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SMEs' market orientation towards public sector customers in public procurement

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Abstract

Purpose This paper investigates how the market orientation of SMEs towards public sector customers enables firms to participate and succeed in public procurement.

Design/methodology/approach We used a survey-based methodology. First, we reconfigured an empirical construct of market orientation for private sector markets to measure the market orientation towards public sector customers. Then we conducted a survey of Finnish firms to test the construct and how it predicted firm performance in public procurement.

Findings We find empirical support for firms to adopt a market orientation towards public sector customers. Our results suggest that a customer and competitor orientation are positive predictors of participating and winning supply contracts in public sector tenders.

Originality/value This paper is the first to report a market orientation towards public sector customers and describe how it is related to supplier performance in public procurement.

Research limitations Self-reported survey data from a single country may limit the generalizability of results.

Keywords: public procurement, public sector, market orientation, SMEs

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1. Introduction

Public procurement accounts for 10% to 16% of the gross domestic product in Western economies (Kutlina-Dimitrova, 2018). However, small and medium-sized enterprises (SMEs) are under-represented in the number of awarded contracts (Flynn *et al.*, 2015). This is attributable to factors such as the onerous requirements in the public procurement process for SME suppliers (Loader, 2015). For this reason, governments have introduced various policy measures to facilitate SME entry into public procurement (Loader, 2017), although their application in practice is limited (Flynn and Davis, 2016b).

Recently, a stream of research has focused on predictors concerning the tendering activity and success of SMEs in public procurement (Flynn and Davis, 2017, Akenroye *et al.*, 2020). Examining firms' motivations, aspirations, and strategies may reveal critical factors that improve SMEs' access to public procurement (Tammi *et al.*, 2014). The potential of SMEs to become suppliers to the public sector is conditional on their capability to identify and exploit suitable business opportunities (Woldesenbet *et al.*, 2012). Firms that engage in public procurement understand the public sector market relative to their own areas of specialization (Woldesenbet and Worthington, 2019). However, SMEs vary a great deal, ranging from those that are unwilling or unable to become suppliers in the public procurement sector to those that are willing and active in public procurement (Woldesenbet and Worthington, 2019).

In private sector markets, strategic orientations guide firms on how to deploy their resources in the pursuit of business opportunities and competitive advantages (e.g., Noble *et al.*, 2002). Recent research suggests that strategic orientations also shape SME behaviour in public procurement (Tammi *et al.*, 2014; Reijonen *et al.*, 2016; Tammi *et al.*, 2017). However, the current research has overlooked whether SMEs have a strategic orientation towards public sector customers. This omission is important because public procurement and private purchasing differ (e.g., Lian and Laing, 2004; Arlbjørn and Freytag, 2012). For instance, rules and regulations govern and limit the interplay between firms and their prospective public sector customers in the tendering process (Murray, 2009b). Thus, understanding how the public sector market operates is crucial if an SME seeks to become a supplier for the public sector (McKevitt *et al.*, 2014; Woldesenbet and Worthington, 2019). SMEs that can interact with public sector customers and master the technicalities of the procurement process tend to succeed in calls for tenders (Flynn and Davis, 2017). Furthermore, a methodological limitation in the current research on public procurement is its focus "on private sector procurement research attributes and questions" (Murray, 2009b, p. 99). Moreover,

since the marketing practices of public buyers include market research, the marketing practices of SMEs in the context of public procurement have received little attention in the literature (McKevitt and Davis, 2013).

Our study aims to close these research gaps by asking: does having a market orientation towards public sector customers improve the ability of SMEs to participate and succeed in public procurement? A market orientation refers to the generation of marketing intelligence and that this permeates the organization (Kohli and Jaworski, 1990) or to an organization culture of creating superior customer value (Narver and Slater, 1990). We conjecture that firms which focus on public sector customers may have developed an organizational culture and a set of management styles which enable them to compete successfully for public sector procurement contracts. By answering the research question above, this paper will shed light on whether such an orientation is beneficial to SMEs involved in public procurement. Since prior studies have mainly focused on examining the market orientation of private or public sector organizations towards private sector customers, in this study we modify the empirical construct of a market orientation (Narver and Slater, 1990; Jaworski and Kohli 1993; Deng and Dart 1994; Gray *et al.*, 1998; Farrell *et al.*, 2008) for the public procurement context. We test the construct using data from a nation-wide survey of Finnish firms.

There is an urgent need to investigate if having a market orientation towards public sector customers generates benefits for the firms involved in public procurement. First, prior research has shown that a market orientation has a positive impact on organizational performance (Kirca, *et al.*, 2005). In the context of public procurement, Tammi *et al.* (2014) show that a market orientation in a general sense correlates with SME activity in public procurement. However, there is a paucity of empirical evidence on how a market orientation predicts firm performance in public procurement. Second, buyer power and rivalry between competitors determine a firm's success in the markets (e.g., Porter, 1980), and in public procurement their roles are even more emphasized. A market orientation enhances the firm's ability to gather and make use of intelligence on customers and competitors and also of the larger operational environment to better meet the customer's needs and consequently, succeed in competition (e.g., Gheysari *et al.*, 2012). Third, a market orientation helps the firm to create superior value for its customers (Narver and Slater, 1990), which is similar to what public procurers look for in their suppliers (Loader, 2013). Finally, Flynn and Davis (2016a) conceptualize a "commercial orientation towards the public

sector”, which is operationalized as the share of public sector contracts in the SME’s total revenue. However, this operationalization does not examine the firm’s strategic choices in relation to public sector customers. Furthermore, how this orientation predicts the involvement of SMEs and their potential success in public procurement has not been investigated.

In this study we make several contributions to the literature. First, we provide an empirical test of a firm’s market orientation towards public sector customers, which to our knowledge has eluded the empirical research literature on public procurement. More specifically, our approach attempts to measure the firm’s strategic focus on public sector customers as opposed to a direct measurement of how much public sector contracting contributes to the firm’s revenue (see Flynn and Davis, 2016a). Second, consistent with Murray (2009a), our results suggest that empirical research methodologies developed for private sector markets may not fully capture elements required in research into public procurement. Finally, our paper adds to the growing body of empirical literature on the predictors of SME activity in public procurement (e.g., Flynn *et al.*, 2017; Reijonen *et al.*, 2016).

This paper proceeds as follows. In Section 2, we present the theoretical background of the paper. Section 3 describes the methodology and data used in the study. Section 4 reports the empirical results. Finally, Section 5 concludes the paper.

2. Theoretical background and the research question

2.1 Market orientation and SMEs

The marketing literature has used the concept of a market orientation to describe the behaviour of firms in markets. A market orientation emphasizes providing superior customer value based on market intelligence (Tammi *et al.*, 2014). Narver and Slater (1990) regard a market orientation as an organizational culture. Acquiring and sharing information on customers and competitors helps to develop a learning organization, a culture of experimentation, and a focus on constantly enhancing the processes of the firm (Kumar *et al.*, 2011). On the other hand, Kohli and Jaworski (1990) see a market orientation as a set of activities required for using market intelligence for the firm’s benefit. Numerous studies document a market orientation as a predictor of high performance in markets (see Kirca *et al.*, 2005). For example, Agarwal *et al.* (2003) found that a market orientation was positively related to innovation as

well as to subjective (e.g., service quality and customer satisfaction) and objective (e.g., market share) performance measures.

In this paper, we adopt Narver and Slater's (1990) concept of a market orientation, because it is conceptually and operationally the most versatile scale (Hooley *et al.*, 2000). The scale consists of three dimensions: a customer orientation, competitor orientation and interfunctional coordination. A customer orientation relates to knowing the customer in a manner that allows the firm to create superior value for its customers. A competitor orientation reflects the firm's understanding of competing product offerings and positions in the market. Interfunctional coordination concerns the firm's internal functions relating to generating, disseminating, and using market information for the firm's benefit. A market orientation does not solely focus on the present moment as firms need to monitor and forecast how customer preferences will change in the future and how competitors affect this evolution (Agarwal *et al.*, 2003).

While the roots of the concept stem from studies of large firms, many studies also argue that a market orientation is relevant for SMEs too. Market-oriented SMEs are able to overcome their resource limitations and compete with larger competitors (Raju *et al.*, 2011; González-Benito *et al.*, 2014). As a market orientation involves gathering, interpreting, and using market intelligence, market-oriented entrepreneurs may use an intuitive approach to the market as opposed to a formal mode of market research (Blankson *et al.*, 2006). Since SMEs often operate close to their customers, they have access to information which can be leveraged for their benefit (Morgan *et al.*, 2009). To this end, repeated personal interactions with customers are often important to SMEs (Tammi *et al.*, 2017).

Research into market orientation also points to differences between large and small firms. There tends to be a significantly lower degree of competitor orientation in small firms (O'Dwyer and Ledwith, 2010). However, a stronger competitor orientation enables SMEs to identify opportunities and develop competitive advantages (O'Dwyer and Gilmore, 2019). A competitor orientation is also positively associated with new product performance and organizational performance (O'Dwyer and Ledwith, 2010).

2.2 Public procurement and market orientation

The public procurement sector is a market in which public authorities ranging from local to national government purchase goods and services from private sector actors. The literature suggests that SMEs face impediments in competing for public sector tenders. According to Loader (2011), the institutional environment of public procurement creates several barriers to SME entry, including the organizational culture, procurement processes, and constraints that are typical for SMEs, such as their limited production capacity and a lack of relevant skills. Furthermore, a lack of relevant information to participating in public procurement appears to be among the largest barriers (Saastamoinen *et al.*, 2017). SMEs face difficulties in acquiring information on public procurement as well as the procedural requirements for bidding for public sector tenders (Loader, 2005).

SMEs often rely on their networks for gathering useful business information (Gilmore, 2011). However, their attempts at generating information on customers and competitors tends to be disorganized and periodical, and SMEs may not be very active or systematic when it comes to disseminating or responding to this information (Reijonen and Komppula, 2010). SMEs' strengths include their closeness to their customers and their ability to respond to changes in their customers' needs flexibly and quickly (McCartan-Quinn and Carson, 2003).

While the qualities of SMEs may work in private sector markets, they may not be as effective in public sector markets. Although public sector buyers sometimes use relational approaches, they usually work at an arm's length (e.g., Loader, 2011). The public sector's preference for transactional purchasing mechanisms results in the adherence to a 'one size fits all' set of guidelines and accountability pressures (Lian and Laing, 2004). Consequently, clear rules and regulations are pivotal to the public sector's purchasing actions (Arlbjøn and Freytag, 2012). This approach confines communication between the bidders and the contracting authority to a formal exchange of information, as all paperwork goes through a clearly defined process. Moreover, the requirements for products or services are customarily pre-determined and thus unnegotiable. However, Uyarra *et al.* (2019) suggest that a more organized dialogue between end-users, procurers and firms is needed in public procurement. Although their view stems from the public procurement of innovations, extensive and organized dialogue between the involved stakeholders might also help SMEs to gather and use information in public procurement tenders.

Recent empirical research into SMEs' role in public procurement suggests that a market orientation plays a role in public sector tendering. Tammi *et al.* (2014) found that market-oriented firms look for business opportunities in the public sector and submit tenders in calls for tenders. Moreover, they found that interfunctional coordination was the dimension of market orientation that drove their results. As Tammi *et al.* (2014) conclude, the impact of a market orientation on a firm's involvement in public procurement boils down to the ability to harness internal resources to satisfy customer needs. Tammi *et al.* (2017) found that market-oriented firms seek local public sector customers as opposed to entrepreneurial firms who seek public sector customers at the regional or national level (see also Reijonen *et al.*, 2016). Based on the findings of the research on private sector markets, however, it is curious that other dimensions of market orientation, namely those related to gathering market intelligence, do not appear to correlate with the SMEs' activity in public procurement. In particular, as the aforementioned studies on public procurement suggest, information acquisition on public sector customers appears to be an impediment to entry into public procurement. For this reason, we propose that, perhaps, the empirical constructs designed for private sector markets may not fully capture all the elements required for participating and succeeding in tendering with public sector customers.

3. Methodology, data and variables

3.1 Methodology and data

We use a survey-based research methodology to answer the research question. The baseline survey instrument that we utilized for market orientation was previously used by Reijonen *et al.* (2012) and builds upon the prior works by Narver and Slater (1990), Jaworski and Kohli (1993), Deng and Dart (1994), Gray *et al.* (1998) and Farrell *et al.* (2008). Thus, in this study we use the 17 items shown in Table 1 to measure a market orientation towards public sector customers. Items are measured on a five-point answer scale from 1 = 'Completely disagree' to 5 = 'Completely agree'. The survey instrument attempts to incorporate the validated quality of the market orientation measurement scale with additional refinements that emphasize a firm's strategic focus on public sector customers. Hence, our work can be regarded as exploratory in part. Performance measures (the number of bids/contracts) and firm characteristics are similar to the measures used in prior studies (e.g., Tammi *et al.*, 2014; Reijonen *et al.*, 2016; Flynn, 2017). The survey instrument was reviewed by leading public procurement experts in Finland to ensure its validity and relevance from the practical aspect.

Table 1. Survey instrument for public sector market orientation.

Item	Wording	Source
#1	We regularly monitor our competitors' marketing efforts in our public sector business.	DD1994; GMB1998
#2	We frequently collect marketing data on our competitors to help direct our marketing plans in our public sector business.	DD1994; GMB1998
#3	Our people are instructed to monitor and report on competitor activity related to our public sector business.	DD1994; GMB1998
#4	We respond rapidly to competitors' actions in our public sector business.	NS1990; DD1994; GMB1998
#5	Our top managers often discuss competitors' actions related to our public sector business.	NS1990; DD1994; GMB1998
#6	We target customers and customer groups where we have or can develop a competitive advantage in our public sector business.	NS1990; DD1994; FOK2008
#7	Market information concerning our public sector business is shared inside our organization.	DD1994; GMB1998
#8	Persons in charge of different activities in our organization are involved in preparing business plans/ strategies focusing on the public sector.	DD1994; GMB1998
#9	We have a strong commitment to our public sector customers.	NS1990; DD1994; GMB1998
#10	We are always looking at ways to create customer value for our public sector customers in our products and services.	NS1990; DD1994; GMB1998
#11	We encourage our public sector customers to give feedback on our work because it helps us to do a better job.	NS1990; DD1994; GMB1998
#12	Customer satisfaction drives our business objectives with public sector customers.	NS1990; FOK2008
#13	We measure the customer satisfaction of our public sector customers on a regular basis.	NS1990; DD1994; GMB1998
#14	After-sales service is an important part of our public sector business strategy.	NS1990; DD1994; GMB1998
#15	We do a good job integrating the activities inside our organization.	DD1994; GMB1998
#16	We regularly have interorganizational meetings to discuss market trends and developments related to our public sector business.	DD1994; GMB1998
#17	We regularly discuss the needs of the public sector customer in our organization.	JK1993; GMB1998

Notes: DD1994 = Deng and Dart (1994); FOK2008 = Farrell et al. (2008); GMB1998 = Gray et al. (1998); JK1993 = Jaworski and Kohli (1993); NS1990 = Narver and Slater (1990).

An electronic survey was carried out in cooperation with the leading electronic procurement platform operator in Finland. The respondents were registered users of the platform. With a market share of almost 90% of all contracting authorities in Finland, including all major government agencies and the largest

municipalities, the platform provides a comprehensive coverage of public procurement in Finland. A survey questionnaire was submitted to a random sample of 10,000 recipients in December 2015. While the sample from the population of firms registered with the service was random, the registered firms are not a representative sample from the population of Finnish enterprises because firms engaged in public procurement tend to be larger. After two reminders, the survey resulted in 421 responses, corresponding to a response rate of 4%, of which 347 were eligible for the purpose of this study. Approximately 90% of the respondents were SMEs.

We analyzed the data using statistical methods. A principal component factor analysis (PCFA) using the STATA 15 software was carried out on the survey questionnaire. The resulting extracted components were used as focus variables in a regression analyses. Since our dependent variables are count variables, we used a negative binomial regression to examine how the variables measuring market orientation towards public sector customers correlated with the number of bids submitted and the number of contracts won in calls for tenders.

3.2 Variables

We used two dependent variables in our regression analyses. As a measure of activity in public procurement, we used the number of bids submitted to the public sector's calls for tenders over the past five years (BIDS). A similar measure was used by Tammi *et al.* (2014) in their related study. As an indicator of success in public procurement, we used the number of contracts won in bidding contests (CONTRACTS).

In addition to the variables obtained from the PCFA, we used several control variables as explanatory variables in a series of regression analyses. The firm size (SIZE) as measured by the firm's headcount was used as a control for the firm's resources as well as its success and participation in public procurement (e.g., Flynn *et al.*, 2015). Furthermore, since we are interested in SMEs and our sample also included large firms, we controlled for firms whose headcount exceeded 250 with a dummy variable (LARGE). Prior studies also suggest that the firm age (AGE) as measured by years since incorporation is a predictor of a firm's involvement in public procurement (e.g., Pickernell *et al.*, 2013). As female entrepreneurs may differ from their male counterparts in how they perceive engaging with public sector customers (Saastamoinen *et al.* 2017), we also controlled for the female respondents with a dummy

variable (FEMALE). Finally, we controlled for potential industry differences because the public sector demand for goods and services varies across industries (Edquist and Zabala-Iturriagagoitia, 2012). To this end, we used the official standard industrial classifications by Statistics Finland as industry controls.

4. Results

4.1 Principal component factor analysis

Table 2 displays the results of the PCFA for the survey instrument. We obtained three principal component factors. The first component measures a competitor orientation related to the public sector business (COMPOR), which accounted for almost a third of the total variance. The Cronbach's alpha value is very high (0.902) indicating a highly reliable scale. The second component is a measure of the customer orientation toward public sector customers (CUSTOR), which explains a quarter of the total variance. The scale has a high Chronbach's alpha value (0.873) which also indicates a reliable scale. The third component consists of two items reflecting the firm's interfunctional coordination related to the public sector business (IFC). It explains 11% of the total variance. The scale has a low Chronbach's alpha value (0.587), which suggests a low level of internal consistency. However, Cronbach's alpha may not be a suitable measure for internal consistency when a scale consists of two items (Eisinga *et al.*, 2013). Instead, Eisinga *et al.* (2013) advocate using the Spearman-Brown reliability coefficient, which in this case is 0.601. A reliability coefficient of this magnitude is satisfactory in exploratory work (Hair *et al.*, 2006). We computed Bartlett scores with the mean at zero and a standard deviation of one from the component factors which are used as explanatory variables in regression analyses.

In comparison to the constructs proposed by Gray *et al.* (1998), the results of the PCFA were somewhat different. While the construct of customer orientation was similar to the one obtained in previous studies (e.g., Tammi *et al.*, 2014), the construct of competitor orientation included items from the interfunctional coordination construct of previous studies. These refer to sharing information about the firm's public sector business and making plans concerning it. As a result, our interfunctional coordination construct consists of two items that relate to a more general integration of activities and knowledge sharing about trends and developments in the public sector. Thus, there appears to be some overlap between competitor orientation and interfunctional coordination. The IFC in this study refers to a general integration and sharing of information that is not directly linked to the actual business the firm does with the public sector.

Table 2. Principal component factor solution.

	Loading	Uniqueness
Public sector competitor orientation (COMPOR)		
Alpha = 0.902; Lambda = 4.370; Variance explained = 29.13%;		
We regularly monitor our competitors' marketing efforts in our public sector business.	0.781	0.326
We frequently collect marketing data on our competitors to help direct our marketing plans in our public sector business.	0.872	0.213
Our people are instructed to monitor and report on competitor activity related to our public sector business.	0.812	0.302
We respond rapidly to competitors' actions in our public sector business.	0.822	0.265
Our top managers often discuss competitors' actions related to our public sector business.	0.684	0.435
Market information concerning our public sector business is shared inside our organization.	0.692	0.339
Persons in charge of different activities in our organization are involved in preparing business plans/ strategies focusing on the public sector.	0.502	0.394
Public sector customer orientation (CUSTOR)		
Alpha = 0.873; Lambda = 3.960; Variance explained = 26.40%;		
We have a strong commitment to our public sector customers.	0.759	0.377
We are always looking at ways to create customer value for our public sector customers in our products and services.	0.799	0.275
We encourage our public sector customers to give feedback on our work because it helps us to do a better job.	0.775	0.339
Customer satisfaction drives our business objectives with public sector customers.	0.849	0.273
We measure the customer satisfaction of our public sector customers on a regular basis.	0.678	0.444
After-sales service is an important part of our public sector business strategy.	0.648	0.443
Interfunctional coordination related to the public sector customer (IFC)		
Alpha = 0.587; Spearman-Brown coefficient = 0.601; Lambda = 1.700; Variance explained = 11.34%;		
We do a good job integrating the activities inside our organization.	0.872	0.225
We regularly have interorganizational meetings to discuss market trends and developments related to our public sector business.	0.618	0.322
Notes: Two original items (#6 and #17) were dropped from the final solution. Obs. = 347. Orthogonal rotation. Kaiser normalization. Chi2 = 3021.14 (p-value < 0.001). Bartlett's test of sphericity = 3015.949 (p-value < 0.001) Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy = 0.914. The label for the predicted Bartlett score in parentheses.		

4.2 Descriptive statistics

Table 3 provides background information on the respondents. According to the respondent's self-reported status, 55% were entrepreneurs or business owners, 7.5% were chief executive officers (CEOs), 19.4% were specialists, 15.2% were clerical workers and 2.7% were employees. This suggests that the average respondent was well-aware of the business strategy and objectives of the firm they represented. According to the firm size based on the number of employees, 57.6% were classified as micro firms, 21.8% as small firms, 9.3% as medium-sized firms and 11.3% as large firms. By sales turnover, more than a half of the respondents reported less than a million euros in their annual sales turnover with the

highest frequency (18.5%) in the category of 400,000 to 999,999 million euros¹. While these figures indicate that our data is not a representative sample of the Finnish firm population, they are similar to Flynn (2017) who examined tendering activity in the Irish public sector marketplace.

Table 3. Descriptive statistics of the respondents.

Respondent's position	Percent (frequency)	Sales turnover (euros)	Percent (frequency)	Firm size (number of employees)	Percent (frequency)
Entrepreneur/owner	55.2 (185)	< 100,000	16.4 (55)	Micro firm (< 10)	57.6 (193)
CEO	7.5 (25)	100,000 to 199,999	8.1 (27)	Small firm (10 to 49)	21.8 (73)
Specialist	19.4 (65)	200,000 to 399,999	11.9 (40)	Medium-sized firm (50 to 249)	9.3 (31)
Clerical worker	15.2 (51)	400,000 to 999,999	18.5 (62)	Large firm (≥ 250)	11.3 (38)
Employee	2.7 (9)	1,000,000 to 1,999,999	9.3 (31)		
		2,000,000 to 9,999,999	15.8 (53)		
		10,000,000 to 49,999,999	9.9 (33)		
		≥ 50,000,000	10.2 (34)		

Table 4 reports descriptive statistics for the variables used in the regression analyses. Regarding the dependent variables, the average firm had submitted 162 bids over the past five years. However, the dispersion of the figure is large with extreme values ranging from 0 to 25,000. In a similar manner, the mean of the contracts won was 49 with a range from 0 to 8,000. Focus variables are standardized so their values exhibit less dispersion. Regarding the control variables, the average firm in the survey was 25 years old. While the mean headcount was 535 persons, so nearly 90% of the firms can be classified as SMEs using this measure. 11% of the respondents were female.

¹ Since 90% of the firms reported annual sales of less than 50 million euros, it is fairly safe to classify the respondents into large firms and SMEs based on headcount, as the official EU definition of an SME is less than 250 employees and either less than 50 million euros in annual sales or less than 43 million euros in assets.

Table 4. Descriptive statistics of the variables used in the regression analyses.

Variable	Variable Description	Obs.	Mean	Std. Dev.	Min.	Max.
Dependent variables						
BIDS	No. of bids submitted over the past 5 years.	335	162.054	1516.142	0.000	25000.000
CONTRACTS	No. of contracts won over the past 5 years.	335	48.901	446.521	0.000	8000.000
Focus variables						
CUSTOR	Bartlett score of customer orientation	335	0.008	0.992	-2.522	2.262
COMPOR	Bartlett score of competitor orientation	335	-0.001	1.006	-3.351	1.824
IFC	Bartlett score of interfunctional coordination	335	0.001	1.010	-2.650	2.256
Control variables						
AGE	Firm age in years	335	25.069	28.248	0.000	167.000
FEMALE	Equals 1 if the respondent is female	335	0.113	0.318	0.000	1.000
LARGE	Equals 1 if the firms has more than 249 employees	335	0.113	0.318	0.000	1.000
SIZE	Firm size as measured by headcount	335	534.876	5559.640	1.000	99999.000

4.3 Regression analyses

Table 5 reports the results of negative binomial regression analyses. Both dependent variables exhibit variance in excess of the mean (see Table 4). Further, a log-likelihood ratio test of the alpha was statistically significant. Hence, the dispersion of the dependent variable is large enough to warrant the use of a negative binomial regression model. Both models include industry dummies using the standard industrial classification by Statistics Finland.

The left-hand panel of Table 5 reports the results for the model which uses the number of bids as the dependent variable. The results indicate that both the COMPOR and CUSTOR variables are statistically significant and positive predictors of bidding activity. However, the IFC is significant at 10% and negatively correlated with bidding activity. Regarding the control variables, both the firm age and size are positively associated with the number of bids.

The right-hand panel of Table 5 shows the results for the model which uses the number of contracts won as the dependent variable. Again, both the COMPOR and CUSTOR variables are significant and positively associated with winning tenders. As for the control variables, both the firm age and size are positive predictors of securing public sector contracts. Moreover, the positive coefficient for the

FEMALE variable, which was significant at the level of 10%, was a positive predictor of bidding successfully in public procurement.

Table 5. Negative binomial regression estimates.

Dep. Var. Variable	BIDS			CONTRACTS		
	Coef.	S.E.	p-value	Coef.	S.E.	p-value
COMPOR	0.163**	0.077	0.035	0.306***	0.092	0.001
CUSTOR	0.345***	0.094	0.000	0.478***	0.109	0.000
IFC	-0.127*	0.077	0.097	0.041	0.093	0.659
Log(AGE)	0.364***	0.111	0.001	0.369***	0.126	0.003
Log(SIZE)	0.468***	0.073	0.000	0.423***	0.084	0.000
LARGE	0.206	0.417	0.621	0.408	0.473	0.389
FEMALE	0.001	0.212	0.997	0.450*	0.248	0.070
Industries Constant	Yes 0.701	1.408	0.618	Yes 0.669	1.581	0.672
Obs.	335			335		
LR Chi2	410.55***		0.000	304.98***		0.000
Pseudo R2	0.127			0.124		
Alpha	1.772***	0.127	0.000	2.199***	0.177	0.000

Statistical significance: *** p-value < 0.01; ** p-value < 0.05; * p-value < 0.1.

4.4 Robustness checks

We tested the robustness of our results with alternative model specifications and estimation methods. As the first robustness check, we ran an ordinary least squares (OLS) regression model using logarithmic transformations of dependent variables (Log(BIDS)) and Log(CONTRACTS)). The results are reported in Table A1 in the Appendix. The results are qualitatively similar to the ones reported in Section 4.3 and indicate that the regression analyses are robust to the use of a different estimation methods.

As the second robustness check, we forced the three-dimensional market orientation construct into a unidimensional construct of market orientation (MO) (see Tammi *et al.*, 2014). Next, we estimated the negative binomial regression models using this construct as a predictor of the number of bids and the number of contracts won. The results of these regressions are reported in Table A2 in the Appendix. The results confirm a positive correlation between market orientation and bidding for and winning public sector contracts. Moreover, we also estimated these models using the log transformations in OLS models (the results are not reported here). Again, the results of this exercise indicated that the analyses are robust to the use of a different estimation method.

5. Conclusion

5.1 Discussion

This paper contributes to the burgeoning empirical literature on SMEs' involvement in public procurement (e.g., Reijonen *et al.*, 2016; Flynn and Davis, 2017) by examining how a market orientation toward public sector customers is associated with the numbers of bids submitted and contracts won in the public sector's calls for tenders. We used the market orientation survey instrument by Reijonen *et al.* (2012), which is built on prior literature, and rephrased its items to measure a market orientation towards public sector customers. We tested the instrument on a survey of Finnish firms.

Our empirical results show that a market orientation towards public sector customers can be found among the surveyed firms. Consistent with the aforementioned marketing literature, the construct consists of the dimensions of customer orientation, competitor orientation and interfunctional coordination related to public sector customers. Furthermore, our results complement Flynn and Davis (2016a) by providing additional insight into how an orientation towards the public sector customer manifests in the SME's choice of strategy.

Regression analyses suggested that the dimensions of customer orientation and competitor orientation are positive predictors of bidding activity and securing public sector contracts. In this respect, our findings are consistent with Reijonen *et al.* (2016) and Tammi *et al.* (2017), who report that the entrepreneurial orientation of SMEs with a focus on seeking new business opportunities predicts involvement in public procurement. In particular, our results are related to Tammi *et al.* (2014) who use a private sector market orientation construct (see Reijonen *et al.*, 2012) and report that it positively correlates with seeking business opportunities with public sector customers and submitting bids in calls for tenders.

However, Tammi *et al.* (2014) found that interfunctional coordination drove their result. Our findings differ from theirs because we found that customer and competitor orientations were positively correlated with bidding for and winning public sector contracts. Hence, using an empirical design which concentrates on public sector customers instead of private sector markets suggests that SMEs which are active and successful in public procurement focus on customers and competitors in the market. This finding is congruent with much of the marketing literature on market orientations (e.g., O'Dwyer and

Gilmore, 2019). Regarding interfunctional coordination, our results suggest that a general discussion about public sector trends may reduce the willingness to bid. An explanation for this could be that some SMEs perceive the public procurement process as complex with stringent requirements (Woldesenbet and Worthington, 2019). If a firm lacks relevant information and experiential knowledge, the notion of the public sector being a cumbersome and hard-to-please customer may prevail in conversation (e.g., Loader, 2015), and consequently, constitute a barrier against bidding.

It is likely that inconsistencies between our results and those of the prior literature are attributable to differences in research methodologies. As noted earlier, Tammi *et al.* (2014) used an empirical construct developed for the private sector markets, whereas our results are based on constructs that attempt to capture an orientation towards the public sector customer. Consistent with the argument made by Murray (2009a), our findings suggest that a research instrument validated in the private sector markets may require adjustment when applied to research into the public sector markets.

5.2 Implications

Regarding policy implications, our findings suggest that developing policy measures that educate SMEs on the specific nature of public sector customers could improve SMEs' ability to develop their organizations in a manner that enables them to compete for public sector tenders. Furthermore, extending opportunities for a dialogue between potential suppliers and the public sector, including end-customers and contracting authorities, could lower the barriers—either perceived or real—that SMEs face in public procurement.

As a practical implication, our findings suggest that firms that seek business opportunities in the public sector could benefit from developing their organizational culture and behaviour in a manner that takes into account the specific nature of the public sector customer. Since a combination of educational programmes and experiential learning on creating customer value has been highlighted as an effective way to teach market orientation in the private sector (Narver *et al.*, 1998), similar approaches with a focus on the public sector customer could be adopted to increase SMEs' engagement in public procurement.

Our findings also suggest that SMEs could benefit from a systematic approach to information gathering and utilization. An informal, haphazard, network-based generation of insight applied in the private sector markets may not be sufficient with public sector customers. Instead, firms should engage in tasks involving regular and analytical information gathering and processing. These include regular monitoring of the calls for bids, analyzing the potential and suitability of the calls for the firm, evaluating the competition, and finally preparing a bid. A market orientation could enhance the ability of SMEs to manage these tasks effectively and efficiently. This could help them overcome the barrier of the ignorance of SMEs concerning the opportunities or procedures involved in public procurement (e.g., Loader, 2015). For example, Woldesenbet and Worthington (2019) found that having knowledge of the public sector helps small businesses to identify the opportunities available to them and to align and integrate resources and capabilities so that these opportunities can be realized as actual business transactions.

5.3 Limitations and future research

This study comes with limitations. The sample is from a single country which may affect the results. For instance, the environment of public sector tendering may vary in different jurisdictions. Further, the data is self-selected and self-reported and subsequently, the figures provided by the respondents cannot be regarded as accurate statistics. Consequently, the numbers recorded in the operationalized variables are subject to measurement errors and limitations imposed by subjective assessments, which restricts their interpretation. A methodological limitation of this study is that we focused on a market orientation, which leaves the potential influence of other strategic orientations unexplored.

This paper opens up several potential avenues for future research. Further research could be carried out in other jurisdictions to improve the validity of our results. Moreover, using objective measurements, if applicable, could reduce biases and measurement errors associated with subjective responses and self-selection. In addition, future studies could develop refined survey instruments that are able to address subtle elements required in business relationships between private firms and public sector customers, which may not be captured by the constructs validated in the private sector markets. Future studies could also build more complex models which include other strategic orientations.

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Appendix. Results of the robustness check.

Table A1. OLS regression results using log-transformed dependent variables.

Dep. Var.	Log(BIDS)			Log(CONTRACTS)		
Variable	Coef.	S.E.	p-value	Coef.	S.E.	p-value
CUSTOR	0.153*	0.087	0.082	0.204**	0.078	0.010
COMPOR	0.329***	0.077	0.000	0.345***	0.067	0.000
IFC	0.025	0.084	0.766	0.015	0.073	0.840
Log(AGE)	0.302***	0.089	0.001	0.240***	0.082	0.003
Log(SIZE)	0.281***	0.071	0.000	0.252***	0.067	0.000
INDUSTRIAL	-0.437	0.292	0.136	-0.067	0.281	0.812
CONST	0.828**	0.359	0.022	0.518	0.333	0.121
TRADE	0.125	0.248	0.614	0.220	0.221	0.321
INFO	0.043	0.241	0.859	-0.017	0.233	0.942
HEALTH	-0.768***	0.209	0.000	-0.318	0.195	0.103
FEMALE	-0.050	0.212	0.812	0.227	0.190	0.235
LARGE	-0.161	0.512	0.754	-0.035	0.487	0.943
CONSTANT	1.086***	0.235	0.000	0.313	0.211	0.140
Obs.	335			335		
F	16.12***		0.000	11.35***		0.000
R ²	0.364			0.346		

Notes: Robust standard errors used. OTHER as the reference category for industries.
Statistical significance: *** p-value < 0.01; ** p-value < 0.05; * p-value < 0.1.

Table A2. Negative binomial regression results using a single construct for market orientation.

Dep. Var.	BIDS			CONTRACTS		
Variable	Coef.	S.E.	p-value	Coef.	S.E.	p-value
MO	0.292***	0.080	0.000	0.564***	0.095	0.000
Log(AGE)	0.335***	0.110	0.002	0.343***	0.124	0.006
Log(SIZE)	0.507***	0.073	0.000	0.414***	0.083	0.000
INDUSTRIAL	-1.221***	0.318	0.000	-0.592	0.369	0.109
CONST	1.009***	0.363	0.005	1.264***	0.424	0.003
TRADE	-0.011	0.244	0.962	0.115	0.271	0.672
INFO	-0.613**	0.311	0.048	-0.265	0.342	0.438
HEALTH	-1.528***	0.271	0.000	-0.685**	0.305	0.025
FEMALE	0.332	0.214	0.121	0.527**	0.239	0.027
LARGE	0.344	0.431	0.425	0.462	0.473	0.329
CONSTANT	1.448***	0.285	0.000	0.259	0.304	0.395
Obs.	335			335		
LR Chi ²	361.42***		0.000	283.15***		0.000
Pseudo R ²	0.112			0.115		
Alpha	0.692***	0.070	0.000	0.847***	0.080	0.000

Notes: OTHER as the reference category for industries.
Statistical significance: *** p-value < 0.01; ** p-value < 0.05; * p-value < 0.1.