Full Paper

Investigating the effect of tendering capabilities on SME activity and performance in public contract competitions

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Abstract

Barriers to small and medium-sized enterprise (SME) participation in public procurement have been the focus of research for many years. Much less attention has been paid to the predictors of SME success. This article examines the role that tendering capabilities – relational and procedural – play in explaining SME activity and performance in public contract competitions. Analysis of primary survey data from 3010 SMEs supports a capability-based perspective. Procedural capability has a significant effect on number of tenders submitted and value of contract sought. Relational capability does not. However, procedural and relational capabilities have a significant and positive effect on contract win-ratio and percentage of total revenue derived from public contracts. For SMEs, these findings underline the importance of investing in tendering skills and devising buyer engagement strategies. Enterprise support agencies and public sector organisations can play their part through the provision of targeted training programmes and better communication with SME suppliers, respectively.

Introduction

Small and medium-sized enterprise (SME) involvement in the public sector marketplace has been the subject of investigation for some time. To date, research has focused on explicating the barriers SMEs encounter when competing for public sector contracts. Loader's (2013) comprehensive review of evidence in this area shows that difficulties facing SMEs emanate not only from the unfamiliarity of public sector culture, policy ambiguity and questionable purchasing professionalism but also unwieldy tendering systems and limited resources of SMEs to cope with them. These issues account in no small part for the under-representation of SMEs as public sector suppliers in

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most countries (Cabinet Office, 2013; MacManus, 1991; PwC, 2014). In response to this less than satisfactory situation, it has become standard for governments to enact policies aimed at facilitating greater SME involvement in public procurement (Organisation for Economic Co-operation and Development (OECD), 2013). These 'SME-friendly' policies have also received academic attention, and the justification for them and their likely effectiveness has been critically assessed (Nicholas and Fruhmann, 2014). Latterly, evidence has started to emerge on compliance of public buyers with these policies and the conditions that support or obstruct their implementation (Flynn and Davis, 2015). Initial indications are that there is still some way to go before 'SME-friendly' practices become fully institutionalised in public procurement.

The factors that predict SME activity and performance in public sector tendering have received comparably less attention. In effect, we know more about what stymies small suppliers than what stimulates them to compete for and win public sector contracts. Not surprisingly, recent empirical studies have sought to redress this imbalance. Reijonen et al. (2014), for example, modelled SME tendering activity as a function of entrepreneurial orientation. Their findings revealed proactivity and innovativeness to be positively related to propensity of SMEs to search and bid for public sector contracts. Similarly, Tammi et al. (2014) found that the ability of SMEs to gather market-relevant information and leverage it for competitive positioning is associated with higher contract search and bid submission activity. Resource-based perspectives on SME involvement in public procurement have also been advanced. In this vein, Karjalainen and Kemppainen (2008) determined that legal and administrative resources can act as predictors of SME public contracting activity and that electronic order processing systems increase the likelihood of SMEs working as public sector suppliers. Temponi and Cui (2008) made the same argument in relation to e-commerce and SME public contracting activity, but could not find evidence in support of it.

Several reasons explain why evidence on the enablers of SME tendering activity and performance has not been more forthcoming. First, and as already mentioned, the negative aspects of public procurement for SMEs have been accorded precedence (Loader, 2013). This has tended to obscure the fact that some SMEs are capable, successful tenderers. Second, research on the role of SMEs in public procurement has been descriptive rather than predictive in form. Another reason is that scholars have privileged public buyers as actors of primary interest (Murray, 2009; Withey, 2011). A more prosaic cause is to do with challenges around identifying and accessing the population of interest. Not all small firms compete for public contracts, which makes securing data that are representative and of sufficient quantity problematic. The fact that public procurement has largely fallen under the radar of the SME research community means that it has not benefited from the application of predictive models to do with growth, innovativeness and competitiveness in small firms. Finally, allowance must be made for the relative newness of public procurement as a field of academic inquiry (Snider and Rendon, 2008).

Building on recent scholarship, our study aims to contribute to a better understanding of the enablers of SME activity and performance in public procurement. It does so by seeing tendering as a firm-level capability that comprises discrete relational and procedural dimensions. These are believed to be significant in explaining SME activity and performance in contract competitions. The capability-based perspective put forward here is original. Importantly, it takes cognisance of the idiosyncratic nature of public procurement and the particular demands it makes of suppliers. At the same time, it complements a nascent line of inquiry based on entrepreneurial market positioning and resource-based explanations of SME participation in public procurement (Karjalainen and Kemppainen, 2008; Reijonen et al., 2014; Tammi et al., 2014; Temponi and Cui, 2008). Moreover, it extends this line by investigating not only tendering activity but also performance outcomes. To our knowledge, this is the first study that goes beyond an examination of firm characteristics in attempting to explain SME performance in public procurement. The study also helps

to connect SME–public procurement research to mainstream debates on the drivers of SME competitiveness (Barbero et al., 2011; Koryak et al., 2015; Rice et al., 2015). Having information on the determinants of SME involvement in contract competitions is also crucial for policy. To date, support for SMEs has largely come through reforms of the purchasing practices of public organisations. Necessary as these reforms are, enhancing capabilities of SMEs is the other side of the coin in ensuring that they can compete more effectively and secure a larger share of the market.

The remainder of the article is organised into five main sections. The first section outlines why the agenda for SME competitiveness has come to be interleaved with public procurement. The second takes a capability-based perspective on tendering by detailing how relational and procedural capabilities can affect SME activity and performance in public procurement. The third section deals with the mechanics of the research, including operationalisation and measurement of the predictor and outcome variables, selection of Ireland as the research context and e-surveying the population cohort of firms active in public procurement. Issues around data representativeness are addressed before key statistical descriptors for the respondents are set out. The fourth section reports on the results of the study. A two-step regression model is used to test the impact of relational and procedural capabilities on measures of tendering activity and performance. The results are then subject to discussion in the fifth and final section. The contribution to research at the intersection of SMEs and public procurement is made clear, as is the implications for practice. The article concludes with recommendations on how to take this line of inquiry forward in the coming years.

The SME–public procurement nexus

SMEs have become central to discourse on public procurement. Elected representatives frequently state their commitment to ensuring that SMEs have maximum practical opportunity to compete for business with the public sector. Pledges of support have translated into explicit policy initiatives. A recent survey of public procurement systems of OECD members found that 29 of 32 countries had instituted some type of support mechanism for SMEs, and 11 of these had enacted policies or made specific legislative provisions (OECD, 2013). That SMEs and public procurement are increasingly discussed in the same context is the result of two overlapping developments. The first is the centrality of SMEs to enterprise policy and ideas around future economic competitiveness. It is, as Storey (1994) observed some 20 years ago, 'no longer possible to discuss economic policy without recognising the role which small firms play in the economy and in the rest of society more generally' (p. 253). The European Union (EU) *Small Business Act* and its exhortation to 'think small first' bear this out (European Commission, 2008). The second is the recognised potential of public procurement to undergird SME competitiveness. Expenditure on goods and services by public sector organisations approximates to 16% of EU gross domestic product (GDP) or, in monetary terms, €1.7 trillion. As such, it represents a significant market for commercial actors, SMEs included. What is more, it is under the control of government and, within legal limits, can be leveraged to strengthen the SME sector and foster entrepreneurship (Preuss, 2011).

Public contracts are an attractive proposition for SMEs on many levels. For a start, they represent stable and predictable sources of demand (Fee et al., 2002; Pickernell et al., 2011). Stability and predictability, in turn, afford SMEs security to plan for the future, invest in new technology and recruit staff. They also come with near certainty of payment (Loader, 2005; MacManus, 1991). Supplying the public sector can burnish a SME's reputation and help them graduate from low value market niches to the mainstream commercial environment (Ram and Smallbone, 2003). It can even act as a demand-side stimulant to innovation when buyers insist on technologically sophisticated products or encourage firms to develop novel service solutions (Georghiou et al., 2014). Public

sector organisations, too, stand to gain from SME involvement in contract competitions. SMEs can offer competitive pricing arrangements on account of their minimal administrative overheads and streamlined operations. Aside from this, SMEs add to 'the quantity and quality of competition in public markets' (European Commission, 1990: 2). In terms of innovativeness, the ability of SMEs to recognise opportunities and leverage capabilities to create novel products and services can make them valuable supply partners (Woldesenbet et al., 2012).

While it may be mutually beneficial for SMEs and public sector organisations to do business, the reality of everyday procurement presents a less sanguine picture. SMEs have consistently expressed their dissatisfaction with public sector tendering processes and procedures (Loader, 2015; MacManus, 1991) and have rated doing business with the private sector more favourably (Purchase et al., 2009). These negative sentiments find confirmation in low participation and success rates of SMEs in public procurement. As of 2011, only one in five small firms in the United Kingdom was using the Internet to either access public sector tender documents or sell to public sector organisations (Office for National Statistics (ONS), 2012). Supportive of these data, BMG Research (2013) found that out of a sample of 5000 British SMEs, only 10% had bid for a public sector contract in the previous year. Performance outcomes of SMEs are no better. Nationally and internationally, SMEs under-perform relative to their actual number and GDP contribution. Between 2006 and 2008, SMEs won 60% of above-threshold contracts in the EU as against their 99.8% presence in the enterprise population (GHK, 2010). This equated to 33% of the total value of above-threshold contracts – some 20% lower than their GDP contribution. In the United Kingdom, 10.5% of direct spend and 9.4% of indirect spend were going to SMEs as of 2013, substantially below their numbers and value-added contribution in the economy (Cabinet Office, 2013).

The reasons why SMEs struggle with public procurement can be understood in terms of an unfamiliar and not always efficient marketplace, bureaucratic tendering procedures and their inherent resource limitations (Loader, 2013). Taking the first of these issues, public procurement has been criticised for low professionalism and high-risk aversion (Georghiou et al., 2014; Loader, 2005). In an international context, half of OECD countries are said to lack adequate procurement capability, as measured by the number of public buyers and their levels of professional expertise (OECD, 2013). Underneath this are problems specific to the public tendering system. These include poorly advertised opportunities, onerous qualification criteria, the large size of public contracts and high transaction costs (Cabras, 2011; European Commission, 1990; Fee et al., 2002; Flynn et al., 2013). In the case of the latter, the economic cost of compiling a bid for a standard service contract is estimated to be as much as £3200 in the EU and £5800 in the United Kingdom (Centre for Economic and Business Research, 2013). Difficulties facing SMEs are not confined to the external environment. Some are simply the product of their small size, limited resource base and low profile in the supply marketplace (Flynn et al., 2015; GHK, 2010; Karjalainen and Kemppainen, 2008).

Tendering capabilities

Clearly, the previous discussion shows that the marketplace for public sector contracts is both attractive and challenging for SMEs. In seeking to determine the factors that lead to SME success in public procurement, it is instructive to see tendering as a distinctive firm-level capability. By capability we are referring to the ability of a firm to exploit its resources using various processes and routines in furtherance of competitive advantage (Javidan, 1998; Stalk et al., 1992). Specifically, in the context of public procurement, capability denotes the ability of a firm to marshal its organisational resources in order to identify contract opportunities and subsequently position itself to exploit them. It is the ability to leverage organisational resources – human, technological, financial, administrative, network and reputational – that is posited here to be a crucial determinant of
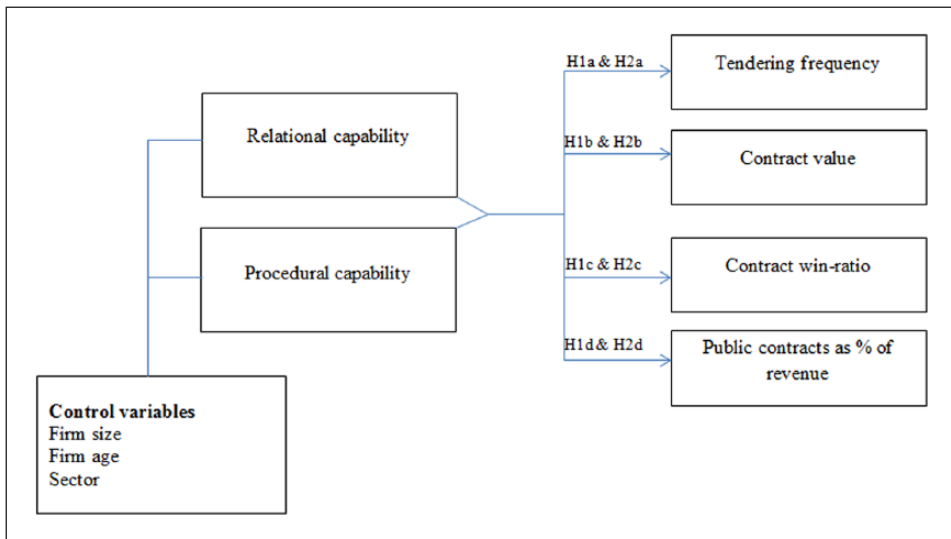
Figure 1. Predictors of SME tendering activity and performance.

the success of SMEs in contract competitions. Recent scholarship points to the efficacy of taking a capability or even dynamic capability perspective in this area. Woldesenbet et al. (2012) explained SME supply relationships with large corporations in terms of entrepreneurship, networking, resource integration and strategic service delivery capabilities. Tangentially, Barbero et al. (2011) linked managerial capabilities to SME growth trajectories, finding marketing and financial capabilities to be particularly salient. Koryak et al. (2015) did something similar, albeit with a focus on growth-oriented capabilities in SMEs and their relationship to market penetration, product development and market development.

The nature of public procurement gives some indication of the capabilities that SMEs need to possess. More so than in the private sector, public procurement is bound up with 'public value' goals and the imperatives of transparency and accountability in commercial transactions (Lian and Laing, 2004). The effect, at least from a supplier perspective, is that public sector tendering is bureaucratic, formalised and legalistic in nature. The typical barriers cited by SMEs, such as lengthy form filling, high compliance costs and qualification standards disproportionate to the risk profile of the contract, bear this out (Baden et al., 2011; Cabras, 2011; Fee et al., 2002; Loader, 2015). Success depends on SMEs being able to draw on their human, social and financial capital to surmount these challenges and compile a bid that responds to the buyer's expectations. Public sector tendering is not only a paper-based exercise. Just as in the private sector, relationships matter (McKevitt and Davis, 2015). As such, success is also contingent on the ability of firms to engage with public buyers, market their goods and services to them and challenge their pre-conceptions of smaller suppliers and what they can offer. All this suggests that relational and procedural capabilities are important for explaining activity and performance in public contract competitions (see Figure 1). These capabilities are subject to further consideration below.

Relational capability

At its most fundamental relational capability is about SMEs being able to promote themselves as credible suppliers to the public sector. A common complaint of SMEs is that public buyers rely on large, established suppliers to the exclusion of smaller, younger firms (Loader, 2005, 2015; Walker

and Preuss, 2008). By being proactive and marketing their business by, for example, attending trade fairs, arranging product demonstrations or exploiting social media, SMEs can increase their visibility to buyers and showcase their attributes. Relational capability is more than SMEs raising their own profile. It also involves influencing tender specifications where at all possible. This is important as narrow bid specifications and overly prescriptive requirements can have the effect of precluding SME access to competitions (Loader, 2005, 2015). So too can situations in which the emphasis is placed on short-term cost savings rather than achieving value for money over the long-term (Cabras, 2011). Anything that SMEs can do to influence priorities of public buyers and shift award criteria towards their own strengths, particularly on innovativeness and customer responsiveness (Woldesenbet et al., 2012), should advantage them. Relational capability is also about creating demand for new products and services and informing purchasing intentions of public buyers before they ever issue a formal request for tender (RFT). Pre-tender engagement of this kind has been shown to be associated with above-average bid outcomes for SMEs by McKevitt and Davis (2013).

Relational capability is predicted to impact SME tendering activity and performance outcomes. To the extent that SMEs interact with and make themselves visible to public buyers, they are more likely to be invited to tender, be added to shortlists or even consulted about supply requirements at the pre-tender phase – all of which should result in more tenders being submitted. Research by Reijonen et al. (2014) has already shown that proactive marketplace behaviour on the part of SMEs is linked to higher levels of tendering activity. Relational capability is anticipated to affect the financial value of contracts sought. A proven ability to engage public buyers and persuade them of their value proposition provides firms with the confidence and the opportunity to pursue larger value contracts. Relational capability is also expected to be associated with contract win-rates. Two points are relevant here. First, cultivating relationships can help to counteract the risk and uncertainty factors that dissuade buyers from awarding contracts to small but otherwise competent suppliers (GHK and Technopolis, 2007). Second, by influencing demand specifications of public buyers, SMEs can ensure that they are prime contenders when the RFT is made public. Finally, relational capability is anticipated to predict the percentage of revenue that SMEs derive from public contracting. The rationale is that possessing such capability is conducive to firms building up a client portfolio and revenue stream that includes public as well as private sector organisations. Taking the above points together, the following four hypotheses are derived:

H1a. Relational capability has a positive effect on tendering frequency.

H1b. Relational capability has a positive effect on contract value sought.

H1c. Relational capability has a positive effect on contract win-ratio.

H1d: Relational capability has a positive effect on the percentage of total revenue derived from public contracting.

Procedural capability

Procedural capability embodies a firm's ability to deal with the administrative and technical demands of the tendering process. In the first instance, it means being able to comprehend what it is that public buyers are looking for from their suppliers and the criteria that they use to evaluate them. While this may seem self-evident, criticisms have been directed at SMEs for failing to show due appreciation of the needs and expectations of public buyers (Greer, 1999; Michaelis et al., 2003). Procedural capability also means that a firm is able to satisfy public buyers that they meet

the minimum qualification standards. Inter alia, this can include demonstrating supply experience, financial probity, professional competence and compliance with environmental standards and employment rights (Withey, 2011). Providing evidence to substantiate any claims made is crucial in this regard. Leading on from comprehending the tender evaluation criteria and being able to satisfy them, firms must also be proficient at articulating their strengths as a supplier in the written tender submission. Many SMEs struggle on this dimension, not only because of the substantial time and resource commitment involved (Baden et al., 2011; Flynn et al., 2013) but also because of the specialist technical, legal and public policy knowledge that is often required (Karjalainen and Kemppainen, 2008).

Procedural capability is relevant even after the tendering process has been completed and the contract has been awarded. In the event of a failed bid, firms need to know how to obtain feedback from public buyers. The benefit to a firm of obtaining feedback is that the relative strengths and weaknesses of their bid are made apparent. This same information can then be used to salutary effect in devising future bid strategies, as the reported experiences of both SMEs and public buyers attest (Flynn et al., 2013). With tendering, as with much else, the key to success is the capacity to learn from failure. Firms also need to know how to search contract award notices and identify the winner or winners of competitions in which they were involved. In the event of a successful bid, it is critical that firms exhibit competence and dependability in managing the contract over its duration (McKevitt and Davis, 2013). Ability to deliver as promised and in line with agreed contractual terms can generate new business opportunities with the same or different public sector customers. Conversely, exposed weakness in contract management damages a firm's credibility and undermines their prospects of securing new contracts with public sector organisations.

Like relational capability, procedural know-how is predicted to directly affect SME tendering activity and performance. To begin with, it should lead firms to tender more frequently. The ability to discern what public buyers are looking for and respond accordingly makes tendering a more manageable and less intimidating process. The time and resource implications of tendering also reduce insofar as firms can take a more purposeful approach to compiling their bid. The latter is significant as projected tendering costs are a principal cause of firms deciding not to progress past the contract identification stage (Centre for Economic and Business Research, 2013). Procedural capability should also be associated with firms competing for higher value contracts. This is because astuteness in navigating the procedural aspects of tendering makes it feasible not only to compete for bigger contracts but also to manage them post-contract award. Given the formalised and legalistic character of public procurement (Lian and Laing, 2004), procedural capability is expected to be a significant predictor of contract win-rates. First, it is essential if firms are to meet the qualification standard (Withey, 2011). Thereafter, it determines how well a firm performs against the objective and subjective criteria applied at the formal tender evaluation phase and ultimately whether the firm is awarded the contract or not. The last relationship concerns procedural capability and public contracts as a percentage of revenue. Procedural capability improves the cost–benefit ratio of tendering so that firms shift more of their operational focus and revenue-seeking activity to the public sector. These points give the following four hypotheses:

H2a: Procedural capability has a positive effect on tendering frequency.

H2b: Procedural capability has a positive effect on contract value sought.

H2c: Procedural capability has a positive effect on contract win-ratio.

H2d: Procedural capability has a positive effect on the percentage of total revenue derived from public contracting.

Methodology

Independent variables

The relational and procedural capability constructs were developed specifically for the purposes of this study. Consistent with recommended practice (Dillman, 2007), advice from a panel of experts was sought as part of this process. Relational capability comprises three items. These are (1) ability to influence buyer needs prior to tender, (2) ability to communicate a value proposition to inform tender specification and (3) ability to promote goods and services to public buyers prior to tender. A 5-point scale is used to measure each item, where 1 = very poor and 5 = excellent. A principal component analysis with Varimax Rotation confirms the presence of a single construct. The construct is found to be reliable (α = .87). Procedural capability comprises five items. These are (1) ability to understand contract qualification criteria, (2) ability to satisfy contract qualification criteria, (3) ability to effectively respond to contract qualification criteria, (4) ability to receive feedback and search contract award notices and (5) ability to successfully manage contracts. A 5-point scale is also used to measure each of the five items, where 1 = very poor and 5 = excellent. After performing a principal component analysis with Varimax Rotation, a single construct emerges and is found to be reliable (α = .84). Further detail on the factor loadings for each of the two constructs is given in Table 1.

Dependent variables

Four variables are predicted to be dependent on relational and procedural capabilities. These are tendering frequency, contract value sought, contract win-ratio and public contracts as a percentage of revenue. Similar to Reijonen et al. (2014), tendering frequency is taken as the number of contracts SMEs tendered for with public sector organisations throughout 2013. The typical value of a contract sought is measured by reference to six financial ranges: €1–€25,000, €25–€130,000, €130–€250,000, €250–€500,000, €500–€1,000,000 and €1,000,000+. Contract win-ratio is operationalised as the percentage of public contracts tendered for throughout 2013 that a firm succeeded in winning. The fourth dependent variable is the percentage of annual revenue that is attributable to public contracting.

Control variables

Three variables are controlled for in this study. These are size, age and sector. Firm size has emerged as a predictor of involvement and performance in public sector tendering across numerous studies (GHK, 2010; GHK and Technopolis, 2007; Pickernell et al., 2011; PwC, 2014; Temponi and Cui, 2008). It is also linked to the human and administrative resources firms have at their disposal for tendering (Flynn et al., 2015; Karjalainen and Kemppainen, 2008). Size is approximated by number of employees. In line with EU classification standards, four size ranges are used for measurement purposes: 1–9 employees (micro), 10–49 employees (small), 50–249 employees (medium) and 250+ employees (large). Firm age has also emerged as a significant variable for explaining involvement in public procurement. Evidence adduced by Pickernell et al. (2013) and Reijonen et al. (2014) indicates that older firms have higher levels of tendering activity. Age is measured as the number of years a firm has been trading. Sectoral effects have also been linked to SME participation and success in public procurement (Pickernell et al., 2011; PwC, 2014; Reijonen et al., 2014). Sector is captured by reference to the four categories of construction, manufacturing, services and other industries.

Table 1. Principal component analysis.

	Alpha α	Initial eigenvalue	Percentage of variance explained	Factor loading	Communalities extracted	Mean score
Relational capability[a]	.87	2.41	80.39			
Ability to influence buyer needs prior to tender				.89	.80	2.59
Ability to communicate value proposition to inform tender specification				.89	.80	3.04
Ability to promote goods and services to public sector prior to tender				.89	.80	2.83
Procedural capability[b]	.84	3.13	62.64			
Ability to satisfy tender qualification criteria				.79	.62	3.65
Ability to understand tender evaluation criteria				.83	.69	3.46
Ability to effectively respond to tender evaluation criteria				.89	.79	3.58
Ability to receive feedback on submitted bids and search contract award notices				.71	.51	3.13
Ability to successfully manage an awarded contract				.70	.49	4.21

[a]Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy = .74 and Bartlett's test of sphericity $p < .001$ ($\chi = 4530.67$).
[b]KMO measure of sampling adequacy = .83 and Bartlett's test of sphericity $p < .001$ ($\chi = 6134.78$).

Research context

The Irish marketplace for public sector contracts is the context for the study. Annual public procurement expenditure in Ireland is in the region of €16 billion, which equates to 10% of GDP. The public procurement field in Ireland has undergone a series of changes over the last decade. Similar to stances adopted across EU Member States, policies have been enacted by successive governments to reform public procurement in the interests of SME participation. The purpose of these policies is to create a 'level playing field' on which small suppliers can compete and win public contracts – evident, for example, in *Facilitating SME Access to Public Procurement* (Department of Finance, 2010). This is to be achieved by getting public buyers to implement a suite of 'positive measures' pertaining to the design, advertising and awarding of contracts. At the same time, reducing procurement expenditure and making buying processes more efficient have assumed priority status in Ireland. Pressures on the country's public finances in the wake of the 2007 international financial crisis have brought this about. As with many other countries, the public procurement environment in Ireland has become more encouraging of SME involvement, but also more insistent on realising 'value for money'.

Data collection

This study uses self-reported data. Self-reporting is the most practical means to capture information on tendering capabilities, behaviours and performance outcomes of firms. There is also

precedent for using self-report data when modelling SME participation in public procurement (Flynn et al., 2015; Karjalainen and Kemppainen, 2008; Reijonen et al., 2014; Tammi et al., 2014). Sole reliance on self-report data alone does come with caveats, such as the possibility of respondents resorting to impression management when answering questions. Yet, there is no evidence to suggest that self-reporting is inherently flawed, or that the criticisms made of it do not equally apply to ostensibly objective measures (Chan, 2009). To underpin the integrity of the research and to guard against common method bias,[1] a number of precautions were taken when surveying respondents (Podsakoff et al., 2003). These included guaranteeing anonymity, placing questions on tendering activity and performance before questions on tendering capabilities, having concise scale items and limiting the number of scale items to eight. Statistical analysis of the data gives no indication that common method bias is present. The variance extracted using Harman's single-factor test is 21.69%, which is well below the 50% threshold that would give cause for concern.

In line with best practice, the survey instrument was piloted with 10 SMEs prior to its distribution (Dillman, 2007). The pilot group reported no difficulties with comprehending the questions, but did recommend minor adjustments to the phrasing of some questions and predefined response sets. These were incorporated into the final version of the survey instrument. The research was conducted over a 2-week period in December 2013. An email notification with an embedded hypertext link to the survey was sent to all firms registered on *eTenders* – the government-managed site on which Irish public contracts are advertised. A reminder email notification, also with an embedded link to the survey, was issued 1 week after the initial mailing. By the end of the 2-week period, 5897 responses had been received. Approximately 60,000 firms were registered on *eTenders* at the time of the research, thus yielding a 10% response rate. Screening resulted in the removal of 595 large firms, that is, firms employing 250+ persons and 2292 substantially incomplete responses, that is, responses that did not progress beyond the first e-page of the survey. This left 3010 SME cases for final analysis.

Representativeness

Before reporting the representativeness of survey respondents, some clarification on the public sector marketplace is required. Foregoing research in this area shows that the profile of firms competing for public contracts differs from the universal enterprise population. Mainly, small firms are under-represented whilst medium and large enterprises are over-represented relative to their actual number. For example, Flynn et al. (2013) ascertained that 51.2% of firms competing for public contracts in Ireland are micro-enterprises – substantially below their 90.7% share of the national enterprise population (Central Statistics Office, 2014). By contrast, 11.7% are large firms although they constitute just 0.3% of the population. The same disparities have been reported in other jurisdictions. In the United States, the number of sole proprietorships competing in the public sector marketplace is not representative of their presence in the economy (MacManus, 1991). The same can be said of the United Kingdom. Data from the Office for National Statistics show that the proportion of small firms using the Internet to access tender documents, or sell to the public sector is only half that of large firms: 19.5% versus 38.5% (ONS, 2012). These effects can be partly explained by the fact that a large proportion of micro and small enterprises, in retail, catering and personal services, are focused exclusively on business-to-consumer (B2C) transactions. Hence, they are missing from the public sector marketplace.

Given the above, representativeness is understood in reference to the cohort of firms active in public procurement rather than the enterprise population per se. Results from two tests indicate that respondents are representative of the former cohort. For the first test, respondent characteristics are matched against data from a 2011 baseline study of public procurement in Ireland carried out by

Table 2. Representativeness testing.

	Respondent (%)	2011 study (%)	Enterprise population of Ireland (%)
No. of employees			
1–9	54.8	51.2	90.7
10–49	23.3	23.7	7.7
50–249	11.7	13.4	1.3
250+	10.2	11.7	0.3
Industry			
Manufacturing	8.9	5.5	7.3
Services	58	57.7	48.6
Construction	17.3	18	18.3
All other	15.8	18.8	25.8
Revenue €			
<2 million	64.5	62.6	–
2–10 million	17.2	17.5	–
10–49 million	9.5	10.5	–
50+ million	8.8	9.3	–
Market focus			
Local	15.4	13.3	–
Regional	17	17	–
National	45.6	49.7	–
International	22	20	–
Firm age (years)			
0–5	24	18.8	–
6–10	17.7	16	–
11–20	25.5	24.6	–
21+	32.8	40.7	–

Flynn et al. (2013). Strong similarities are evident between respondents and the characteristics of firms in the baseline study (see Table 2). On the dimension of size, for example, 54.8% of respondents are micro-enterprises and 23.3% are large firms. The comparable figures from the baseline study are 51.2% and 23.7%, respectively. For the second test, early and late respondents are compared across a number of characteristics, as late respondents are assumed to be proxies for non-respondents (Armstrong and Overton, 1977). Independent sample *t*-tests do not return any statistically significant differences between the two groups on the selected variables of firm size ($p=.43$), revenue ($p=.22$), firm age ($p=.12$), tendering frequency ($p=.39$) or contract win-ratio ($p=.38$). Therefore, the results from the two tests instil confidence that respondents are representative of the cohort of firms active in public procurement and that the findings of the study can be generalised to this same cohort.

Descriptive data

Descriptive analysis of respondent firms reveals the following about them. As referred to in the previous section, they are bigger than the average firm in the enterprise population. Over one in five respondent firms employ 50 people or more. The corresponding ratio in the enterprise population is 1 in 50. Reported annual revenues lend further support to this observation, with over one in three respondents having a turnover in excess of €2 million. Also suggestive of their bigger size,

the majority of respondents are oriented to national or international markets, while only 15% concentrate on the local market. The sectoral distribution of respondents is a closer match of the enterprise population. Approximately 9% compete in the manufacturing sector and 17% in construction. These percentages are coincident with the enterprise population in Ireland (Central Statistics Office, 2014). Respondent firms are somewhat over-represented in the services sector and under-represented in all other sectors when compared to the enterprise population, however. Finally, respondent firms are quite evenly dispersed in age terms. In all, 58% have been trading for more than 10 years as against 42% that have been trading for 10 years or less.

Key statistics for tendering capabilities and outcomes of respondent firms in public procurement are as follows. The mean score for relational capability is 2.82 on a 1–5 scale. The mean score for procedural capability is 3.60 on a 1–5 scale. Evidently, firms rate themselves higher on procedural capability than relational capability. This is not surprising given the arms-length nature of public procurement and the challenges this poses for SMEs in building relationships and social capital with public buyers and other stakeholders (Cabras, 2011; GHK, 2010). The mean figure for the number of tenders submitted in 2013 is 8.47. The majority of firms ordinarily compete for contracts valued at less than €25,000 (36.1%) or €25–130,000 (39.7%). The mean contract win-ratio is 23.47%. The mean proportion of revenue derived from supplying goods and services to the public sector is 19.22%.

Data screening

Diagnostic checks performed on the dataset do not give any indication of multicollinearity. In the first instance, correlation coefficients between the predictor variables are either low or moderate (see Table 3). The highest correlation coefficient is .53,[2] which is comfortably below the .90 level said to be symptomatic of multicollinearity (Tabachnick and Fidell, 2007). Second, the highest observed Value Inflation Factor (VIF) of any of the predictor variables is 1.42. This is well within the upper limit of 10 that is taken to signify a multicollinearity problem (Neter et al., 1990). Third, the Condition Index does not go above 15 in any of the four predictive models in this study. As a rule of thumb, researchers should only be concerned when a Condition Index is greater than 30 (Belsley et al., 1980).

Findings

The effect of relational and procedural capabilities on SME tendering activity and performance is tested, using two-stage regression. The three control variables are entered initially. The relational and procedural capability constructs are entered second. This is done in respect of tendering frequency (Model 1), contract value (Model 2), contract win-ratio (Model 3) and public contracts as a percentage of revenue (Model 4). The output from these four models is described below. The standardised coefficients (β), standard errors and significance values for the independent and control variables in the case of Models 1–4 are contained in Table 4.

The number of contracts tendered for by SMEs in 2013 – tendering frequency – is the first outcome variable tested (Model 1). H1a and H2a state that relational and procedural capabilities will each have a positive effect on tendering frequency. At stage 1, the control variables account for 16.2% of the variance. Size, age and sector are all significant. Both SME size and age are found to have a positive effect on tendering frequency. The construction sector also has a positive effect on tendering frequency. The other sectors have a negative effect. At stage 2, the independent predictors are entered into the model. The variance explained increases to 18% as a result. Relational capability is non-significant ($p = .11$). This leads to the rejection of H1a.

Table 3. Descriptive statistics and correlations.

| Descriptive statistics | | | | | | Correlation coefficients | | | | | | | | | | | |
Variable	Mean	SD	Min	Max	VIF[a]	1	2	3	4	5	6	7	8	9	10	11	12
Tendering frequency (1)	8.47	15.11	0	100	—	1											
Contract value (2)	2.13	1.29	1	6	—	.21	1										
Contract win-ratio (3)	23.47	31.12	0	100	—	.09	.01	1									
Public contracts as % of revenue (4)	19.22	27.92	0	100	—	.37	.18	.43	1								
Size (5)	1.49	.69	1	3	1.29	.35	.36	.09	.07	1							
Age (6)	2.67	1.16	1	4	1.23	.20	.18	.05	.06	.41	1						
Sector: manufacturing (7)	.08	.28	0	1	1.10	.01	.09	.05	.04	.19	.14	1					
Sector: services (8)	.57	.49	0	1	1.08	.08	.16	.01	.01	.10	.13	.36	1				
Sector: construction (9)	.17	.37	0	1	1.08	.16	.13	.05	.06	.04	.03	.14	.53	1			
Sector: other (10)	.15	.36	0	1	1.07	.05	.00	.00	.00	.03	.02	.13	.50	.19	1		
Relational capability (11)	2.82	1.06	1	5	1.38	.07	.10	.28	.16	.11	.02	.08	.05	.04	.04	1	
Procedural capability (12)	3.60	.85	1	5	1.42	.20	.21	.27	.24	.21	.10	.03	.02	.06	.00	.52	1

VIF: Value Inflation Factor; SD: standard deviation.
[a]VIF from Model 1.

Table 4. Predictive test results.

	Tendering frequency		Contract value		Contract win-ratio		Public contracts as % of revenue	
	Model 1a	Model 1b	Model 2a	Model 2b	Model 3a	Model 3b	Model 4a	Model 4b
Size	.35*** (.42)	.32*** (.43)	.35*** (.03)	.32*** (.03)	.07*** (.94)	.02 (.92)	.07*** (.84)	.02 (.83)
Age	.05*** (.25)	.05*** (.25)	.03 (.02)	.02 (.02)	.01 (.57)	.01 (.54)	.03* (.50)	.03* (.49)
Sector: manufacturing[a]	-.05*** (.99)	-.04** (.99)	.06*** (.08)	.06*** (.08)	.03 (2.26)	.02 (2.10)	-.06*** (1.98)	-.06*** (1.93)
Sector: construction[a]	.15*** (.74)	.16*** (.73)	.16*** (.06)	.17*** (.06)	-.05*** (1.64)	-.03** (1.57)	.05*** (1.45)	.07*** (1.41)
Sector: others[a]	-.04** (.77)	-.03** (.76)	.03* (.06)	.04** (.06)	-.01 (1.72)	-.01 (1.64)	.00 (1.52)	.00 (1.48)
Relational capability		-.03 (.29)		-.01 (.02)		.18*** (.62)		.05** (.56)
Procedural capability		.15*** (.37)		.15*** (.03)		.16*** (.79)		.21*** (.72)
n	2739[b]	2739	2626[b]	2626	2672[b]	2672	2723	2723
Constant	-5.50*** (.77)	-13.23*** (1.29)	.93*** (.06)	.19* (.11)	18.49*** (1.72)	-15.46*** (2.76)	12.65*** (1.53)	-13.68*** (2.51)
F	107.02	87.04	104.87	86.82	6.91	44.71	7.80	30.12
Adjusted R^2	.16	.18	.16	.18	.01	.10	.01	.07

The standard error is in parentheses.
[a]Sector: services is the referent category.
[b]Does not equal group total, 3010, due to missing values.
***$p < .01$; **$p < .05$; *$p < .10$.

Procedural capability has a significant and positive effect on tendering frequency ($p < .01$). H2a is accepted on this basis.

The second outcome variable tested is the value of public contracts that SMEs typically aim to win (Model 2). H1b and H2b state that relational and procedural capabilities will each have a positive effect on contract value sought. At stage 1, 16% of the variance is accounted for by the control variables. Firm size and sector have a significant and positive effect on contract value sought. Firm age is non-significant. The variance explained increases to 18% with the addition of the independent predictors at stage 2. As with tendering frequency, relational capability has no statistically significant effect on contract value sought ($p = .38$). This means that we must reject H1b. Procedural capability does have a positive and significant effect on contract value sought ($p < .01$), which allows us to accept H2b.

The third and fourth variables relate to performance outcomes in public sector tendering. The first of these is contract win-ratio of SMEs for 2013 (Model 3). H1c and H2c state that relational and procedural capabilities will each have a positive effect on contract win-ratio. At stage 1, the control variables account for 1% of the variance. Firm size has a significant and positive effect on contract win-ratio. The construction sector has a significant and negative effect. The other control variables are non-significant. With the inclusion of the independent predictors, the variance explained increases to 10%. Both capability types are found to have a positive and significant effect on contract win-ratio ($p < .01$). The effect of relational capability ($\beta = .18$) is slightly larger than that of procedural capability ($\beta = .16$). These results lead to acceptance of H1c and H2c.

The fourth outcome variable relates to public contracts as a percentage of revenue (Model 4). H1d and H2d state that relational and procedural capabilities will each have a positive effect on the proportion of SME revenue attributable to public contracting. At stage 1, only 1% of the variance is accounted for by the control variables. Firm size and sector are again significant. At the second stage, the independent variables are added to the model. The variance explained increases to 7%. Both relational capability ($p < .05$) and procedural capability ($p < .01$) have a positive and significant effect on the percentage of revenue that SMEs derive from public contracts. The effect of procedural capability ($\beta = .21$) is larger than relational capability ($\beta = .05$) this time round. These results offer support to H1d and H2d.

The results are revealing as regards the effect of two capability types – relational and procedural – on SME tendering activity and performance in public procurement. Contrary to predictions, relational capability has no enabling effect on tendering activity, whether in respect of actual number of tenders submitted or contract value sought. In contrast, procedural capability is significant in explaining tendering activity. That said, its effect does not add substantially to the variance attributable to firm size, age and sector. However, relational and procedural capabilities assume greater salience in explaining performance outcomes for SMEs. Together, they explain an additional 9% of the variance in contract win-ratio after controlling for organisation characteristics. Relational capability produces the slightly larger effect of the two on this measure. Equally, relational and procedural capabilities have a positive effect on the proportion of revenue derived from public contracting. On this measure, they add 6% to the variance explained after controlling for organisation characteristics. Procedural capability is the most impactful of the two on this measure. Summarising, organisation characteristics in the form of firm size, age and sector are more important than tendering-specific capabilities in explaining the number and value of contracts SMEs seek to win. When it comes to performance outcomes, however, relational and procedural capabilities matter more than organisation characteristics. These results are given further consideration in the next section.

Discussion

SME involvement in public procurement constitutes a burgeoning line of inquiry in organisation studies. This is due in large part to a growing sensitivity, particularly at government level, over the under-representation of SMEs in the public sector marketplace and the development of steps that need to be taken to overcome this situation (OECD, 2013). For various reasons research has pre-occupied itself with documenting the barriers that confront SMEs, when tendering for public contracts, rather than predicting their levels of activity and performance. Real as these barriers are, scholarly investigation has to look beyond them. Consequently, this article set out to explain and predict SME activity and performance in public contract competitions by focusing on relational and procedural tendering capabilities. The results support the capability-based perspective put forward. In particular, they show that SMEs capable of interacting with public buyers and proficient in the formal aspects of tendering and contract management enjoy superior outcomes. Granted, the study is amongst the first of its type and has some limitations and there is a need for further empirical research in this area. Even so, it provides a useful starting point for understanding the relationship between tendering capabilities and SME involvement in public procurement. The results are discussed in more detail below.

The research shows that smaller firms are less likely to compete for opportunities with public sector organisations, and less likely to aim for higher-value contracts has been established in research across several countries (BMG Research, 2013; Flynn et al., 2015; ONS, 2012; Pickernell et al., 2013). The reasons for this include problems with SMEs identifying suitable opportunities, their inability to meet qualification criteria and prohibitively high transaction costs involved in putting together a bid (Cabras, 2011; Fee et al., 2002; Loader, 2005, 2015; MacManus, 1991). The analysis in this article shows that improvements in procedural know-how can help SMEs to increase their participation rates. Specifically, possessing the capability to navigate the procedural formalities of tendering and post-tendering is positively associated with the number and value of public contracts SMEs seek to win. Relational capability, on the other hand, is not. The original hypothesis was that the ability to interact with and persuade public buyers would lead SMEs to tender for more and higher value contracts. Elsewhere, proactivity on the part of firms in exploiting market information has been linked to contract search and bid submission activity (Reijonen et al., 2014; Tammi et al., 2014). It may be that relational capability, rather than causing SMEs to tender for more and bigger contracts, introduces an element of selectivity to their bidding strategies. That is, SMEs are only inclined to enter into competitions which they are already favourably positioned to win.

As well as being under-represented as competitors in public contract competitions, SMEs are also under-represented as eventual winners. This is borne out by various studies which put their share of the public procurement market to be significantly below their share of enterprises in the economy (Cabinet Office, 2013; GHK, 2010; GHK and Technopolis, 2007; PwC, 2014). Against this backdrop, the identification of relational and procedural capabilities as performance drivers is significant. Consistent with predictions, the ability to communicate with buyers and influence their supply preferences is crucial to improving SMEs' prospects of success – a conclusion that McKevitt and Davis (2013) also reached. Notwithstanding the arms-length character of public procurement (Lian and Laing, 2004), factors such as trust, reputation and familiarity do enter into a public buyer's calculus when making decisions over which supplier to select. Indeed, given the oft-cited high-risk aversion of public buyers (Georghiou et al., 2014), these relationship-based factors are likely to prove critical. SMEs are advantaged to the extent that they appreciate this reality and actively seek to build social capital with procurement decision makers. As it is with tendering activity, procedural know-how is associated with performance outcomes. This is logical given the legalistic and bureaucratic nature of public procurement. Undoubtedly, knowing precisely what

public buyers expect from suppliers and being able to articulate this through the formal tender process increase the likelihood of success.

Alongside its scholarly contribution, this study yields a number of practitioner insights. For SME owners and managers serious about doing business with the public sector, there is a clear incentive to invest in tendering-specific capabilities – relational and procedural. Taking the time to formulate strategies for engaging public sector actors, researching the supply needs and spend profiles of public sector organisations and acquiring expertise in the assessment criteria used by potential client organisations are all important activities in this context. As previously argued by Greer (1999) and empirically substantiated here, success depends on SMEs having the capabilities to match the idiosyncratic demands of public procurement; and capability development takes time and the commitment of resources (Stalk et al., 1992). Whittaker et al. (2014), illustrate this further by suggesting that SMEs should be prepared not only to develop capabilities in-house but also to source them externally via collaborations with third parties. More so again, they need to demonstrate a willingness and aptitude to learn as an organisation and to channel this learning into a product or a service that their customers value (Sanzo et al., 2012). While the capabilities public contracting requires of SMEs are sector-specific, the pressures it imposes for continuous improvement, upskilling and professionalism are universal.

For enterprise support agencies and industry representative associations, the analysis suggest expanding training provision to encompass the relational side of public sector tendering. In the main, training programmes and workshops have prioritised the procedural and technical elements of tendering over 'soft skills' to do with networking and selling to public buyers. Yet, it is evident in this article that relational capabilities can be even more important in determining whether or not SMEs are awarded public contracts. It is also evident that SMEs are weaker on relational capability than procedural capability and that this is the area in which the biggest improvement can be made. Previous research indicates that SMEs are receptive to external guidance and support of this kind and recognise its value for professionalising their business operations (Marlow, 1992). The corollary to SMEs strengthening their tendering capabilities is that public buyers are willing to communicate with them, including by debriefing them on unsuccessful bids. If public buyers are reluctant to do this, and SMEs claim that they are (Flynn et al., 2013; GHK, 2010), then the potential for relational and procedural capabilities to contribute to superior performance is constrained.

The academic and practitioner contributions of this analysis notwithstanding, it does have limitations. For one, data on tendering capabilities and performance are collected from a single source – SMEs. Future research may wish to explore options for collecting performance-related data from archival sources; published contract award notices on e-procurement sites, for example. Further, the study is cross-sectional and covers SME involvement in public procurement for 2013 only. Re-running this study at some point in the future or, better still, initiating a longitudinal research study is recommended. On this point, the migration of public procurement online means that it is becoming easier for researchers to survey national populations of suppliers. Research into the antecedents of SME activity and performance in public procurement would also benefit from replicating this study in another jurisdiction. While there is a high level of institutional commonality in national public procurement systems, particularly within Europe (Flynn and Davis, 2015), replication would be useful nonetheless. Finally, the capabilities-based perspective employed here is one of several that can be used to explain SME outcomes in public procurement. The previously cited work of Reijonen et al. (2014) on entrepreneurial orientations and Tammi et al. (2014) on market orientations are others. Going forward, researchers should consider alternative theoretical perspectives and models, particularly in the area of strategic planning and decision making (see, for example, Basco, 2014).

While the subject matter of this article is SME participation in public procurement, its threads spool out to wider contemporary debates and lines of inquiry on small firms. For instance, its privileging of a capability-based view of tendering resonates with recent studies that have looked at capability types and configurations within small firms and how these variously determine growth, internationalisation and competitiveness. Barbero et al. (2011) generated interesting findings on the relationship between the functional capabilities of managers and the pursuit of high-growth strategies in SMEs. Koryak et al. (2015) highlighted the role of leadership in fostering organisational capability to grow and learn. Raymond and St-Pierre (2013) examined capability alignment in the context of internationalisation strategies of SMEs, finding it to be of critical importance. Not altogether different, Rice et al. (2015) modelled SME performance as a function of the interplay between dynamic capabilities and market transformation processes. The findings and their implications also speak to overarching research themes to do with SME professionalisation and the supportive role that state agencies and industry representative bodies can play in this process. As a final comment, public procurement represents relatively unchartered territory for SME and entrepreneurship scholars. They and it have much to gain from discovering one another.

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Notes

1. Variance that is attributable to the measurement method rather than to the constructs the measures represent.
2. Strong correlations are indicated by values above .7. Moderate correlations are within the .3–.6 range. Low correlations are <.3.

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