CCR INSIGHTS 4/2022

Bringing sustainability to shipbuilding through supplier integration

Findings from SusCon-project

22.12.2022

By Eini Haaja and Jouni Saarni

UNIVERSITY OF TURKU
Turku School of Economics

Summary

This report investigates how supplier integration takes place in a cruise shipbuilding network with respect to generating ideas and innovations for sustainability. The interview data for the study was compiled within a single shipbuilding network aiming to advance sustainable shipbuilding. The research was conducted as part of SusCon project, which is co-financed by Business Finland.

Based on the fruitful interview data, three main findings were compiled. Firstly, information flows within the shipbuilding network become easily fragmented, and therefore the promotion of innovations and especially sustainability-oriented innovations requires genuine and high quality dialogue among different stakeholders. Secondly, there is uncertainty related to who leads the innovation development that affects the whole network and gives direction and inspiration to other actors. Thirdly, sensemaking of the impact of sustainability to business is unfinished and views vary greatly how sustainability goals should be understood, approached or evaluated, which affects incentives and resourcing. All these findings provide underlying reasons for why especially the early involvement of interior suppliers is rare in the network.

To overcome these challenges, this study concludes with managerial recommendations for various partner firms in the shipbuilding network. These suggestions, mostly compiled from the ideas presented by the interviewed representatives at the shipyard and its suppliers, are synthesized as steps towards sustainability, which will provide a fruitful start for concretely enhancing the integration of suppliers into sustainability advancement.

Introduction

Goals related to sustainability, countering climate change and taking an overall responsible approach to business are becoming common elements in business strategies across industries. Cruise shipbuilding as a distinct supplier industry within the cruise industry has a twofold position, as cruises as a form of tourism can be challenged from a sustainability perspective, but the shipbuilding network also has much potential to make improvements and guide cruise operations towards more sustainable activities.

This study investigates how supplier integration takes place in a cruise shipbuilding network with respect to generating new ideas and innovations for sustainability, both in terms of the ship concept and shipbuilding processes. The theoretical framework for the study relies on supplier integration and three additional perspectives. Supplier integration means that a buyer firm collaborates with its suppliers in idea generation, new product development and process improvements. The range for supplier integration extends from no-involvement, where suppliers only make what the buyer firm requires from them. At the opposite end, high supplier responsibility and involvement includes arrangements where suppliers take high independent responsibility of designing new products, services or solutions for a customer. Additionally, the open innovation concept describes the organization's culture towards external information and ideas where again innovation activity or development work can be done alone "in an own lab", or in a manner where external networks are utilized in various ways to enable a high number of knowledge flows. Secondly, the network orchestration perspective takes the view that value is co-created within networks, meaning that a hub company should actively manage and mobilize different network actors to connect and mobilize different resources to contribute into actors' joint innovativeness. Thirdly, the opportunity recognition perspective is a search process where involved managers both actively and inactively discover new business opportunities.

This study examines supplier integration in the context of cruise shipbuilding from these three perspectives, and focuses on the dynamics in one shipbuilding network. The interviews were carried out both in the shipyard and among firms in its surrounding business network. As a result, the study sheds light on the dynamics and challenges of bringing sustainability to shipbuilding through supplier integration.

Co-innovation dynamics – potential for more in the shipbuilding network

The co-innovation activities of the shipbuilding network's suppliers take place mostly with their direct customers, that is the shipyards and possibly also customers in other sectors. Idea sharing takes place also with shipowners especially for such suppliers that deliver more technical equipment into the cruise ship. These engine and system suppliers are often invited to the concept design phase, whereas interior outfitters are mostly invited in only at the basic design or detail design phase. Most of these turnkey suppliers, however, would like to participate earlier in the new vessel design process to comment the plans and present their ideas; after the deal with the concept and budget is closed, it tends to be too late or at least challenging for them to bring in ideas of new structures and materials, for instance.

From the shipyard interviewees' perspective, the supplier portfolio is relatively narrow, yet healthy competition is required among them to hinder the increase of their pricing. Given also the yard's responsibility of the end product and its costs, it has to maintain the control of the concept design and conduct a proper tendering process. At the shipyard, some interviewees consider that suppliers should and could be able to present their new ideas increasingly directly to the shipowners, whereas others see it unnecessary, trusting the design competence of the shipowner, shipyard and their architects. Some consider that too intensive info sharing between the shipowner and suppliers could be even harmful due to tendering considerations. This setup of supplier involvement is, hence, difficult to change, whereby the question is how to maximize idea sharing and farsighted development of the entire supplier network outside individual actualized newbuild projects.

Some idea sharing takes place also outside the new vessel construction projects, particularly through various R&D projects as well as informal encounters. The development activities here relate mostly to solving problems in the everyday shipbuilding operations, but sustainability issues are increasingly on the agenda as well. The few most proactive suppliers are actively in contact with the shipyard as well as shipowners and present their plans and portfolio, while some, however, put all their resources in meeting the current project delivery deadlines, and sustainability developments and innovations are not in their concrete agenda.

Key challenges in co-innovation

Suppliers

- find it challenging to communicate and find "matching" contact persons at the shipyard with whom to discuss particular development shipbuilding projects, all the way to the shipowners
- find it challenging to pursue co-innovation with the shipyard in the absence of a foreseeable payer for the work
- are heterogeneous in terms of taking initiative to develop their own products and production, and to present their development ideas to the shipyard
- are in need of guidance and increased collaboration to avoid wasting their efforts in developing something that may never be of value to the customer

Shipyard

- finds it somewhat challenging to manage and spread information regarding which suppliers are developing what
- experiences some challenges in transferring information regarding supplier collaboration and new idea generation over individual projects and staff changes and throughout the large organization, for example all the way from production interface to the sales of newbuilds
- is still in the process of communicating and implementing sustainability goals internally
- has to process development ideas within the structures of a large multinational organization

Understanding sustainability as the precondition for joint action

All interviewed supplier firms have recognised the generally heating discussion about sustainability and environmental considerations. Still, for most of them, sustainability enhancement does not play a visible role in their businesses, at least not yet. Sustainability advancement is rather challenging to suppliers in interior outfitting, whereas for engine and equipment suppliers the benefits of eco-efficiency tend to be easier to show. Nevertheless, all suppliers expect that one day they might be asked to report the sustainability of their operations, and might even be ranked on that basis, which constitutes the opportunity for which the pioneer firms want to develop their sustainability proactively. Price still seems to be the most decisive factor in the customers' procurement processes, but via regulations this might change in the future. Sustainability forerunners could provide the baseline for regulatory standard setters, which would further strengthen their competitive advantage.

Interviewees at the shipyard also acknowledge the sustainability objectives and some are highly focused and motivated in this respect. They all share the view that shipowners are interested in enhancing sustainability, yet also view that shipowners might not be ready to pay extra for environmentally friendly solutions per se, due to the assumption that the end customers, the cruise passengers, would not be willing to do so. Still, a more ecological ship might soon provide a competitive edge for a cruise liner due to the green image impact. However, a few interviewees note that shipowners are quite different with their interests regarding sustainability and, depending on their nationality, some might still be behind European standards in their safety requirements for materials, for example. At the fuel consumption side, in turn, the motivation for increased efficiency is shared and high due to the direct financial benefit for the customer.

Key challenges in understanding sustainability

Suppliers

- have highly heterogeneous views of what sustainability refers to depending on their product and field of expertise
- find that different shipowners also have quite varying interests in this respect
- mostly do not know what they should do in terms of developing sustainability, except for few self-driven pioneers
- those operating in interior outfitting are in many instances missing the business case in developing sustainable product and production aspects in the absence of customers that would pay more for sheer environmental considerations
- lack the motivation for sustainability development given also in the absence of foreseeable regulatory standards or implications in tendering processes, for instance
- find it somewhat difficult to influence the operations of their own suppliers, particularly large, foreign material providers
- currently struggle with the implications of Covid-19 pandemic and the increasing inflation and try to manage their everyday business, some finding it highly challenging to invest in R&D
- wait for guidance from the shipyard

Shipyard

- representatives have versatile views of what sustainability is too, varying from preference to focus on solving high-emission issues to the inclusion of all small streams (cf. the forthcoming Corporate Social Responsibility Directive)
- representatives have varying possibilities to dedicate time and effort in future visioning, generating innovative ideas, and discussing or co-creating those with partners in the supplier network
- finds it challenging to lead and incentivize sustainable development in the supplier network since the sustainability challenge is shared and there is no clear guidance from the shipowners
- expects initiative, active communication and presentation of new ideas from committed suppliers

Steering sustainable innovation development in the supplier network

To the majority of the interviewed supplier firms, the relationship with the focal shipyard is the priority and major light guiding product development and innovation activities, particularly due to the close geographical proximity as well as shared nationality and working culture. The situation is different for foreign suppliers and there may be no long relationship yet, but also these firms look forward to continuing the relationship in future shipbuilding projects.

The shipyard organises regular info seminars, or webinars since the Covid-19 pandemic, to the suppliers to share news on what is going on at the yard and how the current vessel construction projects are proceeding. To enhance this, there are plans to organise more physical events, whereas for example the R&D-related virtual meetings are built to generate a supportive and positive atmosphere for idea-sharing. The shipyard also needs to signal the rising interest in ecological issues to the suppliers via new means of communication and data gathering, simultaneously allowing the generation of the big picture about the sustainability developments in the network. This would allow the shipyard to better plan future measures and activities for the network regarding sustainability, including the reporting procedures for the forthcoming Corporate Social Reporting Directive (CSRD). Moreover, suppliers might even be guided to meet some minimum sustainability criteria and/or prioritized on that basis in the future. However, the shipyard interviewees note that such requirements should be customer-driven, that is, based on shipowner preferences, and it needs to be ensured that the supplier portfolio does not shrink too much as a result.

With regards to orchestrating the sustainability advancement internally at the shipyard, all shipyard interviewees have heard of their new sustainability-focused R&D programme, and some also note that sustainability is mentioned in the company strategy. Yet, rare say that the R&D programme or the sustainability objectives have a visible role or implications in their everyday work yet, and view that the work and expectations in this regard should be clarified. Building on the quite ambitious sustainability objectives, the resourcing and compilation of a new sustainability team is underway at the shipyard, with the aim of crystallising the sustainability work in the whole shipbuilding network.

Key challenges in steering sustainability development

Suppliers

- are unaware of the concrete steps planned for reaching the climate neutral shipbuilding objective
- some find the related R&D program and its funding somewhat troublesome to access, and many do not have financial resources for independent R&D projects either
- call for more active participation from other partners in co-creating new solutions in publicly financed R&D projects
- expect steering in terms of what sustainabilityactually means and which aspects will be prioritized, and how those development efforts would be once rewarded
- would appreciate targeted, co-creative discussions regarding the future objectives with the shipyard and shipowners as well

Shipyard

- is situated between various shipowner customers with their more or less clear demands and their varying budgets to materialize them
- would require comprehensive sustainability advancement to allow branding a thoroughly sustainable shipbuilding network, yet sees it still cannot push each and every supplier to take initiative in developing their own products and processes
- would require more resources to engage in more detailed discussions and ideation about the suppliers' future development, but faces the internal and customers' budget realities with rising costs
- finds it challenging to co-create solutions and build local value generation partnerships with suppliers of specific expertise, while simultaneously pushing them to compete with each other and accepting that they may also supply their solutions to competing shipyards
- cannot tell suppliers how they should develop their products or production since they are the best experts regarding their own work

Manageral recommendations – steps to sustainable shipbuilding

To synthesize, the key issues hindering sustainability advancement in the shipbuilding network include the following:

- Information flows between the actors in the network are often rather sporadic, which limits the recognition of needs and new ideas that are the source for new, more sustainable innovations in the shipbuilding network
- The views of what sustainability means, and what different actors should develop in this respect, vary greatly, generating confusion regarding how to approach the objective of sustainable shipbuilding
- There is confusion regarding who should take the lead in pushing sustainability development in the supplier network – the shipowners, the shipyard, or suppliers with bottom-up ideas?

The concept design phase of new cruise vessels takes place between a shipowner and shipyard behind mostly closed doors, and due to these actors' needs to keep the discussions confidential, as well as the shipyard's will to maintain the ability to conduct a proper tendering process with its suppliers, this process setup is difficult to change. However, what all these actors could do, is to widen and deepen the exchange of ideas and visions concerning the development of solutions for future ships outside ongoing ship construction projects, and to incentivize this work.

To support such farsighted supplier integration, this concise report concludes with interview-driven recommendations synthetized in steps towards sustainable shipbuilding, by which the shipyard as well as its suppliers can identify a shared opportunity in sustainability development and enhance mutual co-creation activities to materialize it. While the individual recommendations presented in the steps are exemplary, their applicability should be considered by all relevant partners. Furthermore, these recommendations are to trigger thought provoking discussions among actors in the shipbuilding network regarding how to proceed with sustainability advancement right away and in collaboration.

Steps to advance sustainability in a shipbuilding network

1. Increasing face-to-face information sharing

1.1 Shipyard organising interactive “Sustainable Shipbuilding Seminar” workshop few times a year to suppliers on selected development topic

1.2 All partners defining their contact points/persons (at shipyard departments and among the suppliers) to enable easy and wider communication for R&D collaboration

1.3 Suppliers building new partnerships with architectural design providers or other constellations which can generate new customer value to shipyard/shipowners

1.4 Shipyard spreading a positive, farsighted and open atmosphere in the network supporting out-of-the-box thinking and new eco-innovation generation in all partner communications

1.5 All partners dedicating resources for more active dialogue, visioning and co-creation between the shipyard and suppliers in joint sustainability R&D projects

2. Increasing digital information sharing

2.1 All partners exploring and developing digital tools to optimise their design processes (e.g. in 3D modelling or AR/VR solutions)

2.2 All partners developing increasingly transparent project planning and management systems (e.g. regarding material flows, production status and resource availability)

2.3 Shipyard designing a digital feedback/ idea collection tool which delivers info to the use of (a) product development and (b) production development

2.4 Shipyard inviting all customers and suppliers to join weekly/monthly interactive and educating webinars regarding sustainability advancement

2.5 Suppliers actively participating in the development of solutions to digital information and concept idea sharing in the network (from system integration to employing new platforms)

3. Clarifying how sustainability development should be of interest

3.1 Shipyard defining and communicating suppliers the key customer expectations regarding sustainability

3.2 All partners crystallising the meaning of foreseeable regulations (e.g CSRD) to the shipbuilding network

3.3 Shipyard defining the internal and network's amibition level of sustainability goals in collaboration with suppliers (focus on high-emission aspects, or on small streams as well)

3.4 Shipyard exploring and informing suppliers about the planned sticks and carrots regarding sustainability advancement (e.g. standards, measures, minimum requirements or ranking possibilities) to incentivize and avoid surprises

3.5 All partners investigating ways to utilise sustainability data in their branding and marketing, on their own and collectively, all the way to customers and cruise passengerssustainability R&D projects

4. Clarifying how all partners can enhance their sustainability

4.1 All partners defining their key person(s) responsible for sustainability advancement

4.2 Shipyard and pilot suppliers developing a collective carbon footprint calculation and sustainability data generation system (e.g. through material data flows or purchasing data flows) to allow data-driven sustainability management, development and reporting

4.3 Shipyard inviting also less experienced partners to join R&D projects to allow them benefit from the expertise of pioneers

4.4 All partners actively participating and ideating new R&D projects based on needs arising from shipowners, their customers, shipyard internally, and suppliers' challenges

4.5 All partners together exploring a common market shaping strategy to become globally the top benchmark network for sustainable cruise shipbuilding and the related future standards

Background information about the Insight

This insights report was carried out as part of SusCon-project at the Centre for Collaborative Research CCR, Turku School of Economics at the University of Turku, Finland. The project focuses on enhancing the creation of sustainable shipbuilding concepts.

For more information (in Finnish), visit » https://www.utu.fi/fi/yliopisto/turun-kauppakorkeakoulu/ccr/tutkimushankkeet/suscon-business-finland-hanke

The Sustainable Shipbuilding Concepts (SusCon) project, co-financed by Business Finland (6/2020–12/2022), was built on the findings of the earlier Sustainability and Transparency in Shipbuilding Networks (Sustis) project, where early perceptions on improving sustainability and related information exchange was collected form the supplier network. One of the highlighted findings was that project management practices and processes could ideally be more aligned to support supplier integration at an earlier phase. This study under the SusCon project continues from that to explore in more detail how supplier integration takes place currently, what the underlying requirements and role of supplier-driven innovation are especially related to sustainability, and what is the potential of reconfiguring processes related to supplier integration with respect to new innovations and sustainability.

This report focuses on the dynamics in one shipbuilding network. The interviews were carried out both in the shipyard as the network's system integrator, and with different types of suppliers, domestic and foreign. Within the shipyard, the interviewees represent different operations. The data collection within the surrounding network was largely focused on suppliers that deal with interior outfitting, yet includes also representatives from equipment suppliers and the customer end. In total 26 interviews were carried out between November 2021 and November 2022. The authors would like to thank the interviewees for sharing their views, and Business Finland for financing the research.

Eini Haaja works as Postdoctoral Researcher at Turku Institute for Advanced Studies (TIAS) and Jouni Saarni as Development Manager in the CCR.

Centre for Collaborative Research CCR

For more information and downloads, please visit the following:

In Finnish » www.utu.fi/fi/yliopisto/turun-kauppakorkeakoulu/ccr/ccr-insights-ajankohtaiskatsauksia

In English » www.utu.fi/en/university/turku-school-of-economics/ccr/ccr-insights www.utu.fi/en/university/turku-school-of-economics

CCR Insights
ISSN 2814-547X
ISBN 978-951-29-9044-3

UNIVERSITY OF TURKU
Turku School of Economics