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RESEARCH ARTICLE

Operational Effectiveness in Building Renovation Business: Best Practices for Profitable Execution

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Abstract

Many building renovation (BR) companies struggle with profitability, which is an unresearched area in the BR business at the company level. This is worrying since BR companies are becoming increasingly important due to the growth of BR needs, like energy efficiency improvements to existing buildings. This study examines the BR business and profitability from an operational perspective, focusing on daily activities involved to complete renovations. The study reviews the operational effectiveness of BR companies, aiming to enhance understanding of how it influences profitability and to identify best practices contributing to profitability. Methodologically, the multiple case study design was used with two cases, high profitability (HP) and low profitability (LP), each consisting of small- and medium-sized (SME) BR companies. To review the operational effectiveness, semi-structured interviews were used with two frameworks: operational excellence through the 4P model and a model developed in this research, critical operational key elements (COKE) in the BR business. The findings show that operational effectiveness was seen similarly in both cases, but there were differences in execution. The HP case unconsciously possesses certain mainstreams of Lean principles, also visible in the four identified best practices: focus on customers, business orientation, striving for simplicity and clarity, and treasuring employees and subcontractors. The

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findings provide new insights into how operational effectiveness affects BR companies' profitability, and practitioners can utilize them for profitability improvements. The COKE model contributes to further research of the operational core of the BR business and can be applied in the business development of BR companies.

Keywords

Construction Industry; Building Renovation; Operational Effectiveness; Profitability; Best Practices

Introduction

Building renovation (BR), briefly described, includes renovation works aimed at improving the condition of existing buildings (Jensen and Maslesa, 2015). The importance of BR as a sector has increased in recent years, especially in developed countries (EC, 2020). Aging dwelling stocks combined with neglect in renovation works and a willingness to cut CO_2 emissions by improving energy efficiency in old buildings boost the sector (Jensen, et al., 2022). For example, the European Commission (2020) has—as a part of a strategy program "A Renovation Wave for Europe"—decided on an unprecedented stimulus package for energy renovations; the package aims to, at the minimum, double renovation rates in Europe in the next 10 years.

From the BR companies' perspective, the growing market most likely means that current companies can grow fast, mergers and acquisitions are probable, and totally new actors can enter the sector, further increasing competition in an already highly competitive market (Jensen, et al., 2017). This is critical since BR companies are already struggling to make a profitable business, and, for example, bankruptcies are not rare (Shehu, et al., 2014; Bilal, et al., 2019). The BR industry simply cannot afford to lose companies because they are increasingly needed to tackle the growing renovation needs. Profitability plays an important role in this equation since it is a basic requirement for companies to remain operational (Škuflić, et al., 2018). Slightly aggravated, but if we do not have enough BR companies, who will do the supplementary insulation and fit more energy-efficient windows for old buildings?

With this introduction, we come to the research gap: already approximately a decade ago, a research gap was detected in the research on BR companies and the profitability of their business (Vainio, 2011; Henn and Hoffman, 2013). Since then, research in the BR sector seems to have focused on themes related to improving energy efficiency in existing buildings (Khadra, et al., 2020). These—for sure also important—themes appear to have taken precedence over the profitability research. The research gap in profitability has only slightly narrowed, mostly at the project level and regarding companies' financial ratios (Bilal, et al., 2019; Sahlberg, et al., 2021; Rajala, et al., 2023). In order to improve BR companies' profitability, the business elements that influence it should be researched and understood comprehensively. We see this as the research problem. For example, when focusing only on the project level, many important aspects, such as company-level relationships with various customers and their impact on profitability, are ignored. In addition, knowing the ratios does not directly contribute to profitability improvements—various actions are needed to do that.

There are both strategic and operational elements that influence companies' profitability in the construction industry (Sarvari, et al., 2021). Both are important and worthy of research, but for the following reasons, the focus of this study is on operational elements in the BR sector. Namely, it is presented that compared to new construction business, BR includes more complexity, uncertainty, negative surprises, and cost overruns—and the business has lower levels of earnings before interest, taxes, depreciation, and amortization (EBITDA) and profit margin than new construction business (Bilal, et al., 2019; Rajala, et al., 2022). For these issues and lower absolute profitability, there are certain operational reasons that have been

raised in the scientific literature, such as design challenges concerning renovation targets and processes (Ali, 2010) as well as poor contractual practices (Zolkafli et al., 2012).

Including the above-presented design challenges and the poor contractual practices, this study presents 10 typical operational challenges for the BR business. These 10 challenges are based on our thorough literature review, and compared to the new construction business, they are recognized as more challenging and profitability-wise more critical for the BR business—or connect mainly to the BR sector as its special features. Through these challenges, this study presents 10 critical operational key elements (COKE) of the BR business: 1) contracts, 2) cooperation with buyer organizations, 3) coordinating work with building users, 4) demolition, 5) design, 6) material sourcing, 7) on-site logistics, 8) site surveys, 9) understanding the restrictions of regulation, and 10) work processes.

Before delving into COKE, this study examines the operational elements of the companies more broadly by applying a concept of operational excellence (OpEx). There are various definitions for OpEx (Found, et al., 2018), and one very practical version—the 4Ps—is seen as the most suitable to be utilized in this study. In the 4Ps, OpEx includes "excellent *people*, who establish excellent *partnerships* in order to achieve excellent *processes* to produce excellent *products*, which are able to delight the customers" (Dahlgaard and Dahlgaard, 1999). The 4P model also has a fifth element that lays the foundation for the 4Ps: *leadership*.

Profitability, OpEx, and COKE form the conceptual core of this study. OpEx comprises the overarching elements of the operational activities, while COKE dives into the finer details specific to the BR sector. Profitability emerges in two cases: the case of high profitability (HP) and the case of low profitability (LP), which both consist of five BR companies. By utilizing semi-structured interviews, the study compared how these extreme cases value and execute the elements of COKE and OpEx. In this way, the study delved into the research problem, and the objective was to enrich knowledge and understanding of how operational effectiveness influences the profitability of the BR companies and to ascertain the best practices of operational effectiveness that contribute to a profitable BR business. The research questions that this study answers are as follows:

When examining operational effectiveness through the elements of OpEx and COKE,

1. which elements do the HP and LP cases value and in which ways?
2. what best practices emerge from the HP case when compared to the LP case?

After the introduction, the research is organized as follows. The section Literature Review opens up the OpEx perspective and the background for COKE. After that, the section Research Design presents the methodology and research data. The section Findings and Discussion presents the results and found best practices. The last section, Conclusions, brings together the theoretical and practical contributions as well as limitations and suggestions for future research.

Literature review

BACKGROUND FOR OPEX

OpEx has many definitions, one of them being describing the highest quality and performance in all business operations that a company executes (Found, et al., 2018). Over the years, OpEx has gained various forms, and in recent years, discussion around the topic has increased significantly (Found, et al., 2018; Sony, 2019). Sony (2019), for example, developed the theoretical framework for sustainable OpEx; Sehnem, et al. (2019) approached OpEx from the perspective of supply chains; and McDermott, et al. (2021) explored the topic from the perspectives of healthcare systems and pandemics.

The roots of OpEx go back to the late 1980s and Lean thinking (Found, et al., 2018). Lean thinking in its original form can be summarized as being focused on value creation for customers as smoothly as possible while simultaneously striving for perfection (Sony, 2019). In many ways, similar features can be seen in OpEx; in 1995, the first time the term OpEx was mentioned in scientific literature by Treacy and Wiersema, the term was connected to product leadership and customer intimacy (Found, et al., 2018). Quite often, the history and models of OpEx have also been linked to Six Sigma, the quality control model that eliminates defects and therefore improves business processes (Found, et al., 2018; Sony, 2019).

The model of OpEx that was applied in our study, the 4Ps, was presented in 1999 (Dahlgaard and Dahlgaard). The first of the 4Ps, *people*, highlights the importance of employees. The second P, *partnerships*, includes both internal and external partners—like departments of a company, suppliers, and customers—and underlines their importance in terms of the performance of the company. By utilizing the excellent first two Ps, it would be possible to create the excellent third P, *processes.* The processes include, for example, key business and management processes. The fourth P, excellent *products*, is the result of the first three Ps. Eventually, in order to achieve all of the 4P elements, the model highlights that its fifth element, *leadership*, has a notable impact on the OpEx as a whole. The model emphasizes the importance of recruiting—and training—leaders with the right values and competencies.

The 4P model was chosen to be applied in this study because the model combines soft and hard, subjective and objective, and individual and organizational aspects (Dahlgaard, et al., 2013). Pimentel and Major (2016)—similar to our study—utilized the 4P model and a case study approach when they identified public sectors' key elements for the successful implementation of quality management processes. Lai and Yang (2017) also used the 4P model in their study; through the model, they assessed healthcare organizations and their management. In turn, Andriamanampisoa, et al. (2021) applied the 4P model when they assessed Lean Six Sigma's opportunities as a business excellence improver.

OpEx IN THE CONSTRUCTION INDUSTRY: PREVIOUS STUDIES AND THE RESEARCH GAP

The concept of OpEx has gained minor attention in the scientific literature considering the construction industry (Liu, et al., 2015; Zhang and Yong, 2017), and from the perspectives of the renovation sector and profitability, publications were not detected. In general, small- and medium-sized (SME) companies—of which the construction industry mainly consists (EC, 2020)—are an unresearched area from the perspective of OpEx (Wahab, et al., 2022).

However, a few studies considering the OpEx and construction industry in general were found. Liu, et al. (2015) utilized the concept of OpEx to be able to improve safety performance. In turn, Vaidyanathan and Mundoli (2014) presented the process and technology improvements in order to achieve OpEx. What is the most promising is that when Zhang and Yong (2017) reviewed the role of OpEx in the construction industry, they stated that construction companies have good premises to utilize the best models of OpEx concepts in order to develop their businesses. According to Zhang and Yong, the good premises are due to the feature that, in recent decades, especially the productivity challenges of the construction industry have been researched extensively; this is also reflected in the companies in the industry, as many of them have thus focused on improving at least some of the elements of OpEx.

BACKGROUND FOR COKE

The construction industry in general is known as a complex business where delays and cost overruns often cause profitability issues for the companies in the business (Bilal, et al., 2019). From an operational perspective, there are numerous researched challenges behind the delays and cost overruns, like a lack of competence of project managers and poor coordination between various actors and multiple work stages (Arditi, et al., 2000; Tripathi and Jha, 2018).

The mentioned challenges usually concern a significant part of the construction industry, the BR sector. It is presented that the BR sector also has its own special challenges that have turned out to be crucial to manage in terms of successful execution in the BR business (Arain, 2005; Singh, et al., 2014; Konstantinou, 2021).

In this study, we used the scoping review method to be able to identify all significant challenges in the BR business and to create the COKE model. We ended up applying the scoping review method since it is described as a useful literature review method for identifying key characteristics related to the researched concept (Pham et al., 2014). We used Google Scholar to find academic literature across an array of databases and publishing formats. The timeframe for the searched publications was 2000–2022. In the scoping review, we proceeded with four steps: 1) identified the research question of what the challenges in the BR business are, 2) identified and selected the relevant studies, 3) charted and gathered the data, and 4) summarized the data and reported the key challenges. When the challenges were identified through the scoping review, we changed the core ideas of each challenge into critical operational key elements (COKE). The identified challenges and the elements of COKE are presented in Figure 1.

It is reasonable to open up certain not-so-self-evident challenges more precisely. For example, *buyer organizations' inexperience* is seen as typical among customers, such as housing companies, because they are seen as one-time buyers in large projects who do not know the practices of the construction industry (D'Oca, et al., 2018; Rajala, et al., 2023). The feature can cause various issues, and therefore, the briefing of the buyer organization is vital.

Strict regulation in terms of modifications of old buildings is a challenge that can slow down the project or otherwise cause extra costs (Zolkafli, et al., 2012; Singh, et al., 2014). For example, updated building regulations by authorities can cause cost overruns due to corrections that need to be made in design (and eventually on the site) to be able to obey the regulations.

Design challenges arise due to weak or wrong base data, and matching the design with existing buildings causes difficulties (Arain, 2005; Noori, et al., 2016). Information outages between contractors and designers are also typical, and digitalization has not yet been fully utilized (Ali, 2010; Aldanondo, et al., 2014). A challenge that is closely related to design is *incomplete site surveys*. Site surveys often provide a basis for design or at least complement the base data used in design (Singh, et al., 2014). Typically, problems in site surveys are observed in the poor quality or deficient extent of the survey (Arain, 2005; Zolkafli, et al., 2012; Noori, et al., 2016). In many cases—and especially before the project has started—structures, for example, can even be inaccessible, thus complicating surveys.

Material challenges in turn are underlined by the fact that existing buildings require materials to be replaced or adapted to them (Noori, et al., 2016). That can be difficult from a sourcing perspective, as the materials can be hard to find, and they can be more expensive than expected (Arain, 2005; Singh, et al., 2014; Uotila, et al., 2020).

Another revealed challenge, *negative surprises in the demolition phase*, is typical in BR projects (Singh, et al., 2014). The demolition turns out to be more difficult than expected; for example, hazardous materials that complicate demolition are revealed, causing extra expenses for waste management (Buser and Bosch-Sijtsema, 2018).

COKE: PREVIOUS STUDIES AND THE RESEARCH GAP

As presented above, scientific literature has comprehensively delved into challenges—and therefore into clear focus areas—in the BR business. Three of the studies had a similar approach to figuring out the key elements for successful performance in the BR business as in our study. Zolkafli, et al. (2012) presented and analyzed risks in refurbishment projects. They also identified several operational elements that contractors should concentrate on to be able to reduce risks in projects. For example, standardized contract forms and

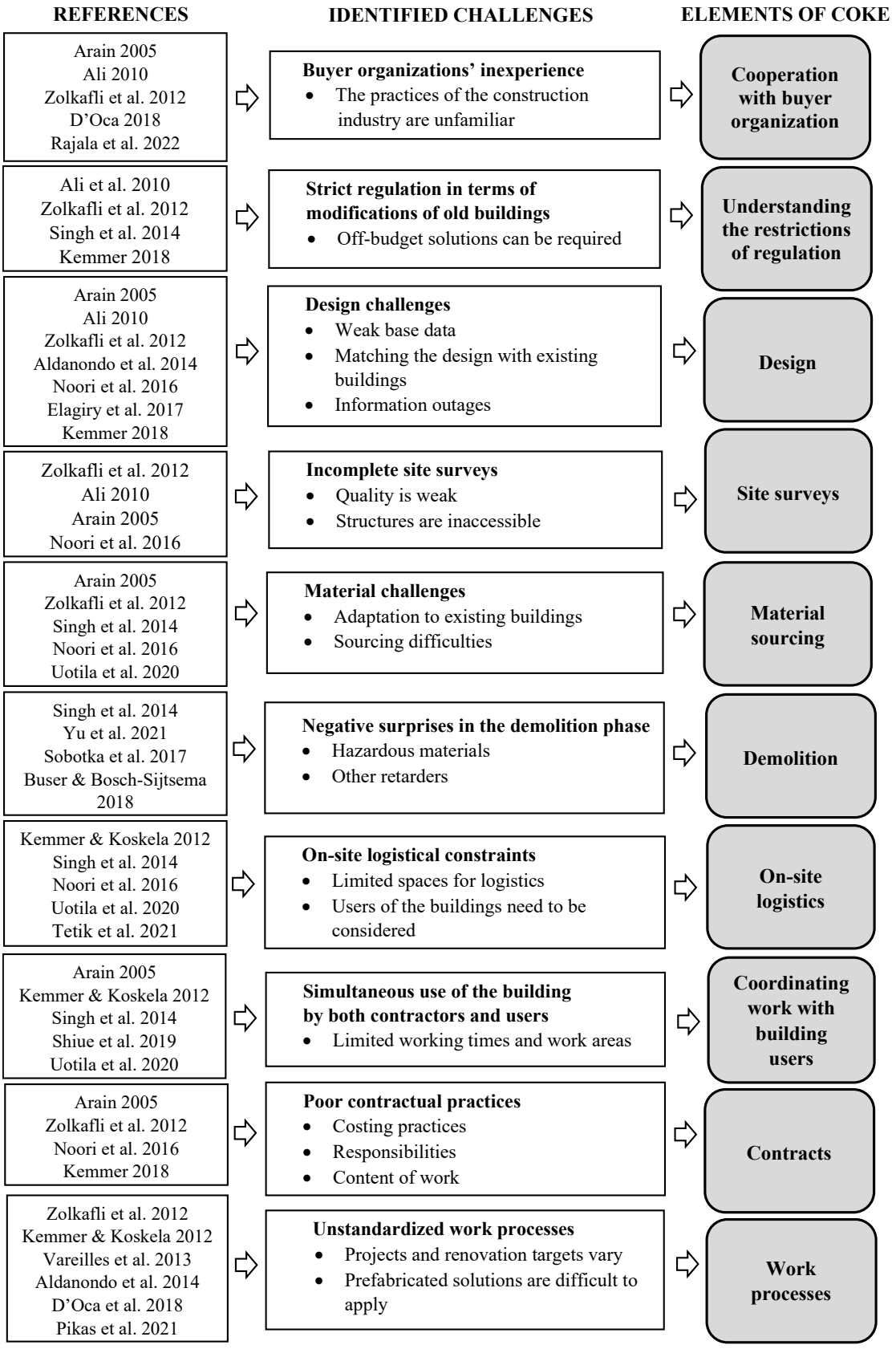

Figure 1. Identified challenges in the BR business and the elements of COKE. BR, building renovation; COKE, critical operational key elements

inclusive surveys about the sites were some of these. Arain (2005) reviewed the barriers in the management of refurbishment projects that may cause delays and cost overruns. In addition to contractual practices and site surveys, Arain presented that, for example, design, concurrent operation by owners, and cooperation between all project participants are the key elements that all project participants should focus on in order to avoid escalated costs and delays in projects. Singh, et al. (2014) also identified the operational key elements, but the main focus of their study was to develop a performance measurement system for BR projects.

The mentioned three studies present the operational key elements to focus on in order to better execute BR projects. However, here, we again come to the research gap presented in the introduction: these three studies focused on performance in general, at the project level or from the perspective of the customer of the project. None of the studies focused, like our study, on the critical operational key elements that affect especially the profitability of BR companies.

Research design

OVERVIEW OF METHODOLOGY

The main research method in this study was the multiple case study design including two cases. This qualitative design is seen as a good way to compare various objects with each other through discovered contrasts and similarities (Gustafsson, 2017). In addition, Campbell and Ahrens (1998) presented that the multiple case study design compared to the single case study design has the same advantages as the single case study design in capturing reality contexts, but it also enriches the validity and generalizability of the results.

In this study, the data for the cases were collected using semi-structured interviews. This method was chosen since the questions in the interviews were typically connected to the themes, but the nature of the questions was open-ended, and the focus was on subjective experiences offered by the interviewees (Blandford, 2004). In this way, we aimed to bring forth all essential information, not confined solely to the themes. Although semi-structured interviews bring flexibility, they still have a clear agenda that allows consistent comparisons between the answers of the respondents (Belina, 2023).

For analyzing the interviews, a comparative research approach was used by applying an analytical content analysis technique. Saunders, et al. (2015) presented that content analysis is a technique where systematic coding is used to reduce the many words of a text into fewer content categories in order to identify various trends of patterns from comparable data sources. We considered it important for our study that Saunders, et al. also presented that the method is well suited to organizational research.

It is worth mentioning that the financial statement analysis and the scoping review method have also had a significant role in this research. The use of the scoping review method was opened up while presenting the COKE model. Financial statement analysis has been utilized when selecting the companies for the cases. The method was a clear choice for our research since it is a method for reviewing the economic condition of companies through financial statements and financial ratios (Fridson and Alvarez, 2011).

Before going more into the details of the above-presented main methodologies and research data, let us summarize how the methods overall relate to each other as part of the analyses. The summary is presented in Figure 2.

THE CASES

This study has two cases: BR companies with HP and BR companies with LP. The five top-profit companies provide data for the HP case, while the five lowest-profit companies provide data for the LP case. Five companies per case were selected to ensure an in-depth understanding of the cases while also allowing for

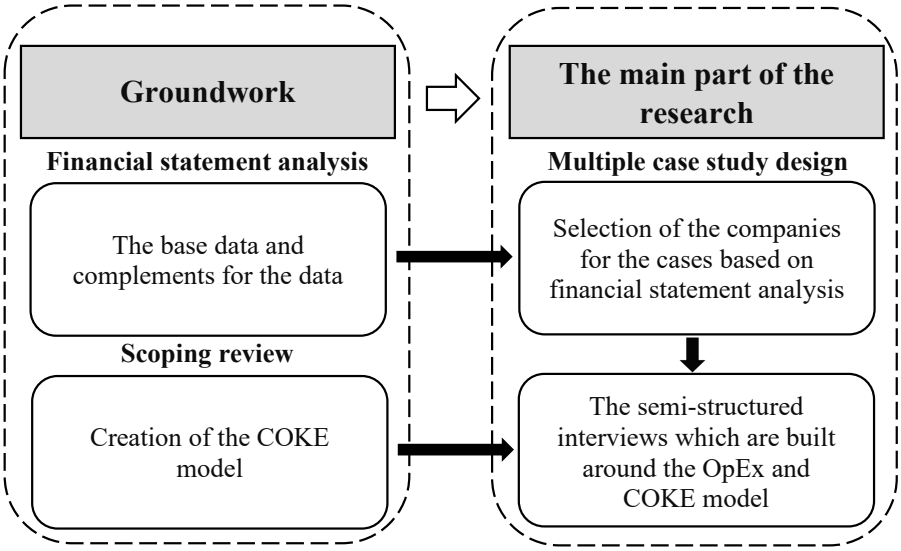

Figure 2. A summary of the applied methods.

the timely completion of the interviews and analysis within a reasonable workload. Extremes were chosen since extreme cases can provide a deeper insight into a researched phenomenon than average or typical cases (Chen, 2015). The companies for the cases were selected from a group of 59 Finnish BR companies (the selection process is presented in Appendix 1), which represent the European Commission's definition (EC, 2003) of SME companies.

The companies for the cases were selected using financial statement analysis. The selected profitability ratios were EBITDA margin and return on assets (ROA)—the formulas for the ratios are also presented in Appendix 1. Since EBITDA measures absolute profitability and ROA relative profitability, the chosen ratios complement each other and strengthen the profitability analysis (Gedviliene and Giliuviene, 2017). The data to calculate the ratios were collected from the companies' financial statements. The research timeframe covered 6 years (2017– 2022). We will also review how a particularly turbulent business environment affects the two cases' focus areas on COKE and OpEx and whether there are differences between the HP and LP cases. The years 2017–2019 represent relatively steady times, and the years 2020–2022 represent particularly turbulent times. The bases for the definition of turbulent years were the COVID-19 pandemic and the Russian invasion of Ukraine in 2022 with all the consequences they led to. The pandemic, for example, caused lockdowns (possible impacts on BR companies' work processes), and both crises caused inflation (possible difficulties, for example, for material sourcing) (Nickel, et al., 2022).

Table 1 presents the details of the profitability levels of the companies in the cases and how the levels relate to the whole group of the 59 BR companies. Table 1 also presents the focus areas of the companies in the cases regarding work and project types, as well as their profitability rankings among the 59 companies.

The companies of the cases were ranked among the 59 BR companies, as follows: for both EBITDA and ROA, top rankings based on 5-year means (financial statements from year 2022 were not yet completely available) were listed, and the lists were combined. To be able to consider EBITDA and ROA equally on the combined list, the ranking of the company on the combined list was defined by calculating weighted averages of EBITDA and ROA rankings. All 59 BR companies were included in the rankings. However, micro-sized companies were excluded from the cases because, during financial statement analysis, we detected that micro companies—due to their size compared to projects—often had exceptionally strong variations in annual revenues and profitability ratios. In addition, the companies that became bankrupt during or after the research timeframe were also excluded from the cases. Similarly, one company declined

to be interviewed. One company, which had just started its business at the beginning of the research timeframe, was also excluded—in the cases, we aimed to include companies that had established their presence on the market for a longer period of time. For these reasons, the companies selected for the cases do not strictly adhere to the ranking order (e.g., the companies ranked no. 2, 53, etc., are missing), but they still clearly represent the extremes of the profitability ranking.

Table 1. EBITDA and ROA values, profitability rankings, and focus area of the cases.

Cases and companies	EBITDA mean	ROA mean	Profitability ranking	Company size	Founded	**Focus area
*Total (59)	5.7	16.8				
HP	**17.1**	**34.8**				
H1	24.8	40.3	1	Small	1992	Wide
H2	20.9	33.2	3		1990	Pipe renovations
H3	12.1	35.5	4		1999	Wide
H4	9.7	37.8	6	Medium	2012	
H5	18.0	27.3	7	Small	1988	
LP	**−7.1**	**−1.6**				
L1	−4.3	−6.6	56	Small	2007	Wide
L2	−0.9	−5.9	55		2008	Modification works
L3	−32.5	−1.8	54		1993	Pipe renovations
L4	−0.7	0.1	52		1994	Modification works
L5	3.1	6.3	48	Medium	1997	Pipe renovations

Note. EBITDA, earnings before interest, taxes, depreciation, and amortization; ROA, return on assets.
Wide = many kinds of works and projects; Modification works = mainly premises and apartments modifications; pipe renovations = mainly refurbishing plumbing systems and bathrooms in apartment buildings.
*Nine companies include only a 4-year mean for EBITDA and ROA. For eight of these companies, there were no financial statements available for the year 2021, and one of the years for one company was seen as an outlier. In addition, one company became bankrupt in 2019.

DETAILS OF THE INTERVIEWS

The main data of this research consist of semi-structured interviews. The primary selection criterion for the interviewees was to represent a company in either the HP or LP cases. The secondary criterion was the selection of the right individuals within the respective companies; we prioritized executives who had worked for the company they represented throughout the entire research timeframe and consistently held leadership roles during that period. More details considering the interviewees are presented in Table 2.

The interviews were steered by following the interviewing forms. The OpEx part (Appendix 2) was covered first, followed by the COKE part (Appendix 3). In both parts, the interviewees were at first familiarized with the topic, and after that, they were asked to rank the elements of OpEx and COKE. The given rankings were utilized as the basis for the next step, the actual questions of the semi-structured interviews. Overall, the OpEx and COKE frameworks formed the themes for the interviews and the basis for the questions presented in the interviews.

Table 2. Details of the interviewees.

Cases and companies	Position	Experience in years	Years in the case company	Date of the interview
HP				
H1	CEO	31	31	6/4/2023
H2		24	10	3/4/2023
H3		41	23	11/4/2023
H4		11	10	15/3/2023
H5		45	35	2/3/2023
LP				
L1	CEO	30	15	1/3/2023
L2		23	23	16/3/2023
L3		50	30	29/3/2023
L4		27	12	6/4/2023
L5	CEO/COO	44/22	33/2	21/3/2023

Note: CEO, chief executive officer; COO, chief operating officer.

The analyses of the interviews were carried out separately for the cases. In the analysis, keywords and phrases considering the research question and the themes were discovered. These discoveries included, for example, various attitudes, opinions, and operation practices of the companies. The discovery proceeded through three stages: 1) using reduction, the keywords and phrases of the data were identified and written in a more concise form. 2) The main findings obtained from the reduction were grouped into subcategories, and the subcategories were titled descriptively. 3) The subcategories were combined into conclusions. The final step in the analysis process was to compare the results of the cases; the focus was on discovering similarities and differences between the cases.

In addition to the analyses of the interviews, we calculated the relative importance index (RII) for the ranked OpEx and COKE elements. As the cases covered only five companies each, a reliable statistical analysis through RII was not reasonable. Still, the RII results support the study well. These results serve as a compass in the result analysis, providing a broad overview that is further explored through the analysis of the interviews.

Findings and discussion

GENERAL OBSERVATIONS

The analyses of the interviews combined with the calculated RII provide various interesting general observations. First, let us show through the RII how the HP and LP cases ranked the elements of OpEx and COKE in the total research timeframe (Table 3). The closer the RII is to 1, the better (Kassem, et al., 2020).

As Table 3 presents, both the HP and LP cases valued the elements of OpEx and COKE similarly. Regarding OpEx, *partnerships* and *people* were ranked as the most important ones, followed by *products*

Table 3. A summary of the RII for OpEx and COKE.

OpEx (4Ps)	*RII	
	HP	LP
People	0.75	0.70
Partnerships	0.80	0.75
Processes	0.45	0.48
Products	0.50	0.58
COKE		
Cooperation with buyer organization	0.93	0.90
Understanding the restrictions of regulation	0.33	0.60
Design	0.80	0.83
Site surveys	0.40	0.33
Material sourcing	0.73	0.80
Demolition	0.53	0.53
On-site logistics	0.53	0.63
Coordinating work with building users	0.87	0.77
Contracts	0.73	0.63
Work processes	0.80	0.70

Note: RII, relative importance index; OpEx, operational excellence; COKE, critical operational key elements; HP, high profitability; LP, low profitability.

*RII = $\Sigma W/(A*N)$, where W is the weighting given to each element by the companies, A is the highest weight, and N is the total number of the companies per case. There were no significant changes in the values between the steady and turbulent times, and thus, the calculated RII values are average values for both timeframes.

and *processes* as the least important ones. The result is not a surprise if we look at the current nature of the construction industry. As Akinwale and Olusanya (2020) summed up, the importance of different skills at different times in the construction project makes subcontractors key actors in the construction industry. In addition, the BR business is stated to be an especially labor-intensive sector in the construction industry, highlighting the importance of *people* (Rajala, et al., 2022).

Considering COKE rankings, for example, *cooperation with buyer organizations*, *coordinating work with building users*, and *design* have been ranked among the most important elements. Arain (2005) presented similar elements as the most important ones in order to avoid escalated costs and delays in projects. Both HP and LP cases highlighted in the interviews that elements ranked as the least important ones are also meaningful, but the companies have usually not been able to influence those elements, or they have not been an issue for them. *Site surveys* are an interesting example of this since Zolkafili, et al. (2012) stated that site surveys should be the contractors' focus area in order to reduce risks in projects. However, they also raised *contracts* as an important operational element for contractors, and it is seen as quite important in the cases of our study.

The only substantial difference between the cases appears in *understanding the restrictions of regulation*. The LP case has ranked the element as more important compared to the HP case. This result reflects the

observation we made in analyzing the interviews; in particular, two of the LP companies—the two least profitable ones—emphasized that they operate in a complicated sector within the BR business, and it is essential to understand the restrictions of regulation. The complexity of projects was also brought up by the third company in the LP case (L5) when the element *on-site logistics* was dealt with. Even though it has been presented that niche and thus often complicated renovations can be more profitable compared to more general renovations (Rajala, et al., 2023), the complexity can also jeopardize profitability in project businesses if project management efforts are lacking (Kaufmann and Kock, 2022).

Table 3 states that there were no significant changes in the RII values between the steady and turbulent times. However, there was a certain variation in the rankings for steady and turbulent years regarding the LP case; for OpEx, there were a total of 9/20 changes, and for COKE, 8/50. In the HP case, all rankings remained the same despite the timeframe.

The finding of variation in the LP case describes the challenges that the LP companies brought up in the interviews. Comments like "There just has not been time for putting effort into processes…until we understood that we actually need to do something to be able to run a profitable business (L2)" were not exceptional among the LP companies. They have had to adjust their operations to be able to keep their business running. Based on the interviews, the variation was partially a consequence of the turbulent times but mainly due to internal issues within the companies, like changes in personnel or similar. In turn, the finding that the rankings of the HP case were unchanged in both timeframes strengthens the image that we obtained in the interviews: the HP companies have been able to focus on their refined operations, which have not really been disturbed by the turbulent times or any other distractions.

Noteworthy is that the focus areas of the companies' service specialization (presented in Table 1) can, on the one hand, slightly influence the ranking variety of the LP case, and on the other hand, the stability of the HP case. Four out of five HP companies have a wide focus area, while four out of five LP companies have a specialized focus area. Rajala, et al. (2023) presented in their study that more specialized companies can suffer from the small market segment during turbulent times, while companies with wider focus areas are more capable of running their business as usual.

As stated in the literature review, OpEx has its roots in Lean thinking. Lean principles have also been applied more and more in the construction industry in recent decades (Babalola, et al., 2019). The principles are diverse, but the following ones are commonly recognized also in the construction industry: simplicity in operations, time and cost-effectiveness, and continuous flow (Sarhan, et al., 2017; Hopp and Spearman, 2020). Interestingly, we found that the HP companies unconsciously possess almost exactly these Lean principles. They seem to be more straightforward, concrete, and business-oriented compared to the LP companies. These features came up in the interviewees' verbal communication but also in a few more concrete ways. The interviews with the companies of the HP case were on average 18% shorter, and the answers included 28% fewer words compared to the companies of the LP case. Nevertheless, we detected a nearly equal number (HP 35 and LP 36) of cost-, profitability-, and overall business-related sentences from both cases—meaning that the HP case used more business-related sentences. The sentences were, for example, "as a labor-intensive industry, you either lose money or make money on a construction site (H5)" and "you also need to understand that if people are expenses, they also need to bring money (H3)."

DETAILED OBSERVATIONS OF OpEx

As presented, both cases ranked the importance of OpEx elements similarly. However, the interviews revealed clear differences in how the cases perceive and consider the elements in their businesses. The most relevant of these differences are presented in Figure 3. In the figure, the size of the observation box always describes the number of companies in which the observation was found.

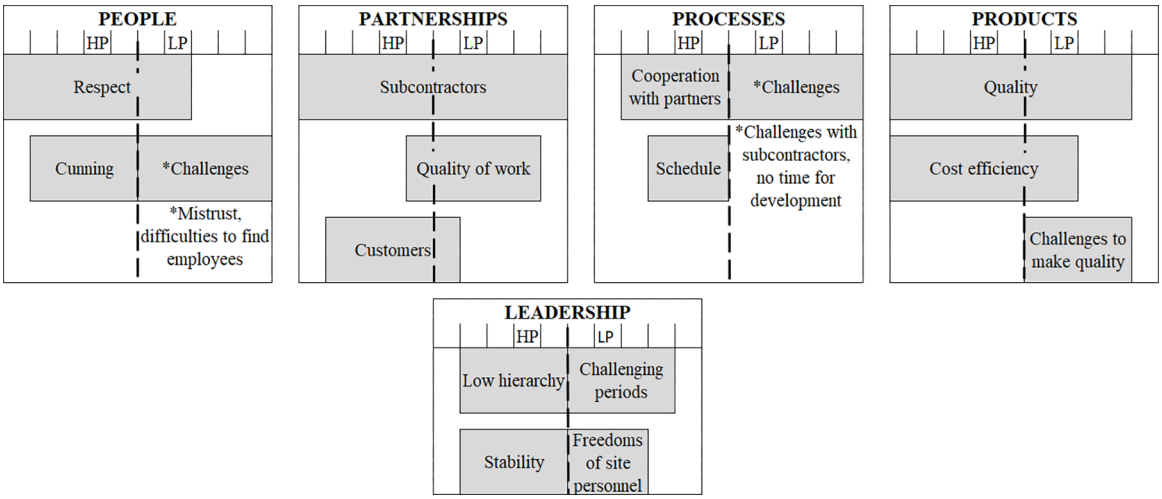

Figure 3. The most relevant similarities and differences of OpEx between the cases. OpEx, operational excellence

The challenges of the LP case are clearly visible in the OpEx. *Partnerships* were the only element of OpEx where the LP case's challenges did not occur significantly. Still, when reviewing the results by the element—and overlooking the challenges perceived in them—we can see a couple of interesting findings.

Regarding *people*, both cases seem to respect their personnel, but it is more visible in the HP case. The companies of the HP case said, for example, that "This will not work without people…people are our business cards (H3)" and "People are our brand and the face of our company (H4)." In the HP case, there were also practical examples of how to recognize employees. For example, one company said that by offering partner positions, senior salaried employees are committed to the company.

One interesting observation that we made regarding the HP case and *people* is what we describe as cunning. The feature relates to the ways the companies of the HP case plan their work and how they communicate to their employees—in fact, how they identify and utilize the best qualities of their people. These appeared, for example, through the following comments: "Some people just know what they are doing, and the rest need to be told what to do" and "We have committed people and partners whose strengths and weaknesses we know extremely well (H5)." The latter comment especially goes together with the definition of OpEx presented here: by utilizing the excellent first two Ps (*people* and *partnerships*), it would be possible to create the excellent third P, *processes*. The observation regarding cunning is also in line with the publication of Buckingham (2005), who presented that knowing the strengths and weaknesses of employees and utilizing this knowledge is the key to success.

In *partnerships*, both cases emphasize the importance of subcontractors. In terms of partnerships, the LP case seems to have a strong focus on the quality of work of their subcontractors. The observation is interesting since it brings out a feature that was detected in many parts of the interviews: at times, the LP companies seem to value the quality of work higher than a well-performing business. One company, for example, stated "we invest in quality, and it even comes before the financial side (L2)." In *partnerships*, the clearest difference between the cases is that the companies of the HP case bring the customers to the forefront. One company summarized it by saying that "partnerships are important, first of all, because they include customers (H1)."

In the HP case, this customer focus—and especially cooperation with the customers—is also visible in *processes* as the following citations present: "We get projects via framework contracts, and often these are such projects that they are not yet even designed. The customers just need something, and we start to

progress these needs together (H1)." and "With certain customers, we are looking for new ways of retaining the quality to a faster pace (H4)." The importance of customer orientation, and especially cooperation with customers in terms of success, has been highlighted in several studies considering the construction industry (Sarvari, et al., 2021).

One observation in *processes*, which appears in the HP case but not in the LP case, is ensuring the schedules. We detected comments like "already 2 or 3 weeks before the handover to the customer, we try to finish the works and have a quality check for ourselves (H1)" and "the schedules go immediately awry if a stakeholder cannot do their stage of the work. It is important that every single step is done on time (H5)." In the construction industry, keeping to the deadlines has typically been one of the aspects behind profitable business (Tripathi and Jha, 2018).

In terms of *products*, the importance of quality arises in both the HP and LP cases. Another matter that arises regarding *products* is cost efficiency. However, cost efficiency is more visible among the companies in the HP case (5/5) than in the LP (2/5) case. The observation is not surprising; cost efficiency is undoubtedly one of the prerequisites for a profitable business in the construction industry (Rajguru and Mahatme, 2015). With that notion, we come back to the observations that we presented in the section General Observations: HP companies seem to be more business-oriented, which shows up here through cost consciousness—which again goes to the core of Lean principles and the roots of OpEx.

Finally, a few words about *leadership*. The interviews showed us that there is no one and only way to lead a company to success or failure when it comes to profitability. In this sense, we came across the same phenomenon that Rehn (2018) wrote about. Rehn stated that leadership is a paradox; it is a diverse phenomenon in many ways, in different places and times. Regarding this, we noticed that in the leadership question, four out of five companies in the LP case highlighted some difficult periods that they had experienced in the research timeframe. One company stated: "In different timeframes, leadership has been different, not because of the turbulent times, but because of the company's internal issues (L2)." Difficulties in profitability have definitely affected leadership, and for sure, vice versa, leadership has also affected poor profitability. In the HP case, only one company stated that their leadership has slightly changed in the research timeframe and that it has been because of the turbulent times.

Despite the various answers regarding *leadership*, there were two interesting observations that emerged in the interviews, the first in the HP case and the second in the LP case. In the LP case, the freedom of the construction sites was somewhat emphasized. For example, one LP company stated "we have given the sites a lot of freedom and the project managers have been allowed to manage their sites at their own pace (L5)." Regarding the HP case and *leadership*, low hierarchy emerged clearly. The picture that we obtained from these observations in the interviews is that, even though the freedom of construction sites can be beneficial, the LP companies have not managed to support their sites enough. Low hierarchy among the HP case instead has supported the sites; the sites have known that the backup is there if needed. One of the HP companies, for example, stated: "We give a lot of responsibility, and we expect employees to take responsibility. In turn, we want to offer a backup, and, for example, I (CEO) always keep my door open for questions from all employees, this is not hierarchical. We encourage employees to ask about matters that they do not know, but we also proclaim that there is no need to be afraid of mistakes (H4)." A similar observation was presented by Diamantidis and Chatzoglou (2019), who showed that managers providing the right balance of giving support and responsibility are important in terms of positive employee performance.

DETAILED OBSERVATIONS OF COKE

In the detailed analysis of COKE, we want to bring out four elements. These elements did not differ much between the cases in the rankings, but these were the ones where we found the most significant differences in the analysis of the interviews.

Cooperation with buyer organization is important for both cases. In terms of the HP companies, three out of five companies present concrete actions of cooperation with the buyer organization. For example, quick reactions to customer needs and joint development work with customers in alliance projects arise from the interviews. Similar concrete examples were not detected in the LP case. Three of the LP companies seem to focus on a certain kind of customer probing to set the base for the cooperation. By probing, we mean that the companies evaluate what kind of customer they are facing and what kind of operating methods could work with them. This feature addresses the matter observed in the detailed observations of OpEx: the HP companies have a more customer-centric approach to the business—and therefore more long-term customers compared to the LP companies. Thus, HP companies know their customers better, and similar probing is not needed. In fact, it is presented that maintaining loyal, long-term customer relationships is generally crucial for running a profitable business (Hoe and Mansori, 2018).

Four of the LP companies ranked *design* among the most important elements of COKE. In three of these, design challenges and questioning of designers were unifying features in the responses of the interviews. One company expressed these challenges as follows: "Designs for the renovations are deficient. Designing competence is needed on the site, since designing unintendedly tends to turn into the responsibility of the site. We have to instruct designers and a lot of designs need to be redone (L3)."

Three of the HP companies ranked *design* among the most important elements, and two of those companies had a somewhat different approach to *design* compared to the LP companies. In their answers, these two companies emphasized the desire for solutions in problem cases and ways to adapt their work to the designs in the best possible way. These solution-centric features appear among the HP companies also regarding the element *coordinating work with building users.* Three HP companies, which had ranked this element among the most important ones, pointed out that the works need to be coordinated so that they will not disrupt the building users, but equally important is that "our employees have a calm working environment so that they can work smoothly (L5)." As shown in the sections above, the HP case's features—the ability to cooperate, business orientation, and support for employees—are visible here as well.

Finally, we present an observation regarding *contracts.* Even though, for example, Suriyanon, et al. (2023) underlined the importance of contracts in the construction industry, there were only two companies that ranked this element of COKE high. However, these two were very profitable companies (H1 and H3), and for them, the contracts have had an essential role in their operations. Both companies presented that they have long-term framework agreements with certain customers. The projects for these customers keep business—and cash flow—fairly stable. On top of this base, the companies seek suitable projects on a tendering basis. Since the construction industry is known as a cyclical business (Rajala, et al., 2022), these kinds of customer strategies can be a workable solution for balancing different cycles and operational execution. That is actually in line with what Fernández-López and Coto-Millán (2015) have pointed out. They stated that construction companies should adapt their business strategies to economic predictions.

SUMMARY AND BEST PRACTICES

This section presents a synthesis of the OpEx and COKE findings and discussions presented above. To be able to present the synthesis in an effective and memorable way, we have evolved the main findings as the four best practices of operational effectiveness in the BR business (Figure 4). Obviously, the best practices come from the HP case and can thus be seen as a basis for a profitable BR business.

Since the presented research gap concerns profitability research regarding BR companies and their business, there really are no studies to compare to our best practices of BR companies. However, as we have shown alongside the findings, in the construction industry in general, there are aligning observations made in the studies about the operational focus areas that can have a positive influence on companies' business performance. In addition, Zhang and Yong (2017), who delved into the numerous OpEx-related studies in

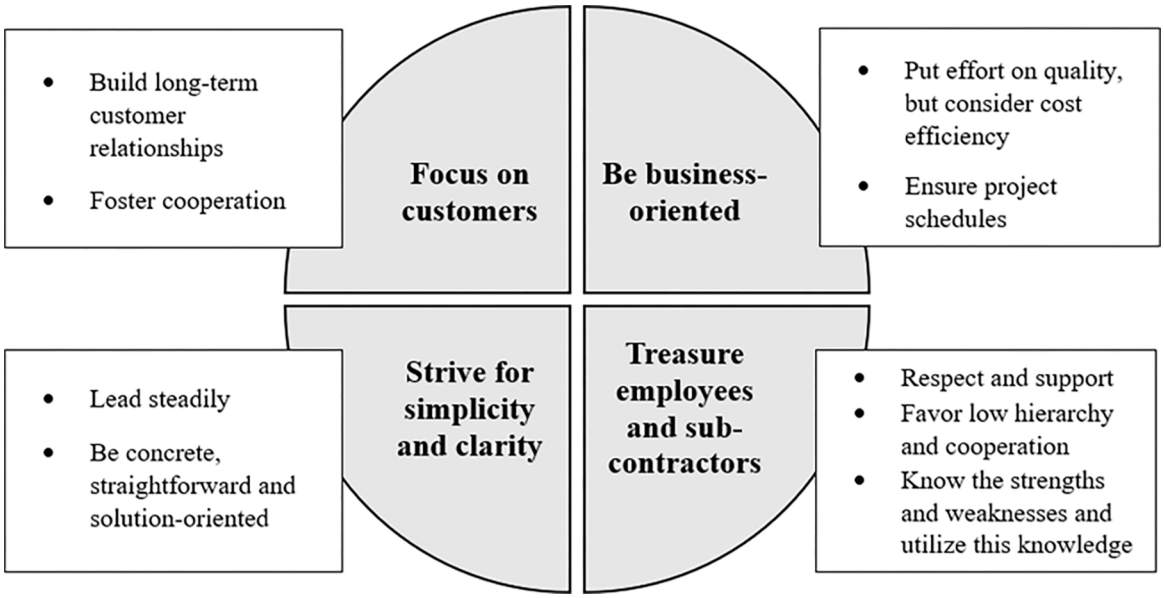

Figure 4. Best practices of operational effectiveness in the BR business. BR, building renovation

the construction industry, also showed similar guidelines as the presented best practices in this study. These include trust and collaboration between various stakeholders, efficient utilization of human resources, strong customer focus, cost efficiency, waste minimization, and effective management.

If there are many similarities to previous research, there is also one clear difference. The utilization of digitalization, which is often raised positively in the research on operational effectiveness in the construction industry (Hossain and Nadeem, 2019), did not end up in the best practices. The utilization of digitalization was actually not emphasized at all among the HP or LP companies, and it is one possible development target for BR companies.

Finally, when comparing the best practices beyond industry boundaries, we come back to the similarities. Namely, the clearest similarities with the best practices can be seen when reviewing the roots of OpEx: Lean principles. We presented in the literature review and general findings that Lean principles cover simplicity in operations (very similar with *strive for simplicity and clarity*), time and cost efficiency (*be business-oriented*), and a continuous flow through which value creation for customers is created (*focus on customers*). Regarding *treasuring employees and subcontractors*, the Lean principles that we presented do not match immediately. However, this best practice could also be connected to Lean thinking. Hopp and Spearman (2020) presented that it is people working within organizations who develop and oversee systems so that Lean principles can be utilized. If we think about how the presented best practices can be utilized in the organizations, we see that it is indeed people who will play an important role in that as well. Hence, the next step regarding the best practices would be implementing and testing them, for example, in unprofitable companies.

Conclusions

Scientifically, the study narrows the detected research gap regarding the profitability of the BR business by presenting new insights into how operational effectiveness affects the profitability of BR companies and which elements can lead to a profitable BR business. In addition, COKE provides academia with a comprehensive model for studying the BR-specific operational elements even more profoundly and from

various perspectives. In this study, the perspective was on the profitability of BR companies, and COKE was seen as a great asset specifically for delving into the operational core characteristics of the BR sector.

As practical implications, this study presents four best practices for operational effectiveness in the BR business. The best practices are a synthesis of the concrete operational actions, which were presented alongside the findings and discussion section, and which emerged from the SME HP BR companies. We believe that by directing operations toward the best practices and by utilizing concrete examples of operational actions, many SME BR companies with low profitability could improve their profitability. That is how, in the best case, for example, bankruptcies in the growing industry can be avoided.

In addition to the best practices, the COKE model also provides implications for the BR industry and its actors. This is the first research that investigated how companies in the BR industry perceive BR-specific operational fundamentals from a business standpoint using the COKE model. This new information is something that companies can utilize in general, but the COKE model also has the potential to be used in a few concrete ways for business development. Namely, we see COKE as a base for developing a verification tool for the planning phases of a project to ensure that the most central BR-specific elements are sufficiently considered and in order before the project starts. By summarizing a company's projects, this verification tool can also be used at the company level to assess and improve the company's overall approach to BR-specific planning and execution. Regarding the company level, we also see COKE as a framework for evaluating a company's BR-specific operational strengths and weaknesses. For example, executives can gather information from projects regarding how COKE has been realized: whether there have been problems with the same elements in unprofitable projects or whether certain elements have been especially invested in profitable projects. Based on the information, companies and their executives can revamp operations.

Moreover, while we look into topics for further research, we also recognize the limitations of this study. COKE focuses on operational challenges that when compared to the new construction business, are recognized as more challenging for the BR business, or are its special features. Thus, there can be some relevant operational elements that are excluded from the model. For example, tender calculation could be one of those elements that we, in this case, saw as equally important for both the new construction and the BR sectors. For further research, it would be reasonable to also research the effect of such elements on the operational effectiveness and profitability of BR companies—at that stage, it would make sense to expand the research to larger companies and different countries. Furthermore, as we had a strong operational focus in the study, it would be interesting to expand a similar research setting to the strategic side, for example, to strategic management. Finally, as we already mentioned when presenting the best practices, testing them in companies is important, and this also applies to COKE in business development usage. Such research could include guidance and possible implementation success stories.

Appendix

APPENDIX 1. BACKGROUND OF THE BASE DATA (59 COMPANIES) AND FORMULAS FOR THE RATIOS.

Background of the company selection process

The company selection process was originally presented in the publication of Rajala, et al. (2022). Figure 1A below presents the details of the process. New building construction companies (NB) were a part of the original research and are therefore also presented in Figure 1A. In this study, we only focused on BR companies. The research timeframe for the background study was 2005–2019. Therefore, we supplemented the calculated profitability ratios for the years 2020–2021. One company from the original group became bankrupt before 2017 and was therefore excluded.

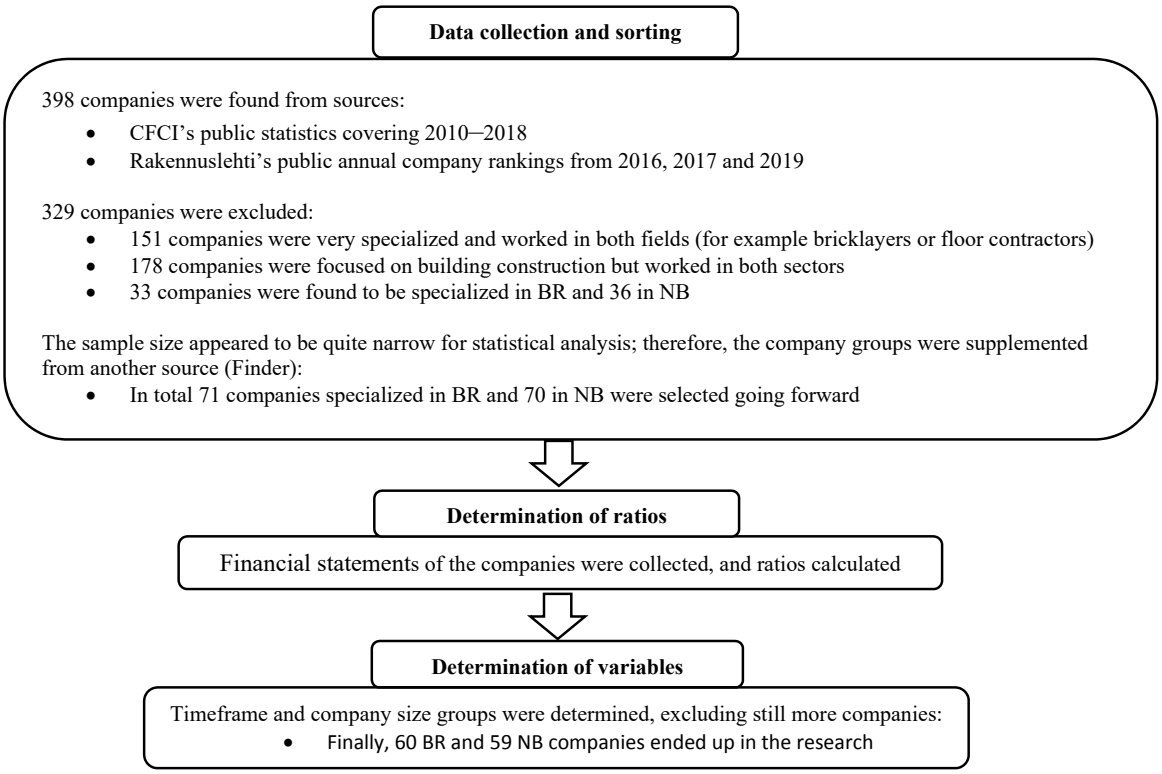

Figure 1A. Main stages of the company selection process.

Formulas for the selected ratios

The formulas (Table 1A) for the ratios are calculated based on the definitions of the Committee for Corporate Analysis (2009).

Table 1A. The selected ratios and formulas for the ratios.

Ratio	Calculation method
EBITDA Margin	$\frac{EBITDA}{(Turnover + other\ operating\ incomes)} * 100\%$
ROA	$\frac{(Net\ profit + Financial\ expenses + Taxes)}{Average\ adjusted\ balance\ sheet\ in\ accounting\ period} * 100\%$

APPENDIX 2. THE INTERVIEW FORM FOR OPEX

Evaluation and questions of OpEx

Rank the above-presented elements of OpEx on a scale of 1–4 based on what have been your company's focus areas in business.

4 = The most important … 1 = The least important

Each of the four numbers needs to be filled in for both timeframes.

The elements of OpEx according to the 4Ps	The years 2017–2019 (steady years)	The years 2020–2022 (turbulent years due to the COVID-19 pandemic and the Russian invasion of Ukraine in 2022 with their consequences)
People (A)		
Partners (B)		
Processes (C)		
Products (D)		

1. You ranked A, B, C, or D as the most important element in the steady years and A, B, C, or D as the most important element in the turbulent years—why? How were these elements considered in your business?
2. The same question as above, but regarding the elements that you ranked as second important in both timeframes?
3. The same question as above, but regarding the elements that you ranked as third important in both timeframes?
4. The same question as above, but regarding the elements that you ranked as fourth important in both timeframes?
5. How would you describe leadership in your company considering the total research timeframe 2017–2022? What kind of factors have your company focused on in leadership and what kind of possible differences have there been between the steady and turbulent years?

APPENDIX 3. THE INTERVIEW FORM FOR COKE

Evaluation and questions of COKE

From both presented timeframes, select three elements of COKE that your company has focused on the most and three elements that your company has focused on the least.

The most focused elements will be marked with number 3 and the least focused with number 1. The elements that are left blank are marked with number 2, as moderately focused elements.

Critical operational key elements (COKE)	The years 2017–2019 (steady years)	The years 2020–2022 (turbulent years)
Cooperation with buyer organization		
Understanding the restrictions of regulation		
Design		
Site surveys		
Material sourcing		

Critical operational key elements (COKE)	The years 2017–2019 (steady years)	The years 2020–2022 (turbulent years)
Demolition		
On-site logistics		
Coordinating work with building users		
Contracts		
Work processes		

6. You ranked X, X, or X as the most important elements in the steady years and X, X, or X as the most important elements in the turbulent years—why? How were these elements considered in your company's business?
7. You ranked X, X, or X as the least important elements in the steady years and X, X, or X as the least important elements in the turbulent years—why? How were these elements considered in your company's business?

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