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WHOSE GAME IS IT? DO SMALL AND MEDIUM SIZE ENTERPRISES WIN ALLIANCE CONTRACTS?

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ABSTRACT

This empirical archival study investigates the distribution of alliance contracts (ACs) between small and medium-sized enterprises (SMEs) and large enterprises (LEs). Previous research has identified concerns about ACs in relation to the participation of SMEs in public procurement markets in the construction sector. The aim of this study was to understand how these contracts are distributed in the construction sector and to provide additional information for industry players on ACs. The study analyzed 80 investment alliance projects from 2011 to 2023, demonstrating a decreasing trend in SME participation against an increase in LE involvement. The findings revealed a concentration of ACs among a few LEs, with a significant portion of SMEs not participating in these alliances. While 81 SMEs have engaged in Finnish ACs, this number is small compared to the total number of SMEs in the industry, pointing to an imbalanced contract distribution favoring LEs. The study also noted a steady rise in the relative share of alliances in the overall construction market. This research sheds light on the challenges of asymmetric AC distribution and offers valuable insights for public works procurement bodies, industry consultants, and AC participants and researchers, highlighting the need for balanced contract allocation.

KEYWORDS

Lean construction, alliance contract, archival study, enterprise

INTRODUCTION

In many countries, the alliance contracting format, which originated in Australia, and integrated project delivery (IPD) developed in the United States, have become widespread in construction projects, often combining lean construction methods and elements into these collaborative contracts (Lahdenperä, 2012; Young et al., 2016). IPD is a contractual and operational approach that unifies the various parties involved in a construction project, including their contracts, procedures, and operating principles. IPD incorporates numerous aspects of lean construction (Lahdenperä, 2012). An alliance contract (AC) is employed for collaborative contracting in

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various construction scenarios, where the emphasis may not be solely on lean construction principles. Instead, these contracts prioritize shared risk sharing, joint decision-making, and enhanced collaboration between the parties involved (Davis & Love, 2011). However, there are some indications that large enterprises (LEs) are engaging in ACs, while small and medium-sized enterprises (SMEs) are not as prominently involved (Dainty et al., 2001; Davies, 2008; Tezel et al., 2018). SMEs are expected to generate a relatively high number of jobs and minimize changes in income distribution (Ayyagari et al., 2007). Therefore, the European Union (EU) includes the participation of SMEs in public procurement markets among the objectives of its public procurement legislation (The European Parliament and the Council of the European Union, 2014). In Australia, similar legislation aims to promote the public procurement of SMEs, indigenous communities, and local industry (Hoekman, 2018). According to Kidalov (2011), in the United States, at the federal level, the Small Business Administration seeks to encourage the participation of small minority and women-owned businesses in federally funded road projects. As the aim is to involve a wider range of firms in growth while ensuring the most efficient use of public funds, the involvement of SMEs in the construction sector is socially and economically significant (Thai, 2017). This rationale is grounded in economic theories, whereby the public entity benefits from a combination of the lowest price, preventive corruption, and a fair playing field for all construction actors (Anechiarico & Jacobs, 1995; Thai, 2017).

The project alliance model originated in the 1980s when the oil and gas industry decided to develop a collaborative contractual model for investment projects (Olsen et al., 2005). Oil and gas companies adopted this approach in the 1990s, and with the success of these projects, the alliance model began to spread to infrastructure maintenance and construction (Rahmani et al., 2016). Alliances establish an integrated project organization between the contractual parties, usually the client, contractors, architects, and other designers. The aim of establishing a joint organizational structure is open communication, information sharing, and joint problem-solving (Lahdenperä, 2012). The main objectives of the alliance are to create an open culture of agreement and cooperation between the contracting parties, which will allow for a more holistic perception of the risks and benefits of the project and enable joint decision-making and risk and benefit sharing (Rahmani et al., 2016).

In the EU, public procurement contracts significantly impact the economies of its member states, representing over 16% of the EU's gross domestic product (GDP) (The European Parliament and the Council of the European Union, 2023). Similarly, in the United Kingdom, the construction industry is a major economic contributor with an annual turnover exceeding £100 billion, nearly 10% of the UK's GDP; approximately 40% of this turnover is attributed to the public sector (Menteth et al., 2014). Public entities are therefore seeking more value for money in their construction projects, and in this respect, alliance contracting has set high expectations (Love et al., 2010).

Recognizing the challenges and complexity of traditional procurement methods, particularly in managing significant risks, public procurement has played an important role in seeking alternative contracting models (Lahdenperä, 2015; Walker & Jacobsson, 2014). Experiments with public procurement entities began in Australia, where the model was adapted to different types of projects and local markets (Rankohi et al., 2023; Sanderson et al., 2018; Valkama et al., 2019). In countries where alliances have been promoted, public procurement authorities have been the drivers of change and have adopted alliance model practices in their procurement policies and procedures (Walker & Jacobsson, 2014). The role of the public sector has been a key factor in the development of the alliance model and its increasing use in the construction industry. Therefore, the rationale behind selecting ACs has primarily been based on the characteristics of the project and the type of client.

Many studies identify the benefits of alliances for the contracting parties and for the public entity in terms of improved liaison, adherence to budgets and schedules, and the achievement of objectives important to the client, reducing the disputes and litigation typical of the sector (Davis & Love, 2011; El-adaway et al., 2017; Young et al., 2016). Despite the importance of public procurement and the role of ACs in public construction projects in countries where the model has been adopted, there is limited research on how ACs are distributed in the market between SMEs and LEs. Understanding the distribution of contracts can reveal market conditions and barriers that may have an impact on reducing competition, such as oligopolies and monopolies. This study presents a comprehensive sample of the Finnish construction market and the parties to ACs and contributes to answering the question of how ACs are distributed in the construction business landscape. The aim of this study is to shed light on the current situation through a geographically limited but comprehensive sample of the Finnish dataset and to encourage similar research in other countries. The findings of the study could be used by policymakers to target the use of public funds in the construction sector more precisely to relevant groups of companies. For the lean community, the study contributes to mirroring the economic and social impacts of lean construction.

This research endeavor will also provide a modest contribution to the relationship between lean construction and ACs. It presents novel insights into the implementation of lean methods within Finnish ACs, including the utilization of the "last planner system," the "big room" approach, and other lean methods. This is intriguing because ACs have not originally been seen as a distinct characteristic of lean construction. For example, Miles and Ballard (1997) contended that alliance-like partnerships were not established with the intention of enhancing efficiency, productivity, speed, or the smooth flow of production in a construction project; therefore, they have a logical link to the productivity ethos of lean construction. They reasoned that the applicability of an alliance-type collaboration to lean construction is therefore uncertain (Miles & Ballard, 1997). In subsequent years, the relationship between alliances, namely IPD initiatives, and lean construction has been further reinforced, indicating that these two advancements in the construction industry are useful concepts together (Lahdenperä, 2012; Young et al., 2016).

METHOD

Archival research was chosen as the research method (Das et al., 2018) and was encouraged by the researchers' sufficient access to the research data, which was possible in the Finnish context. The research relies mostly on quantitative data. The research study data were collected from all ACs implemented in Finland from 2011 to 2023. The data were first collected using a publicly available catalog from a consultancy specializing in alliances (Vison Ltd., 2023), which provided basic information on alliances. This basic information included the name of the project, the name of the client, and the budget. The names of the projects and companies investigated were anonymized. Numerical codes 1–80 were used for projects, and the letter-number combination C-1 to C-112 was used for companies.

Based on these data, the researchers sought the following additional information on these projects from public and available sources (news, Internet search, Finnish research databases): 1) which companies were contractors in the alliance, 2) the turnover category of these companies (i.e., which companies are SMEs and which are LEs), 3) the time schedule of the ACs, and 4) any indication of the lean methods used in the project. In this study, in line with the EU convention, SMEs are defined as enterprises with fewer than 250 employees and an annual turnover not exceeding EUR 50 million, which are independent of enterprises that do not qualify for the definition of an SME (The Commission of the European Communities, 2003). Tezel et al. (2018) also used this method of dividing firms in their study of SMEs.

The researchers inserted the data into an Excel spreadsheet. Projects related to maintenance or other service ACs were excluded from the data. The number of excluded projects was 14. After screening the data, 80 construction investment alliance projects remained to be analyzed. The total budget value of the selected projects is €9.049 million. Details of the analyzed projects are presented in Table 1.

Table 1. Details of the projects

Project No.	Project type	Timeline	Client	No of SMEs	No of LEs	Budget [M€]	Lean methods used
1	Railway renovation	2011–2015	Public entity	0	1	80	BR, LPS
2	Housing renovation and expansion project	2011–2013	Public entity	1	1	18	BR
3	Road construction project	2012–2016	Public entity	2	1	192	BR, LPS
4	Office and laboratory building project	2019–2021	Public entity	3	1	18	NA
5	Health care building project	2014–2016	Public entity	5	1	51	BR
6	Travel center project	2014–2016	Public entity	2	1	19.2	NA
7	Power plant project	2015–2017	Public entity	1	2	50	NA
8	Courthouse and police headquarters building project	2014–2017	Public entity	0	1	31	NA
9	Office and laboratory building project	2014–2016	Public entity	0	1	30	NA
10	Housing façade renovation project	2014–2018	Private company	2	1	23.3	BR, LPS
11	Housing project	2014–2016	Private company	5	2	13	NA
12	Expansion project of the health care building	2015–2017	Public entity	3	3	14	NA
13	Airport paving works project	2015–2016	Public entity	1	3	20	LPS
14	Tramway construction project	2017–2021	Public entity	0	4	266	BR, LPS, TVD, VM
15	Hospital building project	2018–2021	Public entity	3	5	265	BR
16	Hospital building project	2015–2021	Public entity	0	3	153	BR, LPS
17	Airport expansion project	2015–2020	Public entity	0	1	100	BR, LPS
18	Renovation project of the cultural center	2015–2017	Public entity	0	1	30	NA
19	School building project	2015–2017	Public entity	1	4	20	BR, LPS
20	Police headquarters building project	2015–2016	Public entity	0	1	20	NA
21	Housing project	2015–2022	Private company	2	1	120	NA
22	Road construction project	2015–2017	Public entity	0	3	76	BR
23	Railway renovation project	2015–2017	Public entity	0	1	74.6	BR, LPS
24	School building project	2015–2018	Public entity	1	2	23.7	NA

BR = Big Room, LPS = Last Planner System, TVD = Target Value Design, VM = Visual Management, TP = Takt planning, CBA = Chosen by Advantage, NA = Information not available

Table 1 (continued). Details of the projects

Project No.	Project type	Timeline	Client	No of SMEs	No of LEs	Budget [M€]	Lean methods used
25	Office and multipurpose building project	2015–2017	Public entity	1	1	25	BR
26	School renovation project	2015–2020	Public entity	2	0	10	BR
27	School renovation project	2015–2017	Public entity	5	2	10	NA
28	School and multipurpose building project	2016–2021	Public entity	2	1	42	BR
29	Housing and commercial building project	2016–2021	Private company	1	3	52.1	NA
30	School and multipurpose building project	2016–2018	Public entity	1	3	22	NA
31	Renovation project of the service tunnel	2017–2018	Public entity	0	2	7	NA
32	School building project	2017–2019	Public entity	2	1	32	NA
33	Tramway construction project	2017–2023	Public entity	0	5	508.5	BR, LPS
34	Hospital building project	2017–	Public entity	3	2	321	NA
35	Airport expansion project	2017–2021	Public entity	2	2	300	BR, LPS, TP
36	Road construction project	2017–2023	Public entity	0	4	258	BR, LPS
37	Hospital building project	2018–	Public entity	3	6	164	BR
38	Hospital building project	2017–2022	Public entity	2	3	141	BR
39	School building project	2018–2021	Public entity	1	4	36	BR
40	School building project	2018–2020	Public Entity	2	1	32.5	BR, CBA
41	Housing renovation project	2018–2021	Private company	2	2	8	BR
42	Church building project	2018–2020	State church	1	1	44	BR
43	Housing renovation project	2018–2021	Public entity	6	0	25	TP
44	Office and multipurpose building project	2018–2020	Public entity	1	1	22.3	BR
45	Hospital expansion building project	2021–2023	Public entity	3	4	118	NA
46	University building renovation project	2020–2023	Public entity	1	1	28	BR, LPS
47	Housing project	2019–2021	Private company	2	3	15	BR
48	Church building project	2018–2021	State church	2	3	10	NA
49	School and daycare building project	2018–	Public entity	4	1	53	NA
50	Hospital building project	2020–	Public entity	3	5	375	BR, LPS, TP
51	Sports stadium building project	2019–2023	Public entity	1	1	60	NA
52	Church building renovation project	2019–2021	Independent state church	2	2	13	NA

BR = Big Room, LPS = Last Planner System, TVD = Target Value Design, VM = Visual Management, TP = Takt planning, CBA = Chosen by Advantage, NA = Information not available

Table 1 (continued). Details of the projects

Project No.	Project type	Timeline	Client	No of SMEs	No of LEs	Budget [M€]	Lean methods used
53	Tramway construction project	2019–	Public entity	0	5	370	BR
54	Housing and commercial building project	2021–	Housing foundation	1	3	118.6	NA
55	School building project	2019–2021	Public entity	0	1	25	NA
56	Soccer hall project	2019–2020	Sports association	2	0	3.7	NA
57	Tramway construction project	2020–	Public entity	0	5	300	BR
58	Office renovation project	2021–2023	Public entity	2	2	22.9	NA
59	Hospital building project	2021–	Public entity	0	2	500	BR, LPS
60	Theatre building renovation project	2020–2023	Public entity	0	1	61.4	NA
61	School building project	2020–	Public entity	1	3	14	NA
62	Hospital building project	2022–	Public entity	3	5	225	BR
63	Police headquarters building project	2020–	Public entity	0	1	130	NA
64	Concert hall building project	2021–2023	Public entity	1	2	62.2	BR
65	Hospital building project	2022–	Public entity	5	7	838	BR
66	Housing renovation project	2022–	Non-profit foundation	2	0	10	NA
67	Museum building extension project	2022–	Public entity	0	1	55	NA
68	Prison building extension project	2021–	Public entity	0	1	56	NA
69	District heat seasonal storage project	2022–2023	Public entity	0	2	108.8	NA
70	Road construction project	2022–	Public entity	2	2	96	NA
71	Housing renovation project	2021–	Public entity	4	0	10	TP
72	Sports arena building project	2022–	Public entity	2	3	50	BR
73	Power plant project	2021–	Public entity	0	2	60	NA
74	Housing and multipurpose building project	2023–	Public entity	3	3	190	BR, TVD
75	Pedestrian and light traffic road project	2023–	Public entity	0	2	30	NA
76	Seawater heat extraction project	2022–	Public entity	0	2	496	NA
77	Multipurpose building project	2023–	Public entity	1	2	39	NA
78	Road construction project	2021–	Public entity	0	1	128	BR
79	Tramway depot building project	2023–	Public entity	2	3	275	BR
80	Tramway construction project	2023–	Public entity	0	4	335	BR

BR = Big Room, LPS = Last Planner System, TVD = Target Value Design, VM = Visual Management, TP = Takt planning, CBA = Chosen by Advantage, NA = Information not available

The data were analyzed as follows: 1) the alliance contractor companies were divided into SME and LE categories, 2) the groups were divided into two subgroups: contractors and designers, 3) the alliance contractor companies were summed by subgroup in step 2. The analysis allows

for an estimation of the number of SME partners in alliance projects and the distribution of ACs in Finland. By linking the timeline of ACs signed, it is also possible to assess how the involvement of SMEs in alliances has evolved over time in Finland.

In the last part of the analysis, the relative share of ACs in the total construction market was analyzed using public statistical data from Statistics Finland (SF) and the database of the Finnish Association for Quality in Construction (Finnish Association for Quality in Construction (FAQC), 2023). The aim of the analysis is to link the data to the research questions and provide explanations both quantitatively and over time. SF's data were used to estimate the size of the construction market, and FAQC's data were used to compile SME and LE data for analysis. The FAQC's data on certified construction companies in different turnover categories are reliable and, as required by the Finnish public procurement function, comprehensively cover the entire SME sector and LEs operating in the market.

FINDINGS

The mean budget value of the ACs in these projects was €113.1 million, and the median was €50.5 million. In terms of project value, Figure 1 shows the distribution of contract values of ACs in euros.

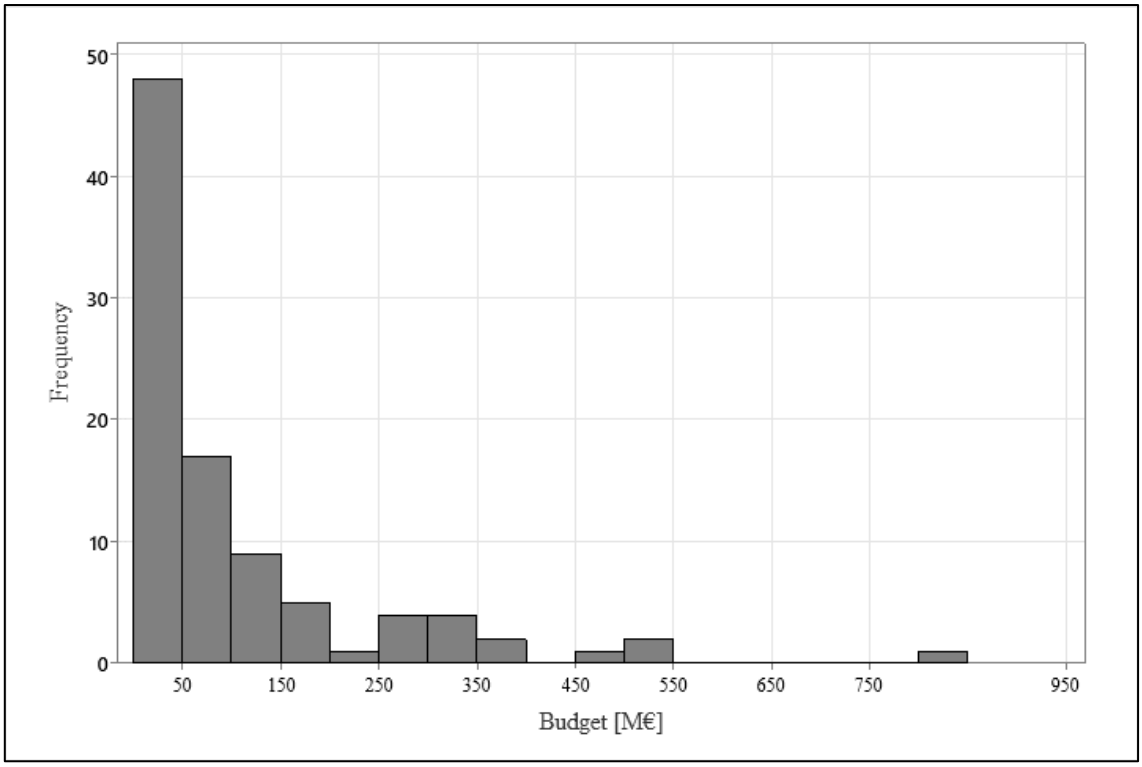

Figure 1. Distribution of the value of alliance contracts

Of the total, 40% of the parties to the ACs were SMEs, and 60% were LEs. There was a downward trend in the number of parties in the SME group, while there was a clear upward trend in the number of parties in the LE group. At the peak, the share of SME parties was 67% in 2012 and 2014, but the mean of the last four years of observation was 33% for the number of SME parties. The trends and relative proportions of AC parties by year are shown in Figure 2.

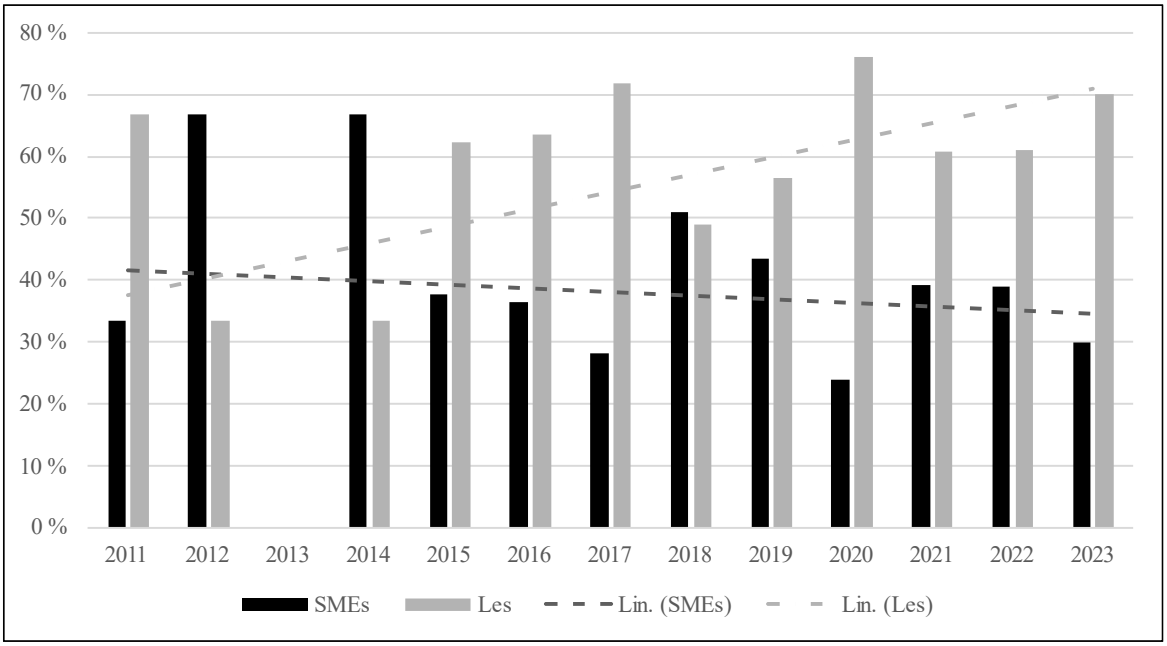

Figure 2. Distribution of ACs between SMEs and LEs

In the analysis phase, the same companies were identified as recurring alliance partners. Table 2 summarizes the 15 companies with the highest number of ACs.

Table 2. Distribution of ACs among companies

Company code	No. of alliance contracts	SME	LE	Contractor	Designer
C-19	21		X	X	
C-37	16		X		X
C-26	13		X		X
C-2	12		X	X	
C-7	12		X	X	
C-35	11		X		X
C-45	11		X		X
C-5	10		X		X
C-14	8	X			X
C-40	7		X	X	
C-18	6		X		X
C-42	6		X		X
C-11	5		X	X	
C-15	5	X			X
C-31	5		X	X	
Sum	148				

As demonstrated in Table 2, 15 companies, of which only 2 were SMEs, were selected 148 times out of 292 as contract partners. This means that 51% of the ACs have been signed with only 15 companies. Of these 15 companies, only 2 were SMEs, and both were architecture firms. In addition to this group of firms, ACs have been signed with 97 other firms, of which

79 are SMEs and 18 are LEs. In total, 292 AC parties were involved, with 115 individual firms in the surveyed data. This indicates that just 11% of the companies (all LEs) have signed more than half of the ACs. When considering contracts with a maximum budget value of €50 million, there were 67 SMEs and 65 LEs as contractors in these contracts, so the contracts were evenly split between the groups.

For the analysis period, the relative share of the budget value of ACs in the revenue value of the overall construction market was also assessed. In 12 years, the annual budget value of ACs has risen from €15 million to €1 billion. The revenue value of the construction market varied over the period from EUR 11.6 billion to EUR 12.9 billion (Statistics Finland, 2023). The relative share of ACs in the Finnish construction market has steadily increased, as illustrated in Figure 3.

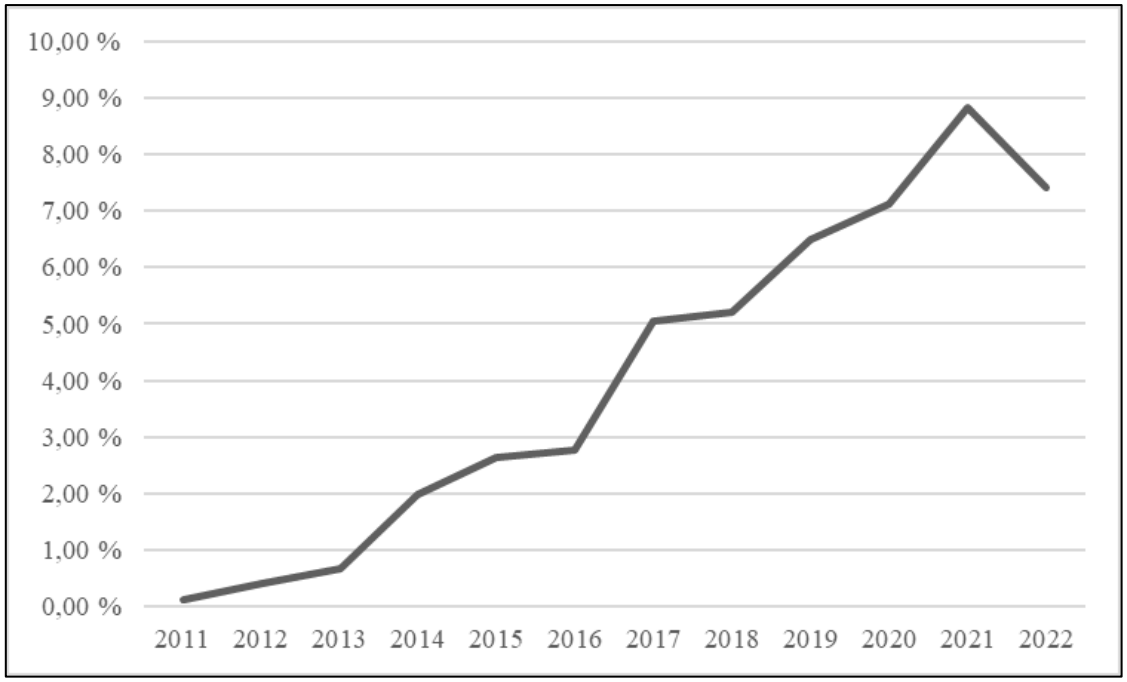

Figure 3. Relative share of ACs in Finland's total annual construction market

While the findings of this study suggest that ACs are mainly distributed among LEs already present in the market, only 81 SME companies have participated in ACs. However, this number represents about 9% of the total number of these SMEs in the construction sector, which was 857 in Finland in 2022 (FAQC, June 2023). For LEs, 31 out of 77 companies (about 40%) have participated in ACs in the period under review. According to the FAQC (June 2023), there were 77 LEs in Finland in 2022. The evidence indicates that a significantly higher number of LEs than SMEs have been awarded ACs. For 2022, the downturn in the construction sector in Europe caused by the pandemic and Russia's invasion of Ukraine is likely to be reflected in the downward trend in Figure 2.

The most often employed lean methods in AC projects were the "big room" and "last planner system." The latest lean construction innovation, "takt planning," was implemented in three projects, whereas "target value design" was utilized in two projects. "Visual management" and "choosing by advantages" were each utilized in a single project. Out of the 80 projects, 38 did not have any reference to the utilization of lean methods in public sources.

DISCUSSION

Alliance projects have been shown to bring many benefits to contracting parties, but there are limited studies available on how ACs are distributed among firms in the market. The three main

findings of this study from the projects studied are as follows: 1) the distribution of ACs in the group studied is skewed toward LEs, 2) a significant proportion of ACs is distributed among a few LEs, and 3) the relative share of ACs has increased relative to the size of the construction market throughout the follow-up period. Each of the three findings and their significance are discussed separately below.

One explanatory factor for the distribution of ACs to LEs may relate to the fact that the alliance model was mainly developed for large and complex construction projects (Hietajärvi et al., 2017). Large, risky, and complex construction projects inherently exclude smaller companies with a limited capacity to bear the risks of the project, regardless of the contract model. On the other hand, although large projects require large firms as contracting partners, the construction sector globally depends on SMEs, which, in practice, also do most of the work of these large firms, including work in alliance projects (Akintan & Morledge, 2013; Kale & Arditi, 2001). This has generated debate in the sector and in research on how trade contractors should be considered in the alliance model (Aslesen et al., 2018; Dainty et al., 2001). One issue raised by the data is that actors in the SME sector, such as smaller architectural and engineering firms, participate in alliances using traditional contracts with alliance partners, thus distributing the value of the alliances to the SME sector. More research is needed on these issues.

However, the findings indicate that the mean size of ACs was just over €100 million and the median was about half of that. The ACs studied included many smaller school and housing projects as well as renovations. Nevertheless, these contracts were also disproportionally awarded to LEs. These findings suggest that the objectives of public procurement in terms of enhancing SME opportunities may not be achieved as intended in the alliance model. Based on the data, SMEs seem to be mainly smaller design firms. The share of design costs in construction rarely rises above 10–20% of the contract value, so the question arises: Are alliances in practice large construction contracts for one large construction company? These observations open an interesting question for further research: Are these phenomena observed only country- or market-dependent, and what other factors are behind this observation?

The distribution of a significant proportion of ACs to just a few LEs also raises interesting questions. Are these actors pioneers and forerunners of the industry and, therefore, overrepresented in the survey (Holt, 2015)? Has the alliance model been a strategic choice for these companies, and their success in doing so is reflected prominently in the study (Kim & Park, 2006)? Is the alliance model a form of Schumpeterian hypothesis-like innovation to which only large companies can typically afford to dedicate their resources, and would this also explain the findings of this study (Nam & Tatum, 1989)? Does this finding suggest that relations between individuals in the sector (including decision makers in procurement entities) and large companies were already strong before the alliance model emerged and that cooperation has been further strengthened by the collaborative nature of ACs (Blayse & Manley, 2004)? Is it a game-theoretic setting where, as cooperation flourishes, an oligopolistic mechanism prevents the entry of the SME sector (De Valence, 2010)? Oligopolistic competition focuses on competition based on specialization in certain types of projects or forms of procurement in the construction sector or on alliances or partnerships with customers (Contractor & Lorange, 2002; De Valence, 2010). Instead of looking at these individual factors, further research, such as multivariate analysis, is recommended to seek these answers (Rencher, 2005).

The contribution of this empirical study is relevant since it also shows that the relative budget value of alliances is increasing in one local construction market, but on the opposite side of this trend, the share of SME companies in alliances is decreasing. Hence, more and more budget value is being transferred from ACs to LEs. However, this study cannot answer the question of why these differences have emerged and are growing between SMEs and LEs. Nevertheless, our research indicates that as a few major companies secure a larger portion of ACs, including those smaller ACs, there is potential for dominant industry leaders to exploit

their market power in a highly competitive setting. The market may thus progressively form toward oligopolies, leaving small and medium-sized businesses with diminishing opportunities to form partnerships with companies of similar scale. Therefore, we consider it important to investigate and record this issue, especially because many advocates and practitioners of alliances have emphasized the significant benefits of alliance agreements in public discussions and among researchers and practitioners (Davis & Love, 2011). These advantages include transparency, collaboration, and, among other benefits, the implementation of lean construction principles and practices (Schöttle et al., 2014).

The discovery that lean methods were not publicly emphasized or mentioned in nearly half of the projects suggests that the Finnish realization of alliance and lean may not always involve a combination of the two. Instead, it appears that certain ACs are executed without incorporating lean methods. However, the discovery that the "big room" and "last planner system" were the most frequently employed lean methods indicates that lean construction has indeed had an influence on Finnish alliance projects. It is also possible that ACs are perceived by contracting parties primarily as simply cooperation agreements, with no prerequisite for a lean component, and that the primary goals of alliances, which are frequently improved collaboration, joint decision-making, and joint risk sharing, are sufficient for many of the projects studied (Rahman & Kumaraswamy, 2002). Nevertheless, the data we gathered are not entirely comprehensive and conclusive. Specifically, in cases where there are no publicly available references for a project, conducting interviews or surveys might offer supplementary insights into the methodologies used. Further qualitative research is necessary to gain more clarity regarding the impact of lean in Finnish ACs.

LIMITATIONS

This study is not a statistical analysis of the randomness of the observed phenomena; therefore, a more detailed and statistically rigorous further study on a larger sample of projects is recommended. However, in many studies, it can be difficult to randomly allocate companies to experimental conditions, although this study has managed to obtain a complete sample of all ACs in one country over a 13-year period. Despite the geographical limitations, the complete sample size enhanced the reliability of the conclusions.

The main limitation of the study is its interpretation based solely on numbers without qualitative background data. However, there are intentions to gather qualitative data on the entire dataset in a later phase of the research project. Unfortunately, this qualitative data cannot be and is not included in this short conference paper. Another obvious limitation relates to the geographically limited market and language area. The reliability of the study is enhanced by the open data availability of the study to other researchers. Researchers are also willing to share data on request. The researchers also stressed the internal validity of the study by underlining the possibility of competing explanations. The study would benefit significantly from combining qualitative research with the numerical data currently being collected.

Another limitation is the comparison of the budget value with the revenue value of the construction sector. In reality, the budget value is spread over several years after the contract year; therefore, comparing the budget value to the annual turnover value as a relative figure is not absolutely correct. However, the approach used to present the time series contributes to minimizing this error.

One limitation of the reliability of the study is that the research sample was obtained from a company involved in the alliance facilitation business. It is therefore possible that the list is not exhaustive or that there are contracts on the list that are not ACs. The researchers have tried to mitigate this limitation by identifying the details of each contract from public sources, and some of the contracts on the list were other types of contracts (e.g., project management contracts) and have been excluded from the data. On the other hand, a company that has

collected information on its ACs has also included ACs in which it was not involved, which suggests neutrality in maintaining the list.

CONCLUSION

This study is motivated by a research gap on the role of SMEs and LEs in ACs. The study was carried out as an archival study covering all alliance construction projects in Finland over a period of 13 years. In addition, the relative change in the budget value of Acs in this market was assessed. The aim of this study is to stimulate debate among researchers and practitioners on the distribution of ACs in the construction sector and to encourage further quantitative and qualitative research.

The survey indicates that the number of ACs awarded to a group of LEs is clearly higher than to SMEs. The study's findings, with an even split between SMEs and LEs and a median contract size of just over €50 million, also raise a question about the effectiveness of the alliance model in promoting SME opportunities in public procurement. This difference suggests that further research is needed to understand the market-specific factors influencing this phenomenon and to assess whether the alliance model disproportionately benefits larger firms.

From the projects examined, it was found that a significant proportion of ACs are distributed among a few LEs. These LEs may be pioneers in their field, strategically choosing an alliance model of lean construction to succeed, or their dominance may be the result of innovation dynamics in which only large companies can afford to invest significant resources. Whatever the speculated reasons, in order to clarify these aspects, we encourage other researchers to explore the phenomenon in more depth than this short paper, which focuses on numbers and a limited geographical area, is able to accomplish.

The third central finding revealed that the relative budget value share of ACs has been increasing relative to the size of the construction market for 13 years and is approaching one-tenth of the total market. However, the share of SMEs in these alliances is decreasing. This trend suggests that the budget value of ACs is increasingly being transferred to LEs, which raises serious questions about the differences and opportunities between SMEs and LEs in the sector. The limited sample and data available in this study are not sufficient to assess the reasons; therefore, this study serves as an inspiration for further investigation into the dynamics of ACs, especially from the perspective of SMEs in the construction sector.

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