Bispevika Project: Research for Constructing a Collaborative Value Chain

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Abstract

Purpose – Identify what kind of research we need to reach extraordinary performance in value chains in construction projects.

Design/Methodology/Approach – Theory and qualitative case study (document study and interviews in the Bispevika project).

Findings – To change the collaborative game and transform the construction industry, there is a need for research on projects with extraordinary ambitions. The research needs to bridge from strategic level down into specific details in operations. We need contributions that do not follow the general tendency to limit perspectives and focus small, isolated questions. Research must be designed in a multidisciplinary fashion that includes aspects on all levels from individuals to across organisations in the project and even the industry itself. Research also needs to define a new "business model". If not, research can become irrelevant rather than being a relevant partner producing knowledge and insights in the transformation of the construction industry.

Research Limitations/Implications – For researchers, this result indicates that there is a need for more complex, interdisciplinary research to be able to cover both the strategic and fundamental levels.

Practical Implications – The Bispevika project shows that both strategic direction and fundamental issues need attention and practical action.

Originality/Value – The research raises important aspects of a research agenda for the industry. This paper argues how research can contribute with relevant insights and will help define a more ambitious research agenda where the construction industries' challenges can become the catalyst for also transforming future research design.

Keywords Construction business, Value chain, Supplier development, Collaborative mindset, Organizing projects, Ambitions and goal setting, Project performance

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1. Introduction

There is a widespread acknowledgement in the research community that the construction industry is less productive than other industries (Egan, 1998; Ahmad *et al.*, 2018) and that construction projects are more costly than optimal, both as investments (Flyvbjerg *et al.*, 2003) and resulting operations (Boge *et al.*, 2017). Further, construction projects typically produces less benefits (Alexander *et al.*, 2013) and consequently less value (Leiringer and Bröchner, 2010) than we would expect from one of the most important industries in society (Espelien *et al.*, 2015). This needs to change. We also know that the construction industry invest very little in R&D, 1 per cent of turnover in average in Norway. We believe this has to change too if the construction companies are to keep their position. If they do not innovate – they will be out of business. This motivates the authors to look closer at the consequences for research in this context.

The construction industry itself and its business environment are changing with increasing interdependencies and specialist competence (Teece, 2010). So are technology and the project content and scope – and thus the over-all complexity (Geraldi *et al.*, 2012). World Economic Forum (WEF, 2016) concludes that the industry will have to make an extraordinary effort to improve. There is a need for actors that walk up new paths and cases that show how it can be done.

One way of walking up new paths for research is to investigate its own being by describing and categorising the bits and pieces of an ambitious research policy expressed in ontology. It is pertinent to ask if we understand the role of research in a changing context such as the construction industry. Can research best reach its goals of by investigating single parts or as co-existing entities in a group or a social system?

From an epistemological point of view, how can research capture the complexity and produce knowledge relevant for the transformation of the construction industry? A relevant issue can therefore be to discuss the assumptions research has on itself. How knowledge is developed based upon other perceptions and experiences. In these terms, we see knowledge production as a social construction where different assumptions from different theories can be bridged.

From an axiological angle, new research policy also needs to discuss what kind of values should guide and express these ambitions and what outcome this will lead to. Will these ambitions only seek to understand, or also seek to be an innovation enabler for the construction industry?

This paper is a theory- and case-study that discusses how research can contribute to a construction project that wants to be a "game changer" in terms of operationalization of extreme ambitions. We question the ambitions of the research community. Can the extreme ambitions of the case project also influence the ambitions of researchers and illuminate how research will have to change? We expect research to develop in accordance with the changes the construction industry is facing. The research question is thus: What kind of extraordinary ambitions and design must research itself have to produce knowledge that is more relevant and help construction projects reach extraordinary performance?

2. The case project

The Bispevika project is one of the most ambitious construction projects in Norway and aims at changing the collaborative patterns of the industry. For both client and contractor

this is a transformational journey bridging across eight single building projects over a five-year period where the joint scope of both parties is expressed in four main goals:

(1) Make Bispevika the most attractive part of the city of Oslo
(2) Create the best place to live and have the most pleased users
(3) Create 40 per cent more value than comparable construction projects
(4) Change the collaborative patterns of the construction industry

To be able to reach such ambitious goals, the project owner and client, OSU, invited the largest construction companies in Norway to suggest how to reach performance levels beyond what is currently considered best practice in the industry. The CEO of OSU defined the goal of 40 per cent more value. Being a former world champion in rowing, he said that to reach extraordinary performance one needs to set the goals as high as possible. He said, "*20% is good. 40% is better, so why not!*" The AF Group won the position as contractor and the two parties defined the goals together. The project was set up in 2016 and holds 1,200 flats and 150,000 m^2 planned for completion in 2021. The business scope of the project for the contractor is approximately 4.5 BNOK. AF Group is one of the largest construction companies in Norway, but as in most other construction projects, they only cover approximately 20 per cent of the total cost of construction with their own resources. The rest – 80 per cent – AF needs to cover by hiring highly specialized subcontractors. To reach the ambitious goals forces the main contractor towards a more collaborative behaviour. Finding collaborating partners and developing their business model in the value chain with corresponding high ambitions is, therefore, fundamental for success.

3. Method

At its base, this research is an exploratory case study (Yin, 2017). It is firmly placed in the qualitative research tradition based on a constructivist epistemology. Case study as a method can contribute a lot to studies of purchasing and supply development (Dubois and Araujo, 2007). The research activity in Bispevika looks at the value-chain of the project – the relations between key parties: how parties team up and how relations are developed. This will be reported later. The current paper is limited to understanding how research strategy can help meet extraordinary high ambitions.

Researchers first studied formal descriptions of the project organisation, its ambitious goals and formal contracts (document study). Then, to address and challenge the project supply chain a series of semi-structured, in-depth interviews with seven individuals, representing six companies was conducted. Individuals where chosen owing to their key role in developing relations with other parties involved, and the number of interviews was a result of resource and time limitations. To strengthen the analysis and secure detailed knowledge of the empirical reality of the project, the two academic researchers teamed up with one key member of the project organisation – an individual with research background. This individual assisted in interpretation and fact checking, but did not take part in any step of the interviews.

This research is limited to describing the reality in one single case and thus not transferable to other situations. Following Yin (2017, p 45), the research has a high degree of construct validity, combining different sources of data. It has high internal validity owing to use of direct internal first-hand in-depth knowledge. It has limited external validity, but a strong basis in documented study protocol and database that secure reliability.

4. Theory

When we talk about performance and performance improvement, we naturally also touch upon the concepts of creativity and innovation. These concepts are related and partly overlapping. Hughes *et al.* (2018, p 551) develops a new and improved definition of these concepts:

> *Workplace creativity concerns the cognitive and behavioral processes applied when attempting to generate novel ideas. Workplace innovation concerns the process when attempting to implement new ideas. Specifically, innovation involves some combination of problem/opportunity identification, the introduction, adoption or modification of new ideas germane to organizational needs, the promotion of these ideas, and the practical implementation of these ideas.*

The authors expect implementing creativity and innovation to be central elements of the improvement strategy to make project organizations able to perform better. Leadership literature and leadership research often focus these issues. Different leader traits (e.g. personality, IQ, etc.), leader behaviours (e.g. communicativeness), leader styles (e.g. empowering, dominating, etc.) and leadership approaches (e.g. transactional-, transformational-, authentic-leadership, etc.) are discussed in an overwhelming number of leadership literature. Some styles are found to stimulate creativity and innovation, while others stifle it. Research itself seems to be unclear and confusing, or at least ambiguous about how this works. Hughes *et al.* (2018, p 554) clarifies that many leader variables share roughly equivalent association with follower creativity and innovation. The variables researched are also in theory influencing creativity and innovation through the same mediating mechanisms.

Hughes *et al.* (2018), referring to Shaffer, DeGeest and Li (2016), therefore, finds that the observed homogeneity in this overly complex leadership literature is a reflection of construct proliferation and construct redundancy within leadership research. The approach to selecting mediators in the models is unsystematic. In plain words, this means some of the problems with implementing better leadership and improving performance is the researchers' fault. In reality, this complexity probably hides inconsistencies, overlaps and gaps in the research. Hughes *et al.* find that the complexity in this research hinders understanding, theory building and development of practical recommendation. They further conclude that future research needs to make a concerted effort, using appropriate study designs, to address the relative and incremental effects of different leader variables effect on creativity and innovation.

We suggest this must be the case also in other research, for instance concerning procurement and contracts, development of high performing supply chains etc. in construction. Lahdenperä (2012, p 72) saw this when he observed that the distinction between different alliancing contract models was repeatedly referred to in research, without reaching any clarity. He gives the example of how emergence and diffusion of alliance contracting represents a challenge for research. He calls out for a type of research that aids the project owner in the selection of appropriate project delivery system for an individual project. Researchers must make the effort to reveal the differences in detail and comprehensively. Lahdenperä himself demonstrates one approach to this in his paper (Lahdenperä, 2012).

Research may introduce new knowledge and fresh ideas to organizations. Whether generating and implementing ideas lead to improved organizational outcome is not a feature of either creativity or innovation; rather, it may be an outcome (Hughes et al. 2018). Learning is another outcome. Gardiner (2018) observes this in his empirical study into learning mechanisms used by project-based organizations. He reports that his material demonstrates the importance of understanding the evolutionary development of capabilities and the nested character of the processes of developing capabilities. He finds a need for studying the evolution of these processes over time – not only in a short period or as single events. His

study clearly points out the centrality of addressing not only the overall strategic capabilities, but also the nested processes occurring at the practice level.

There is a need for research to involve in multilevel analysis and understanding of these processes of capability development and to engage in analysis of the micro-foundations of capability development (Gardiner, 2018 p 24). When companies need to build this multidisciplinary learning capability, research must also develop and express the needed capability to produce relevant knowledge for the transformation of the construction industry. Research must, therefore, develop its own ontology to be able to express its own ambitions. Then, it is possible to make a gap analysis to describe the actions needed to build the necessary capabilities for reaching this ambition, thus securing the relevance of research in this context.

5. Discussion

Across all interviews, there was a prominent use of the idiomatic description of the actors within the industry as "king of their own hill" also known as the silo-mentality. Further questioning revealed a frustration towards other actors for not understanding their needs while not acknowledging the needs of the other actors. However, there was a sober attitude among participants that they themselves were not perfect either, and everyone seemed to hope for this project to be different and wanted to be part of this project as an opportunity to change themselves and the industry. In regards to this, interviewees often referred to the ambitions (i.e. goals) of the project as an enabler for this mentality.

The silo-mentality and lack of knowledge regarding how other actors generate value for themselves among interviewees might translate over to the challenges researchers face to capture these nuances. A research team has limited time and resources to conduct interviews and single-case studies have a tendency to seem weak from a methodological point of view (Flyvbjerg, 2006). The ability to understand the reality of a given organization from the outside is difficult. The conclusions and potential recommendations for better practices are highly dependent on these nuances. Researchers are seldom close enough to see them.

The variances between projects and organizations are also highly dependent on the people within them, some being more suited for collaboration and some more suited for completion. Even then, people working on a project are not constant either. Individuals are leaving and being assigned to new projects. As the project progressed, this undoubtedly affected the organization to some degree. If one sees the project as the experiment, these changes and their effects are often difficult to measure and control. Research needs to be close to the project over time to see these effects. "Snapshots" at a certain point in time will not expose these effects.

One aspect of the interviews concerned the contract of the project as a mechanism to regulate the relations between actors. The case is classified as a partnering project. Thus, the researchers had an interest in how the formal structure affects the collaboration within. As the contract is a fairly concise and small part of the project, it should be well suited for such a limited study. Research literature holds the contract as a central part of the project – a means to achieve expected performance. However, talking to the people responsible for the execution of the project, the contract was of little relevance to their daily practice. There was recognition that the contract enables collaboration, but at the same time, the interviewees put more weight on attitudes of key personnel and their willingness to cooperate. This illustrates how a key instrument of project control is reduced to a formality, whereas other aspects under umbrella terms such as culture or collaboration stands out as more important in the current situation. At another point in time, under other circumstances or in other perspectives, contract would still be important. This serves as an illustration that research

also need to see things in light of different methods and disciplines to understand the qualities of defined system elements.

The interviews reveal acknowledgement of the need to collaborate across different parties in the value chain and combine different disciplines as design, engineering, logistics, management, administration and construction planning, among others. However, there were different views on how project management should rig the collaboration to achieve maximum performance. This collaborative recognition should also spur research in the same direction, matching the transformative ambition of the context it aims to cover.

Research is similar in that we can easily recognize it as organized in silos, with different expertise, research methods, traditions and assumptions about the world. Each research community has its own way of isolating phenomena and effects to identify interesting issues, problems and opportunities. These different perspectives and practices are necessary tools to see aspects of the world – to answer limited research questions. These single perspectives cannot answer more complex and connected questions. Together they paint a fragmented picture with gaps and overlaps. This is why Bispevika Project wants a different take on project research.

Bispevika has the ambition to construct a collaborative value chain and network of suppliers that is capable of delivering extraordinary performance and demonstrate potential to change the collaborative patterns of construction. On the way to reach this goal, the authors believe that research must raise its ambitions and work in new ways. We need interdisciplinary research and a multidimensional research design to make way for collaborative research that is able to grasp the whole picture and simultaneously pick up the operational details within this complexity. Therefore, defining a new set of interdisciplinary research goals – inspired by ambitions in the Bispevika Project – designed and expressed in an ontology corresponding with the needed changes in the construction industry – can drive the quality and relevance of research to help projects such as Bispevika reach its goals and produce more relevant knowledge for increasing productivity in the construction industry.

On a strategic level, such research would have to demonstrate how to create more value in construction. Then, new business models are needed based on understanding the level on which to optimize for maximum value creation for all involved parties. In a tactical perspective, we need to optimize the process and allow for intended effects. There is a need for dynamic decision making that allows for fast progress and optimal solutions at the same time. We need a deeper understanding of how to regulate the collaboration between the parties in construction, to avoid sub-optimization and to allow for dynamic change. We need new contract formats that mirrors current dynamics and complexity of the projects. We need to understand how to make sure the value capture follows the value creation for fair distribution. We need a digital platform to integrate the parties and handle the complexity. We must understand how purposeful sourcing on individual and organisational level can help develop the organisation. On a fundamental level, communication must be better understood to create the necessary mutual trust and understanding. Further, it would require studies into psychology and culture to understand how we can make the performance last beyond the initial enthusiasm of a successful start. Finally, in an operational perspective, the practical issues that create an efficient management and operation, and organisational principles, control of processes and stimulated innovation and learning has to be in place.

Bispevika is currently establishing its own "research and innovation cluster" – a network of collaborations with a wide array of universities and research communities. This network of knowledge providers and innovation stimulators are expected to make it possible to break new

ground – solving operational and fundamental questions and at the same time puzzling together a holistic view on what really matters in the quest to achieve extraordinary performance.

Put short: Research has to see the small things in the big picture, and the big picture in the complexity of the real world. This is not what we recognize as typical for research in construction today. On the contrary, what we perceive as the current trend in construction research is increased focus on selecting a narrow set of perspectives, preferably one specific theory or set of lenses, isolating one effect and limiting the research to a specific context.

6. Conclusions

Research has offered many suggestions for improvement in recent years. Research points at good ideas and improved practices, but every single one represents a selected view from different institutions and disciplines, a defined and limited perspective, in a limited context, following a set methodology that leads down a defined path. This makes research partly guilty of sub-optimizing and fragmenting knowledge.

As indicated in the introduction, construction needs to step up to the challenge that lack of productivity and value creation represents. This research follows a case project that has extraordinary ambitions to change the collaborative behaviour in the industry. Project management in Bispevika realizes these ambitions can only be reached with the help of effective supply chains and research to understand the real effects of strategies and operational choices.

We asked what kind of extraordinary ambitions and design research itself must have to produce knowledge that is more relevant and can help construction projects reach extraordinary performance. The answers we found was not surprising:

There is a need for more ambitious interdisciplinary research in the construction industry – far more than we have traditionally seen. To make way for the necessary fundamental shift, we need to design studies that mirror the whole complexity and variety of challenges in construction. Research must be interdisciplinary synthesized to cover the range of complexities the industry must integrate to move forward. Research need to look both at the totality and at the details and understand how they are connected. Research must expand its perspective and repertoire of research methodologies.

New knowledge needs to span from strategic to fundamental level, and tactical and operational perspectives. Construction still has a lot to learn, and so has researchers. Research on construction needs to step up to face these challenges and bridge the gaps in a fragmented knowledge terrain. Research needs to be better at seeing the small nuances and, at the same time, better at seeing connections and dependencies on a strategic level. Relevant insights are dependent on defining a more ambitious research agenda. The construction industry's challenges can become the catalyst for also transforming future research design. We believe an ambitious research policy may also attract an increased will in the construction industry to invest in R&D. Construction should walk the walk and not just talk of ambitions.

In principle, there are only two positions to be held in the future: to disrupt or to be disrupted. This requires a mind-set that must attract investors of means, will and capability. This applies for both the research community and players in the construction industry. Transformation will require knowledge development and capability to execute insights into actions that create value, expressed in a corresponding ontology of R&D. This insight should accelerate a new ontology and mind-set for research to open up for integrated design and dynamic collaboration as a mirror of the complexity we want to study. Only then can the research take position as credible source of knowledge that can turn the construction industry around.

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