that generic operations strategies are

also identifiable at the purchase category level. The only strategy that was not identified in our purchasing strategy taxonomy was the Lean Management strategy. One explanation for this result might be the transformation of this strategy from a focus on only cost, quality, and delivery to an emphasis on innovation and sustainability as well in an Emphasise All strategy. Frohlich and Dixon (2001) argue that operations strategies change over time and that, therefore, more replication studies are needed to assess such change. Because our purchasing strategy taxonomy based on competitive priorities is a first attempt in the literature, more studies are needed to support this conclusion.

This study includes an additional taxon, sustainability, which is a rather recent competitive priority compared to the traditional competitive priorities (Krause *et al*., 2009; Dabhilkar *et al*., 2016; Pagell *et al*., 2010). Interestingly, we did not identify a separate sustainability strategy, and only in the Emphasise All strategy sustainability was emphasised at moderately higher levels. What was common in almost all purchasing strategies was the relatively low emphasis on the sustainability competitive priority. These results might support the notion that although the importance of sustainability issues is acknowledged, it is primarily viewed as a marketing issue or as compliance with laws instead of a major competitive priority in purchasing.

5. CONCLUSION

Although there is on-going discussion regarding the extent to which operations competitive priorities are also valid in the context of purchasing, very little evidence for this proposition has been presented in the literature. In this exploratory study, we empirically validated that competitive priorities can be used to define purchase category strategies and found remarkable similarities between our purchasing strategy taxonomy and extant operations strategy taxonomies. By adopting a configurational approach that encompasses both the trade-off (Hayes and Wheelwright 1984; Skinner, 1985) and combinative capabilities arguments (Kathuria *et al*., 2018), we found that firms pursue multiple competitive priorities simultaneously in some purchase category strategies but focus on one or a few key competitive priorities in others. Additionally, we emphasise that one of the recently suggested competitive priorities, sustainability, is not yet the top priority for purchasing professionals.

This research contributes to the literature about purchasing portfolio models by examining the role of competitive priorities, a factor that was hitherto neglected, and investigating this issue using a comprehensive data set from multiple countries representing a variety of purchase categories. We have taken the first step in classifying purchasing strategies at the purchase category level and illustrated how the strategies differ in terms of purchase importance and supply risk. Our results should be considered not as an alternative to the Kraljic matrix but, rather, as a complement to this widely used portfolio model. The ten countries represented in our data set constitute 43.1% of the World GDP in 2019 (IMF, 2020). In each of these countries, there is a professional purchasing association supporting both research and practice, highlighting the strategic nature of purchasing. Therefore, the samples from these ten countries are exemplary of a wide range of firms with a variety of purchasing strategies.

As with any other research, this study is not without limitations. First, we acknowledge that there might have been some changes after the data collection in 2009. One could speculate that as the strategic role of purchasing has become more visible in the past decade, competitive priorities of innovation and sustainability might be attracting more attention from the purchasing managers. It could also be that recent global events, such as Covid-19 pandemic, result in temporary shifts in competitive priorities emphasized (For instance, many firms struggled with delivery and finding alternative suppliers). Therefore, there is a need for replication studies to test our purchase category strategy taxonomy in other contexts and with recent data.

Second, we were not able to illustrate the link between purchase category strategies and purchasing practices adopted. We illustrated that many purchase category strategies can be implemented equally effectively in the same Kraljic quadrant but that some purchase category strategies are more likely to be implemented in certain quadrants. Future research should examine in detail the possible reasons

for this choice and whether different purchasing practices and processes are required to deploy different purchase category strategies adopted in the same quadrant.

Third, we adopted a cross-sectional design limiting causal inferences. Longitudinal design approaches can better serve this purpose and enable researchers to discover more definitively the effects of competitive priorities on performance (Boyer and Pagell, 2000; Kathuria *et al*., 2018).

Fourth, we relied on perceptions to assess purchase category performance. Another area of improvement would involve the development of objective performance measures, although this is quite challenging, as firms do not yet use such measures at the category level.

Finally, we relied on two-item measures for some constructs. Although the extensive validity checks via confirmatory factor analysis indicated no issues, future research can preferably use more items. It is our belief that more research is needed in this area for a better understanding of how different purchase categories are very distinct from each other and how they are actually – and effectively – managed in practice.

AUTHOR STATEMENT

Research and Publication Ethics Statement

This study has been prepared in accordance with the ethical principles of scientific research and publication.

Author Contribution

Melek Akın Ateş: Research Idea Generation, Research Design, Literature Review, Methodology, Data Collection, Data Analysis, Writing, Review and Editing

Finn Wynstra: Research Idea Generation, Research Design, Writing, Review and Editing

Erik van Raaij: Research Idea Generation, Research Design, Writing, Review and Editing,

Conflict of Interest

There is no conflict of interest arising from the study for the authors or third parties.

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