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A review of contractor selection methods: Risky business?

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Ágrip

Í samfélagsumræðunni er oft fjallað um vandamál innan mannvirkjageirans - eins og framúrkeyrslu í kostnaði og tafir, og ekki síður vandamál sem tengjast gæðum. Stundum er til þess vísað að þessi vandamál séu afleiðing af hinu ófyrirsjáanlega eðli greinarinnar. Hins vegar liggur fyrir að einn áhrifamesti þátturinn sem hefur áhrif á útkomu slíkra verkefna er val á verktökum, sem fer fram á fyrri stigum verkefnanna. Megintilgangur þessarar rannsóknar var að fara yfir aðferðir við val á verktökum, sem íslenskar skipulagsheildir notast við. Þessar aðferðir voru bornar saman við alþjóðlegar aðferðir - sem endurspeglar faglegt þekkingarstig samtímans. Niðurstöðurnar benda til þess að íslenskar skipulagsheildir notist við margþætt viðmið að einhverju leyti, en verð er þó langmikilvægasta viðmiðið og í því getur falist áhætta.

Lykilorð: *Verklegar framkvæmdir, áhætta, val verktaka.*

Abstract

It has long been recognised that poor quality, delays and cost overruns are common in the construction industry due to reasons that have often been linked to the unpredictable nature of the industry. However, one of the most influential factors affecting a projects' outcome is the selection of a contractor in the pre-construction phase. The overall purpose of this study was to review the contractor selection methods applied by Icelandic organisations, compare them to those recommended by experts, and conclude whether the methods used impose too much risk for organisations. The results indicate that Icelandic organisations use multiple criteria selection to some extent, but price is by far the most important criteria.

Keywords: *Civil constructions, risk, contractor selection.*

Introduction

A traditional perspective in project management is that project success is defined by quality, time and cost. Most projects fail to meet at least one of these objectives (Evans, 2005) and construction projects are no exception. Poor quality, delays and cost overruns are common in these projects (Kanji & Wong, 1998). One of the most influential factors affecting the outcome of a construction project is the selection of a contractor in the pre-construction phase (Holt, 1998; Arditi et al., 2000; Palaneeswaran and Kumaraswamy, 2001; Banaitiené & Banaitis, 2006; Singh & Tiong, 2006; Ng & Tang, 2009; Williams, T. 2016; Caldas C. & Gupta, A., 2017). Selecting an unsuitable contractor increases the risk of problems such as cost overruns, schedule delays, lack of quality and accidents that can significantly affect the project outcome (Ulubeyli, Manisali, & Kazaz, 2010).

Iceland is no exception and frequent cost overruns in Icelandic public projects have been discussed by Friðgeirsson (2015). Further to this, there have been news in recent years about tax evasion, human trafficking and shortcomings regarding safety in the Icelandic construction industry as well as contracts being awarded to contractors submitting unrealistically low bids. This raises the question of how Icelandic organisations select contractors for their projects. Does the selection process focus on attaining the lowest contract price or does it aim towards long-term value in a broader context? Do attributes such as fulfilment of legal obligations and health and safety of workers, hired by their (sub)contractors, matter to Icelandic organisations?

Contractor selection in Iceland has gained little public attention and the topic has mainly been researched from a legal perspective. This study is meant to address the lack of research in this field. More specifically, the research questions put forward are:

1. What methods are used for contractor selection in Iceland and how do they compare to those recommended by international field experts?
2. Which criteria are most frequently used for contractor selection in Iceland and how do they compare to those recommended by international field experts?

To answer these questions, Icelandic contractors and clients were interviewed, and an e-mail survey questionnaire was sent to 1378 managers of Icelandic organisations. It should be pointed out that this data gathering took place in the year 2016.

Theoretical review

Contractor selection

According to Holt (1998) contractor selection is "...the process of aggregating the results of [contractor] evaluation to identify optimum choice" (p. 153), where the optimum choice represents the contractor best suited for a specific project. How the optimum choice is identified has gained significant attention in research. The lowest bid method was established in the U.K. public sector in the 19th century to provide the lowest price to the public while ensuring fair competition between contractors. Since then, the method has become well established for selection of contractors and is widely used. Yet, it has received a lot of criticism for increasing the likelihood of hiring an incompetent contractor, which can lead to higher overall costs. In the 1980's the idea of selecting contractors based on value emerged, which led to contractors being selected based on non-price criteria in addition to the evaluation of price (Ashley, Lurie, & Jaselskis, 1987; Birrell, 1988; Russell et al. 1990, Hatush, 1996). Nevertheless, the lowest-bid method remains in use, more so though in the public sector. According to Plebankiewicz (2010) over 90% of public clients in Poland use price as a decisive criterion and Wong et al. (2000) revealed that public clients in the U.K. place more weight on price than private sector clients. Other studies have verified the frequent use of price as a decisive criterion in the public sector (Russell et al., 1992; Banaitiené & Banaitis, 2006). Nevertheless, recent studies have shown that the public sector in some countries is moving towards the multiple criteria selection (MCS) method, and several governments have even encouraged the use of value-based tendering (Wong et al., 2000; Waara & Bröchner, 2006). A

clear preference for MCS over the lowest-bid wins method can be seen in the research literature (Banaitienė & Banaitis, 2006; Doloi, 2009; Hasnain & Thaheem, 2016; Holt et al., 1995; Russell & Jaselskis, 1992; Waara & Bröchner, 2006; Wong, 2004; Zavadskas, Turskis, & Tamošaitiene, 2008) as well as criticism of the lowest-bid wins method (Zavadskas et al., 2008).

The construction industry is inherently uncertain where geotechnical conditions, weather, material prices, labour costs, conflicts and design errors are just a fraction of things that can affect the project outcome. Contract price and cost do not always go hand in hand, since low initial cost can result in high cost in the long run due to unforeseen effects (Lingard, Hughes, & Chinyio, 1998). The benefit of MCS was established when Russell and Jaselskis (1992) concluded that a correlation exists between project success and the extent of contractor evaluation carried out by clients. Contractor failure becomes less likely when more effort is put into evaluation of contractors prior to bid acceptance.

The MCS method has become a widely used approach, however some researchers have raised the question of the financial feasibility of the method. Lingard et al. (1998) discussed the impact of contractor selection methods on transaction costs and argued that complex contractor selection systems could increase ex-ante costs too much to outweigh lower ex-post costs. Waara and Bröchner (2006) claimed that applying additional criteria to the evaluation method applied is often unlikely to significantly affect the choice of a bidder. The idea of MCS methods has also raised the question what criteria should be used to increase the chances of identifying an optimal contractor.

Contractor selection in Iceland

To the knowledge of the authors, research of contractor selection has not been carried out in Iceland. Several studies have focused on the legal aspect of public tendering and Aðalsteinsson and Bollason (2015) discussed allegations on corruption in the tenders of Icelandic municipalities. The importance of contractor selection was mentioned by Sigurðardóttir (2016), outlining possible loss of quality, security and safety when outsourcing projects to contractors. Ólafsdóttir (2011) discussed that the lowest bid does not always lead to the lowest overall cost.

Public procurement in Iceland is regulated by the Public Procurement Act No. 120/2016, which outlines the selection process and permitted criteria in the public sector. The act applies to all public procurement, including the selection of contractors, and it serves as an assurance that interests of taxpayers are emphasized, and public funds are used sensibly. All construction projects exceeding ISK 49.000.000 (excluding VAT) shall be put up for open, restricted or negotiated tender, and contracts with a value of ISK 697.439.000 or more shall be put up for open tender in the EEA. When open tendering is not seen as feasible, restricted tendering, queries, or negotiation is authorized (Public Procurement Act No. 120/2016).

According to Art. 79 of the Act, the buyer shall choose the most economically advantageous bid based on 1) the lowest price, 2) the lowest cost or 3) the best ratio between price and quality, where the lowest cost should be evaluated based on cost-effectiveness, for example, by calculating the life-cycle cost, and the assessment of quality should be linked to the subject matter of the contract in question (Public procurement Act No. 120/2016, Article 79).

The Icelandic Ministry of Finance operates a Central Public Procurement agency, which published a manual on public procurement in 2008. In the manual, criteria recommended for qualitative selection of contractors are listed. However, it is emphasized that the qualitative selection and award of contract must be kept separated. Contractors bidding for contracts go through pre-qualification where they need to meet certain minimal requirements relating to their financial and technical ability for their bid to be evaluated. All bids that meet these requirements must be evaluated in the process of selecting a bidder that shall be awarded the contract. The evaluation of bids, that have been deemed qualified for participation, must be done per predetermined conditions, which are independent of the requirements used for the pre-qualification. In addition, the buyer is expected to use appropriate criteria depending on the nature and scope of the project and is encouraged not to make higher demands than deemed necessary (Júlíusdóttir,

Guðmundsson, & Magnússon, 2008). It should be pointed out that an updated manual was published by the ministry in 2020 (Fjármála- og efnahagsráðuneyti, 2020), or after this research was carried out.

The public procurement law does not apply to organisations operating in the private sector, and private clients are therefore free to use any method they wish to use when selecting contractors. No research has been conducted on the contractor selection methods applied by private sector organisations in Iceland.

Contractor selection criteria

To evaluate the perceived impact of various contractor selection criteria on project success Russell et al. (1992) surveyed 344 construction professionals and found out that the three criteria ranking the highest across all respondents were financial stability, experience and past performance. Hatush and Skitmore (1997) also studied the perceived impact of selection criteria on project success, in terms of time, cost and quality. The criteria perceived to have the most impact on all three success factors were past failures, financial status, financial stability, credit rating, experience, ability, management personnel and management knowledge, while safety criteria and length of time in business were seen as having the least effect. Singh and Tiong (2006) reached a similar conclusion where criteria relating to experience, past performance and financial stability of contractors scored the highest in a study on the Singapore construction industry.

Above-mentioned studies focused on the perceived impact and did not confirm an actual link between these criteria and the success of construction projects. Only one such study was found. Alzhrani and Emsley (2013) explored the influence of contractors' attributes on project success from a post construction viewpoint. Criteria found to significantly affect project success were turnover history, quality policy and adequacy of labour and plant resources, waste disposal, the size of past projects completed, and company image.

A total of 17 peer reviewed research papers were analysed to identify the criteria most commonly suggested by researchers. The identified criteria, frequency of appearance and example publications are shown in Table 1. Each observation is based on subjective categorization by the authors since the names given to criteria can differ between papers. Also, these criteria can be interrelated and often it is hard to distinguish which category an observation should be counted in. Examples of interrelated categories are past performance and experience.

Table 1 Criteria observed in selected literature (N=17).

Criteria	No. of observations	Examples of publications
Financial	14	(Doloi, 2009; Banaitienė & Banaitis, 2006)
Experience	15	(Wong, 2004; Zavadskas et al., 2008)
Technical ability ^a	14	(Hasnain & Thaheem, 2016; Waara & Bröchner, 2006)
Past performance	15	(Plebankiewicz, 2010; Shukery et al., 2016)
Quality control	11	(Doloi, 2009; Singh & Tiong, 2006)
Health and safety	15	(El-Sawalhi et al., 2008; Banaitienė & Banaitis, 2006)
Price	17	(Mentioned in all publications)

^a Includes all criteria relating to ability of staff such as management capability and project management capability etc.

The table gives a good idea of criteria most commonly suggested for use by researchers, and similar results are found regarding the perceptions of clients and contractors in the industry.

Public clients in Iceland joined forces in 2011 and published a manual that covers how to handle the assessment of bidders for projects of various sizes and complexity (Júlíusdóttir et al., 2008). The criteria that are recommended for assessment are technical ability, financial stability and information on criminal activity or bankruptcy of said contractor, categorized as personal circumstances. Before deciding what exact criteria should be used for the assessment it is recommended that projects are categorized into one of three groups, A, B or C, depending on the risk, A being the least risky and C the riskiest. The bidders are then assessed by various technical, financial and personal criteria which vary between risk groups, for further information on these criteria, the reader is referred to (Júlíusdóttir et al., 2008).

Recent trends that will have impact on contractor selection

Concepts such as corporate social responsibility and sustainability have become key concepts in the public discussion. Sigurdardóttir (2017) concludes that already in 2007, the basic foundations for sustainable public procurement were promoted into the Icelandic Public Procurement law, with the implementation of the first comprehensive Public Procurement Act based on the European Public Procurement Directives. Sönnichsen and Clement (2020) give a comprehensive literature review of what has been written about green and sustainable public procurement from the year 2000 and point out how the values and beliefs of the procurer are crucial in a transformation towards circular public procurement. In recent years, the idea of "responsible investing" has gained strong momentum, this reflects how environmental, social and governance factors (ESG) are integrated into investment processes and decision-making. ESG can be thought of as a measure of the collective conscientiousness for social and environmental factors, by an organisation. The concept of ESG was introduced in 2004 in the report "Who Cares Wins: Connecting Financial Markets to a Changing World" written by Kofi Annan of the United Nations and 18 financial institutions. This concept has gradually emerged in Europe and USA and become an important issue after Corporate Social Responsibility (Li et.al. 2021). One of the barriers to ESG is lack of data for analysis and benchmarking, but the launch of the Global Reporting Initiative (GRI) has improved the disclosure on ESG issues (Kell, 2018).

Research method

The study can be split into two, an exploratory study where a literature review and semi-structured interviews were utilized to gain understanding of the topic, and a quantitative survey of contractor selection methods used by Icelandic organisations.

Semi-structured interviews

Semi-structured interviews were conducted with multiple contractors as well as representatives of organisations that frequently hire contractors. The objective was to collect data on general trends in contractor selection in Iceland from the perspective of both contractors and clients of contractors. Two questionnaires were designed, one for each group. Since contractors are sometimes clients themselves when hiring sub-contractors, the contractors interviewed were asked if they had employed subcontractors and if so, they were asked about the selection process. Both contractors and clients were asked questions on: (1) The perceived importance of various contractor/subcontractor attributes. (2) What criteria organisations use to evaluate possible contractors/subcontractors. (3) How information on these criteria are obtained. (4) How easy it is to access information about these attributes. Questions relating to the perceived importance were presented with a 5-point Likert scale (1 = strongly agree, 2 = agree, 3 = neither agree/disagree, 4 = disagree, 5 = strongly disagree) where interviewees were presented with a statement and requested to answer using this scale, the remaining questions were open ended. Both questionnaires were pre-tested on three participants to identify possible issues. Based on the feedback, some modifications were made to the questionnaire regarding both clarity and order of questions.

A stakeholder analysis was conducted to identify those who could possibly supply information on the contractor selection process. It was decided to interview a broad selection of contractors and contractors' clients along with representatives of the Central public procurement office. The Federation of Icelandic Industries provided a list of possible participants. The contractor firms were split into three categories depending on size:

- Small contractor firms: 1 employee
- Medium sized contractor firms: 2-15 employees
- Large sized contractor firms: >15 employees

Clients invited to participate were large organisations and public clients active in the construction industry. The final number of respondents invited to participate consisted of 20 contractors, 17 clients and the Central public procurement office.

Survey

In order to collect data that could represent the population of Icelandic organisations, a survey of 1378 managers in Icelandic companies was conducted. The focus here was to answer two main questions; what method do clients in Iceland apply when selecting contractors, lowest-bid wins or multiple criteria selection? In addition, which criteria is applied by those who use other methods than lowest-bid wins? The data was collected through an e-mail omnibus survey during the period from 1st to 13th of September 2016 by (MMR¹). MMR uses random sampling which is the sampling method best suited for achieving generalizable results. All organisations in the "300 biggest" book² were asked to participate as well as additional organisations drawn at random from the Registry of organisations; a database that keeps data on all listed organisations in Iceland. The final sample consisted of 1378 managers of Icelandic public and private organisations.

Results

Interviews

13 contractors and nine clients participated, as well as the central public procurement office and the directorate of internal revenue. Table 2 shows the details of the sample characteristics.

Table 2 Interview sample characteristics.

Sample group	Total contacted	Total responses	Response rate
Clients			
Public clients	13	7	54%
Private clients	4	2	50%
<i>Total</i>	<i>17</i>	<i>9</i>	<i>53%</i>
Contractors			
Small	6	3	50%
Medium	6	3	50%
Large	8	4	50%
<i>Total</i>	<i>20</i>	<i>10</i>	<i>50%</i>
Overall	37	19	51%

¹ MMR or Market and Media Research Iceland is a market research agency specialising in advanced market research in Iceland (Administrator, n.d.).

² A book published every year in Iceland covering the 300 biggest organizations (Hauksson, 2015)

Selection methods

Descriptions of methods applied for contractor selection ranged from rather informal methods, such as calling a contractor that had previously worked for the organisation to more formal methods, such as open tendering where anyone can submit a bid. The subject of type and size of project was often mentioned in the discussions on selection methods. Larger and more complicated projects are often put up for tender, while more informal ways are more often used to hire contractors for smaller, less complex projects.

All public clients cited the public procurement act regarding their obligation to put all projects exceeding a certain amount up for tender. Additionally, they all claimed to tender projects below the threshold amount if it was feasible and that pre-qualification/closed tender is only used for the most complex projects. For small projects, such as general maintenance work, the framework agreement managed by the Central Public Procurement is typically used.

The fact that contracts must be awarded based on objective criteria was referred to and that selecting a contractor based on other factors than price often leads to subjectivity. Some of the contractors mentioned that even though they are required to submit information on various attributes, the information is not used when public clients award a contract. What matters most is the bid amount, as pointed out by one of the contractors who gave a typical example:

Everybody bid ISK 100 – 120 million kr but then one said he could do it for ISK 60 million kr, he was awarded the contract, even though everyone knew that this bid was not realistic and he would go bankrupt. Contractors often submit ridiculously low bids to keep the business afloat. It is depressing, putting all this work into the bid and gathering all this information and then this happens.

All public clients with ISO 9001 certification use some version of supplier evaluation to evaluate potential suppliers as well as for post evaluation of performance. By keeping track of past performance, clients can refuse certain contractors on the terms of substandard performance.

One client described the supplier evaluation as follows:

Suppliers are evaluated after providing us with services or products, and this applies to contractors as well, where contractors are evaluated during and after working on projects for us, we evaluate them by pre-determined factors and if certain things are not in order we can place the contractor on a "black list" which means that the contractor is not allowed to bid for our projects for six months.

Similarly, the private sector companies both mentioned to put larger projects up for tender while using ways that are more informal in smaller projects, such as negotiation. One of the two private companies frequently used closed tendering since they don't want to waste resources on assessing multiple tenders. Additionally, they claimed that they roughly know what contractors can carry out certain types of projects and they have an informal list of contractors with whom they have had previous good experience.

The methods mentioned by clients were in line with the responses of contractors, when asked about how they acquire projects. Smaller contractor firms more often mentioned references and obtaining work "through their phones." While larger contractor firms also mentioned those informal ways, the more common way of obtaining work is through tendering. One contractor described the work that goes into preparing the documents:

In the private sector the use of closed tendering is more common, they have already prequalified the bidders to a standing list by checking various resources such as Creditinfo³

³ "An organization that offers diverse services in the area of credit risk management with information provision as the core of services, including tools for decision making, models and software." ("Creditinfo," n.d.).

and then you must submit this information after they have decided to award you the contract, you don't have to prepare these documents before.

Contractors and clients were specifically asked about the following, regarding the perceived importance of different contractor attributes.

- Contractor fulfilment of obligations relating to legally statutory payments such as taxes.
- Contractor fulfilment of obligations relating to employees such as employer pension fund contribution, minimum salary and working conditions.
- Contractor fulfilment of obligations towards customers, subcontractors, suppliers etc.

Contractors were asked to assign a degree of importance placed on these attributes by their clients while the clients were asked how important these attributes are when they hire contractors. These statements were presented with a 5-point Likert scale.

Table 3 Answers by clients to the statement "In your dealings with contractors, it is important that they can demonstrate that they have fulfilled their obligations relating to the payments of legally statutory payments."

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
Public (N=7)	7				
Private (N=2)	2				

When the respondents from the group of contractors gave answers to the same statement their answers varied more, as shown in Table 4.

Table 4 Answers by contractors to the statement "In your dealings with contractors, it is important that they can demonstrate that they have fulfilled their obligations relating to the payments of legally statutory payments."

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
Large (N=4)	3		1		
Medium (N=3)	3				
Small (N=3)		1	1		1

The next statement was concerning obligations towards employees.

Table 5 Answers by clients to the statement "When hiring a contractor, it is important that he can demonstrate that his obligations towards his employees are fulfilled."

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
Public (N=7)	7				
Private (N=2)	2				

Table 6 Answers by contractors to the statement "When hiring a contractor, it is important that he can demonstrate that his obligations towards his employees are fulfilled."

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
Large (N=4)	3	1			
Medium (N=3)	3				
Small (N=3)	2				1

The last statement was concerning relationships with suppliers/customers/subcontractors.

Table 7 Answers by clients to the statement "When hiring a contractor, it is important that he can demonstrate that his relationship with suppliers/customers/subcontractors are in order."

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
Public (N=7)	4	1	2		
Private (N=2)	1	1			

Table 8 Answers by contractors to the statement "When hiring a contractor, it is important that he can demonstrate that his relationship with suppliers/customers/subcontractors are in order."

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
Large (N=4)	2	1	1		
Medium (N=3)	3				
Small (N=3)	3				

Actual use of criteria

Perceived importance and actual use of selection criteria do not always go hand in hand. When asked about the actual use of criteria representing these attributes it is clear that even though clients consider them important, they often do not require their contractors to provide information to confirm that they are fulfilled. Respondents from small contractor firms had rarely been required to disclose information on their financial stability or their fulfilment of legal obligations. A contractor working in the domestic building sector said that individuals hiring him

rarely request information about him. He commented: "...in this sector everything is built up on trust and reputation, I am never required to disclose information about my business and likewise I never require my subcontractors to disclose information about them." However, he added that he found it strange that individuals hiring him are willing to give him the keys to their homes and to work around their belongings without knowing anything about him. A representative of a large contractor firm said:

It is rare for private sector companies to request information on these matters, I have experienced it twice, just recently, and that has clearly been because the ultimate client has these requirements. However, these demands are standard for foreign clients that have come here, foreign clients are more cautious than is normal for Icelandic clients.

Larger contractors had more frequently taken part in tenders where information about certain attributes had been requested. One large contractor commented:

The public sector almost invariably demands information on these things as well as larger companies, such as the aluminium companies, these demands are clearly on the rise generally and recently main contractors have also been demanding such information.

The importance of reputation – i.e. being known for good craftsmanship

All types of contractor firms assigned a high degree of importance to fulfilling obligations towards other business partners. When asked further about the importance of this attribute the typical answer was that the Icelandic market is small and word of mouth spreads fast and easily. All of them mentioned the importance of a good reputation in Iceland. The smaller contractor firms said they get most of their work through word of mouth, and therefore a good reputation is vital. One contractor described the importance of reputation as follows:

90% of our business comes through my phone where other contractors or hardware stores have recommended us. We get customers because someone recommends us and in the same way, I recommend others that I know to my customers. If my business relationship with others is not in order, then I get no work.

Larger contractor firms and clients described the importance of reputation in a different way, information on potential contractors is easily acquired through others due to the small market and one respondent commented: "...I can always find some link to the contractor I intend to hire and frequently check what others have to say about them before I close the deal." Therefore, good reputation can increase the chances of contractors being awarded contracts.

Survey

The survey was sent to 1378 managers, 706 responses were received and the response rate (RR) was thus 51%. The first question was how important price is for the organisation when buying services from contractors. Those who chose "The organisation does not buy services from contractor companies" (94 or 13,6%) and "Price is all that matters" (22 or 3,2%) were not asked any further questions. Additionally, 17 did not answer the first question and 30 did not answer the second one. Table 9 shows the details of the sample characteristics.

Table 9 Details of sample characteristics.

	Number of responses	Percentage of sample	Percentage of responses	Actual division ^b
Number of employees				
≤ 10	283	41%	45%	94%
11-49	168	24%	27%	5%
50-149	98	14%	16%	1%
≥ 150	83	12%	13%	1%
Total	632	92% ^a	100%	100%
Location of head office				
Capital region	393	57%	70%	61%
Other regions	166	24%	30%	39%
Total	559	81% ^a	100%	100%
Field of work				
Industrial	130	19%	23%	24%
Service	265	38%	46%	56%
Retail/Wholesales	120	17%	21%	14%
Fisheries & food processing	60	9%	10%	5%
Total	575	83% ^a	100%	83%

^a Respondents decided if they wanted to answer background questions which explains the difference between the total in each segment.

^b "Actual division" represents e.g. that 94% of organizations in Iceland have 10 or fewer employees. The results were analysed with regards to number of employees, region and field of work.

Contractor selection methods

The purpose of the first question was to reveal how much weight is placed on price versus non-price criteria in Icelandic organisations. A detailed breakdown of answers can be seen in Figure 1.

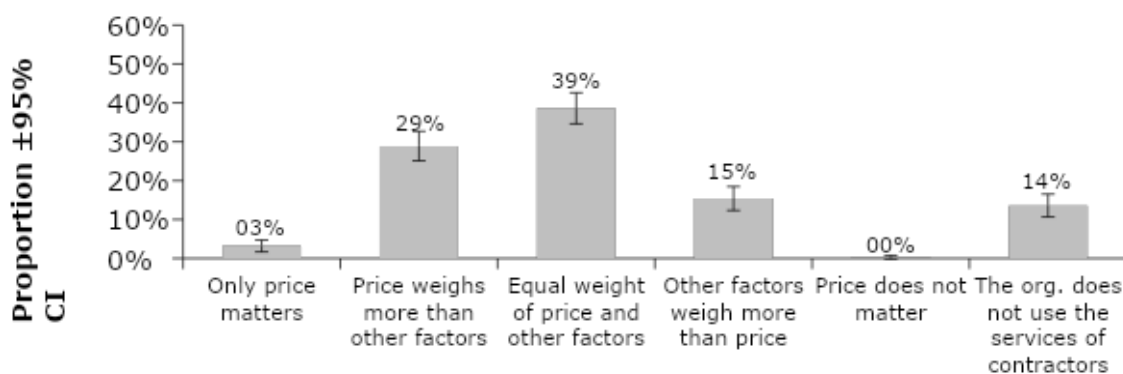


Figure 1 Which of the following statements best describes your organisation's purchase of contractors' services? (N=689, 95% CI - confidence interval).

Most organisations (96%) take other factors than price into account to some extent when selecting contractors, and almost none rely solely on price (0.3%). Since few answers were present in the "Only price matters" and "Price does not matter" categories the following simplifications were made:

1. "Only price matters" and "Other factors than price are considered but price weighs more" where merged into a group named "Price > Other criteria"
2. "Other factors than price is considered that weigh more than price" and "Price does not matter" where merged into a group named "Price < Other criteria"
3. The "Other factors than price are considered that weigh the same as price" group was renamed "Price = Other criteria"

Comparison of preferred selection method between sample groupings did not reveal any statistically significant difference as can be seen in Figures 2, 3 and 4.

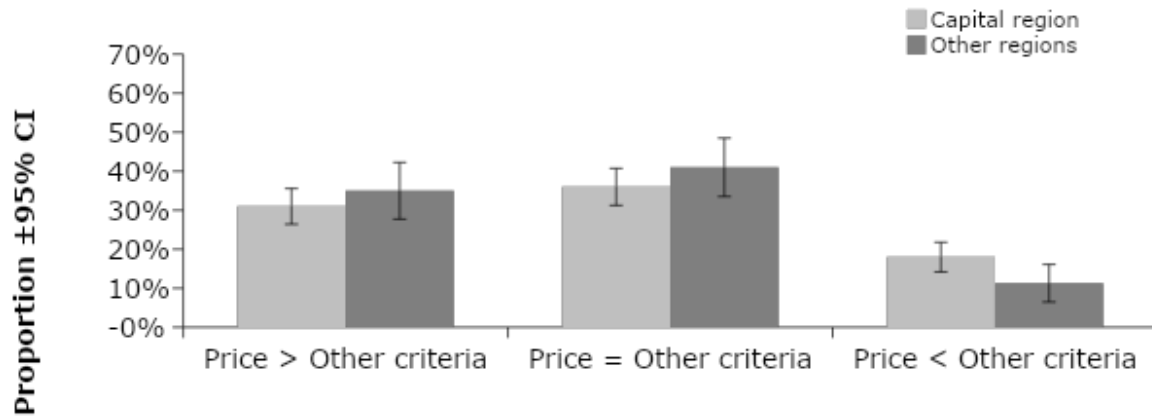


Figure 2 Organisations' selection method preference by region. (N=559, 95% CI).

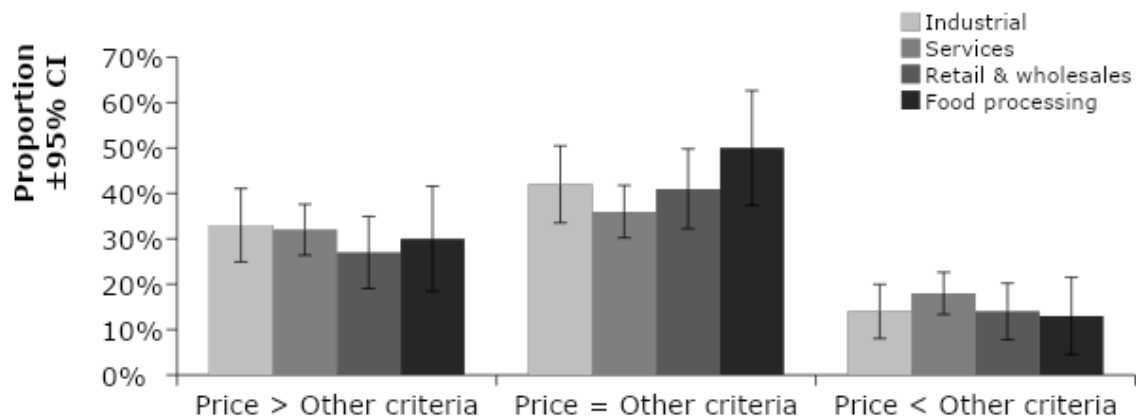


Figure 3 Organisations' selection method preference by field of work. (N=575, 95% CI).

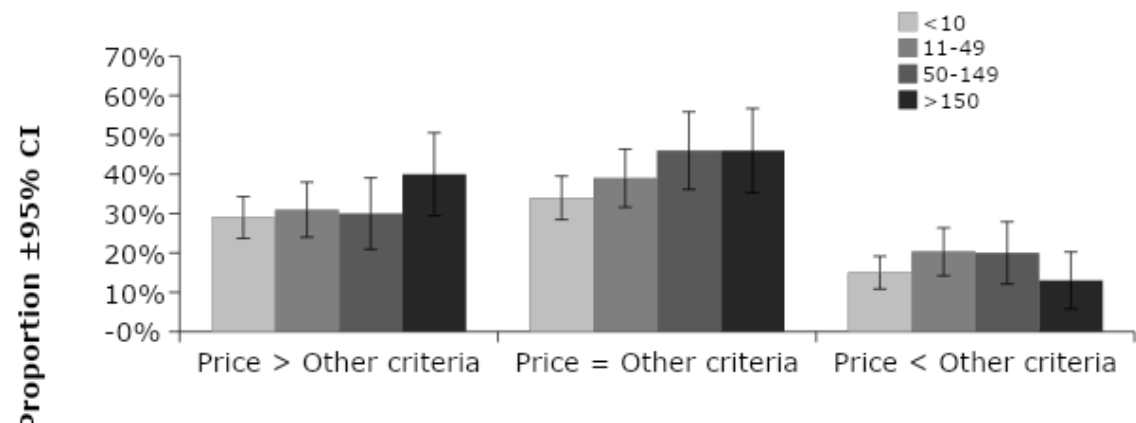


Figure 4 Organisations' selection method preference by number of employees (N=518, 95% CI).

To further examine the selection criteria preferences, the respondents were asked the question: “What factors other than price are used as basis for procurement of contractor firm services? – Tick all that apply.” Nine predetermined options were available for selections as well as an “Other” option where respondents could indicate if other attributes than provided were used. On average, respondents selected 3,4 factors and 75% selected four or less factors. A detailed breakdown of criteria ranking can be found in Figure 5.

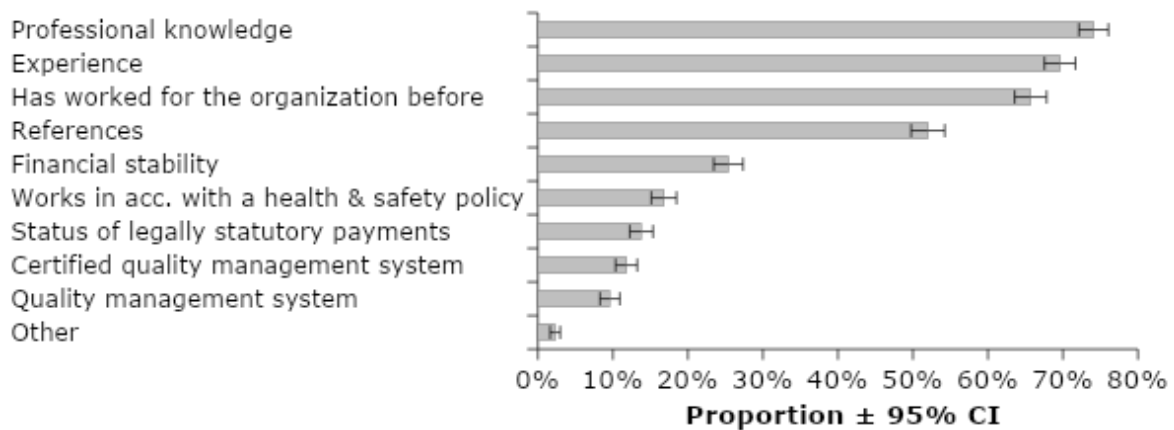


Figure 5 What factors other than price are used as basis for procurement of contractor firm services? – Tick all that apply. (N = 560, 95% CI)

To analyse further the difference in preference between certified and uncertified quality management systems the answers of those who selected some kind of quality management system as a criterion used by their organisation (98 respondents) were broken further down into three separate groups. The first group included those who only selected “Certified quality management system” (44 respondents), the second those who do not require the quality management system to be certified (32 respondents) and the third group included those who selected both options (22 respondents).

Only one criterion, “has good references”, was found to be significantly more often selected by organisations located in the capital region than those located elsewhere. Furthermore, industrial organizations are significantly more likely to require information on status of legally statutory payments than those organizations operating in other sectors. Organizations operating in food processing were also more likely to request that contractors work in accordance with a health and safety policy, this difference was however only significant in comparison with those organizations operating in retail and wholesale.

Discussion

What methods are used for contractor selection in Iceland?

Interviews with clients and contractors indicated that the selection methods of Icelandic organisations are dominated by price. Organisations requiring information on other attributes than price seem to be the public sector as well as organisations applying selection methods from their foreign parent companies, such as the aluminium sector. Also, organisations operating in sectors with strict safety rules such as the aviation sector.

However, even though public bodies require information on certain attributes, the legislation⁴ in place at the time when the interviews were taken, implied that these attributes should only be used to *identify incompetent* bidders, not to select the most capable ones. Judging from the

⁴ Public procurement Act No. 84/2007.

interviews, this is the case. Public clients often cited the difficulty of selecting contractors based on other factors than price, due to the risk of being subjective, and contractors mentioned how they have witnessed unrealistically low bids being accepted by public sector clients. However, more recent legislation⁵ shows signs of more emphasis being placed on quality and value, instead of price only.

Results from the survey indicate that Icelandic organisations have adopted MCS (multiple criteria selection) methods to some extent. Majority of organisations take other factors than price into account when selecting contractors and almost none rely solely on the lowest-bid wins method. These results are similar to findings from a study conducted in the U.K. by Wong et al., (2000) where 88% and 94% of public and private clients respectively indicated to use other criteria along with price.

The most common method used by Icelandic organisations is an equal weight of price on one hand, and on three or four non-price criteria on the other hand. These findings correspond to results from a Swedish study conducted by Waara & Bröchner (2006) where the most common method used by Swedish municipalities for contractor selection was 70% price, together with three non-price criteria.

A clear preference for multiple criteria selection and value over price was observed in the literature and Icelandic organisations seem to be on the right way.

The criteria are most frequently used for contractor selection

According to the survey results, the criteria most frequently applied for selection are professional knowledge, previous experience in a similar project as well as choosing a contractor that the client has previously done business with or a one that has a good reputation. These results correspond to findings from studies carried out in the U.K. and Poland where reputation, experience and client-supplier relations have been recorded as being amongst the key considerations (Holt et al., 1994; Holt, 1998; Plebankiewicz, 2010).

Our findings indicate that reputation and references play a big role in the selection process across the whole industry. Criteria relating to references and whether the contractor had previously worked for the organisation were frequently selected. These results seem to be in line with the findings from Aðalsteinsson and Bollason (2015).

Criteria used for selection of contractors depends on the size of organisations. Large organisations select criteria such as financial stability, health and safety, quality management system, and contractor fulfilment of legal obligations significantly more often than smaller organisations. The reason for this difference could be multidimensional, for example:

- Larger organisations are more likely to undertake larger projects, requiring greater investment, thus taking less risks,
- larger organisations are more likely to have greater resources to request information on, and assess greater number of criteria, and
- larger organisations often work in accordance with quality management systems, such as ISO 9001, where organisations are simply required to establish "criteria for selection, evaluation, and re-evaluation" (ISO 9001:2015, 2015).

Similarly, Jennings and Holt (1998) concluded that small contractor firms are less likely to be assessed by prequalification than large firms. When the stakes are higher, organisations tend to be more cautious and apply criteria that are more stringent.

The fact that so many contractors claimed that they had never been asked to provide information about their financial standing is in line with the survey results, where on average 25% of organisations surveyed had used financial stability as a criterion for selection. This is a surprising

⁵ Public procurement Act No. 120/2016

outcome and different from the literature review findings, where industry workers frequently selected financial stability as one of the most important attributes of a contractor. It is apparent that respondents do not see health and safety policy of contractors as an important attribute. Ásbjörnsson (2014) reached a similar conclusion regarding the lack of emphasis put on health and safety measures of contractors in his research - majority of managers in small construction companies see no benefit of working in accordance with a safety policy since it *is not required by their clients*. This lack of awareness on health and safety of contractors is however not unique to Iceland since studies abroad have reached the same conclusion (Holt et. al, 1994; Jaselskis and Suazo, 1994; Pongpeng & Liston, 2003; Singh & Tiong, 2006; Waara & Bröchner, 2006). Finally, the application of a QMS is not a factor commonly taken into account in the selection process. These results are interesting when viewed in the light of Ólafsdóttir (2011), who concluded that contractors working in accordance with quality management system achieve higher customer satisfaction than those who don't.

Concluding remarks

We would like to emphasise that the data for this study was collected in 2016. We also point out that the number of contractors interviews in the study was limited. Even though we conclude that our general results are still valid, these facts must be stressed.

Selection methods of Icelandic organizations are not as advanced as one would have expected; word of mouth and other subjective criteria are predominating compared to the demand placed on objective criteria available for assessment. If contractors involved in questionable practices are repeatedly awarded contracts, this leads to lack of transparency, more difficult operating environment for honest and professional contractors and the final outcome will be stagnation in the industry.

Since the data collection took place in 2016, there has been increased pressure for companies to show conscientiousness in their decision making. Hopefully, this research will raise awareness and encourage discussions on the issue, since improved selection methods will eventually reduce costs for organisations and society.

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