



16

Case Study: A RESTART for Scanship

“Maybe the company name is the ‘red herring’ holding you back from discovering business opportunities in other industries?”, Lars Jacob asked rhetorically at a strategy seminar with the executive team in Scanship Holding ASA (henceforth referred to as Scanship).

Consultants from an international consulting firm facilitated the workshop, which took place in 2017. The purpose of the session was to *rethink* Scanship’s business model. After the workshop, Scanship decided to change the heading on its website from “A complete system for wastewater treatment systems” to “World leading solutions for cleaner oceans”. This might not seem like a big step, but for more than ten years, Scanship had primarily delivered waste management and wastewater purification systems to the cruise ship industry, which also dominated its mindset when thinking about business opportunities. Changing the description of its operations in this way signaled both internally and externally that the company had redefined the problem it was designed to solve.

Moreover, the new phrase conveyed that Scanship were—and are—in the middle of what can be called a process of sustainable business model

innovation. In this still ongoing process, the company expands horizontally into other industries, such as aquaculture. This process will perhaps not stop with solutions for cleaner oceans, as we will see in the following. Scanship is in fact also exploring land-based solutions for water purification and waste management systems. And who knows, perhaps the ongoing innovation process will lead the company to take on a completely new name—a name that does not give associations to ships and the shipping industry?

Later in 2017, Henrik Badin, the CEO of Scanship, told us that the discussions before, during and after the strategy seminar had fundamentally changed their view of what the company was and why it existed. “We have always thought our work was important”, Badin said, “but now we really know why we get up early every morning and hurry off to work!”. He added a story that might have been coincidental, but that he interpreted because of their shift in mindset. “Following the change of how we presented our business on our website, we were contacted by Sir Richard Branson’s new cruise company Virgin Voyages. At the time, we had already entered into contracts with the Italian shipbuilder Fincantieri to equip the Virgin Voyages newbuilds with Scanship clean ship systems. However, the new entrant in the cruise industry wanted to do more to substantiate their sustainability efforts”.

Branson and McAlpin’s vision is to disrupt the cruise industry, and Virgin’s motto is “Changing business for good”, which also includes a goal of substantially reducing its environmental impact. In an interview with the industry magazine *Cruise Business Review* late in 2017, McAlpin told about Virgin’s new partnership with two Scandinavian companies that would help achieve Virgin’s environmental goals: the Swedish company Climeon and the Norwegian company Scanship. Both Climeon and Scanship provide services and technologies, McAlpin said, that can make Virgin’s new cruise ships much more sustainable. Climeon has developed technology that turns heat into electricity, and there is a lot of wasted heat onboard ships. Scanship was invited to become a partner because of its new waste to energy technology microwave-assisted pyrolysis (MAP). In the interview, McAlpin especially highlighted this technology that is currently under development. This technology uses microwaves

to transform carbon-based waste into energy sources as syngas, biofuels, charcoal and heat. The technology produces a substantial amount of energy that will reduce onboard fuel consumption, and with the production of charcoal, carbon is captured that either can be landed as a valuable product for soil enrichment known as “terra preta” or further used to produce hydrogen gas for fuel cells. Virgin Voyages will integrate both Climeon’s and Scanship’s technologies in its new ships, and by doing so, the company seeks to substantially mitigate the shadowy side of its ships.

We will return to Scanship’s new MAP technology and the opportunities it may create in different industries also beyond the cruise industry. We got involved with Scanship and the processes described above in early 2017. The company’s executive team invited us to participate in a research project to explore new business opportunities and to develop prototypes of business models and test them in the field. In the following, we will give a snapshot of the status of this research project in light of the RESTART framework and the process model for sustainable business model innovation. Thereby, we will give a glimpse into ongoing research on sustainable business model innovations in practice, largely based on the framework developed in this book.

16.1 Business Opportunities on the Floating City

Did you know that a cruise ship carrying 5000 people has the same footprint as a land-based town with a population of 30,000, and that by turning the food waste, garbage and sludge from the wastewater purification process from these ships into fuel, each ship can reduce their fuel costs by about 1 million USD a year? And did you know that wastewater from the fishery industry can be rinsed and dried and sold as organic fertilizer instead of polluting the ocean? This was news to us when we first met Henrik Badin and Narve Reiten, the CEO and Chairman of the board of Scanship, respectively. Enthusiastically, they told us about the shadowy sides of the cruise industry and of aquaculture and how Scanship was working to turn these problems into business opportunities.

Historically, Scanship did this by using its technology in different kinds of waste management systems to the cruise industry. Recently, however, the company has set out to enter new industries. In the pipeline is also a groundbreaking technology called MAP, which Virgin Voyages, as well as many other cruise lines, is eagerly awaiting. Ships and other autonomous sites like ports, islands, airports and offshore platforms use MAP. The technology enables them to turn carbon-based waste, such as food, sewage, paper, cardboard, plastics, wood, oils and mixes, into flammable gas, bio-oil and phosphorus-rich charcoal. These materials can in turn be used for fertilizer and heating purposes. Moreover, the MAP technology will capture carbon in the activated charcoal, which means that it will give Scanship's customers a substantial reduction in their carbon footprint.

The MAP technology was still in development when we first met Badin and Reiten early in 2017, and the management team was in the process of designing collaborative business models that could help them create, deliver and capture value in different industries. We should note that neither Badin, Reiten nor the company was new to the idea of conducting ambitious turnarounds. Scanship is a Norwegian company and it was listed on the Oslo Stock Exchange in 2014. In 2017, its share price increased by a stunning 352 percent, which is in stark contrast to the situation in late 2008 when the company went bankrupt. Only days after the bankruptcy, Badin and a handful of other top managers bought what remained of the company's assets and managed to turn it around. Today, Scanship delivers advanced technologies for processing and purifying wastewater, food waste, solid waste and bio sludge. Its main activities include designing, engineering and producing solutions for waste management and wastewater purification to markets worldwide. Currently, the core market for these technologies is the cruise industry to which Scanship delivers systems to the yards for new-build constructions and to existing ship-owners for fleet upgrades.

There are approximately 400 cruise ships in the world, and Scanship is the industry leader in advanced wastewater purification (AWP). Every second cruise ship delivered to the market in the period from 2014 to 2020 is equipped with Scanship AWP. During this 7-year period, Scanship AWP will have been installed on 42 of 75 newbuilds globally. Scanship is

a supplier to most major cruise liners, and the business opportunity upon which the company's business model is based is the fact that modern cruise ships generate substantial amounts of wet and dry waste that need to be properly treated. Scanship's technology processes this waste into recyclables, clean flue gas and treated wastewater. The company's headquarter is in Lysaker, Norway, and the group has offices in Tønsberg, Norway, Davie, Florida and Gdynia, Poland.

Reiten and his partner Bård Ingerø bought approximately one-third of the company's stock in 2017, and Reiten soon became the Chairman of the board. When we first met Badin, he had already read our Norwegian practitioner-oriented book *RESTART*. He said that Scanship was already in the middle of "restarting" its business and that the company was looking for ways to redefine what the company was and by exploring different kinds of environmental problems it could solve. However, he added that this was not Scanship's first big change. Ever since they established the company, the managers had redesigned its business model several times. Badin explained how the biggest challenge they had faced from a business model standpoint perhaps was to convince the cruise industry of the value of its technology. In order to unlock this door, several changes had been necessary in how the company created and delivered value for its (potential) customers.

16.2 Solutions for Cleaner Oceans

"You have to remember", Badin later told us, "that when we restarted this company almost 10 years ago, not many people talked about the circular economy, global warming and the plastic problem in the oceans". Today, however, this has changed drastically, and now customers, regulators and the cruise industry itself are starting to understand that the industry's footprint can be—and must be—reduced. Earlier, the tendency was to comply with regulations enforced by International Maritime Organization (IMO) Marpol and the port states in which ships operated, even though these regulations in many situations were considered a minimum. In the company's first years, leading up to the bankruptcy in 2008, the technology was more difficult to sell as it was more advanced than what the regulations required.

In recent years, there has been a shift, as the different ship-owners are starting to compete on environmental initiatives driven by increased focus on corporate responsibility, more media attention and public awareness. This has been driving demand for shipboard environmental technology. Today, Scanship serves more than a third of the approximately 400 cruise ships in the world, and new contracts are lined up. “Our challenge now”, Badin and Reiten said, “is to increase the pull from this industry and to develop technologies like the MAP that can do an even better job for the customers”. At the same time, the company was trying to design business models that could do similar jobs in other markets Scanship is now targeting such as aquaculture.

One important barrier for Scanship is regulation, and therefore the company relies on influencing lawmakers. With some exceptions, it is still legal to dump wastewater and food waste in the so-called territorial waters, that is, 12 nautical miles from the shore. An example of a protected area is the shore of Alaska, which is protected by environmental regulation, but there is still a long way to go before regulation facilitates full-scale adoption of greener solutions. One of the drivers for change in the cruise ship industry has been the growing pressure from other stakeholders, not at least local communities, the media and NGOs. One example is a report published by Friends of the Earth (FoE) in 2012, which revealed the following figures for the amount of waste generated by a large cruise ship on a one-week voyage (cf. Friends of the Earth 2012):

- 800,000 liters of human sewage
- 15,000 million liters of gray water (water from sinks, baths, showers, laundry and galleys)
- 95,000 liters of oily bilge water
- Up to 44,000 liters of sewage sludge
- More than 400 liters of hazardous wastes

Keep in mind that this is in addition to the solid waste that each ship generates, including leftovers from about 25,000 meals a day, given that the cruise ship has 5000 people on board. Excess food is typically grounded up and discharged as a slurry into the ocean, often together

with plastic and other forms of litter. Food waste discharged in this manner lowers oxygen and creates acid and a nutrient imbalance in ocean waters.

FoE also regularly publishes a sustainability report card for cruise ships. In such report cards, it ranks the 17 major cruise lines and their initiatives in sewage treatment, air pollution control, water treatment and other criteria. In the 2016 report, Disney Cruise Line is the top scorer with an A-, while Cunard, Holland America, Norwegian and Princess Cruises share the second place with a C. Yet, it is unclear to what degree the scores in such ratings translate into stakeholder action—customers choosing whether or not to buy a cruise, investors choosing whether or not to invest in the company, regulators assessing the need for regulation, and so on. However, it seems clear that negative attention toward the cruise industry is on the increase, which makes it likely that companies will act in ways that can improve this image.

16.3 Toward Uncharted Waters

The cruise industry is not big enough to allow for continuous growth for a technology provider such as Scanship, however. Therefore, to enable continued growth, Scanship has now entered the aquaculture industry and land-based applications. The intensive production of Nordic salmon and other seafood has increased the need for water purification and residue treatment. The basic business opportunity related to this industry is to treat the water in the fish tanks in a way that minimizes water consumption and reduces the negative environmental impact. This process creates sludge that needs to be handled properly to allow for more sustainable fish farming. Scanship identified an opportunity in this challenge and has now entered into an alliance with different partners in the industry in order to produce organic fertilizer that is highly demanded in Asian markets. The aquaculture company Skretting, the waste management company IVAR and the organic waste treatment company HØST are its alliance partners in this project. Scanship's technology dries the aquaculture sludge for this purpose and thus commercializes waste from the aquaculture sector together with its alliance partners.

Scanship's systems can also be used in land-based operations, for which the company provides a variety of industrial applications for waste processing and water purification. The technologies can also be used for several purposes by municipalities and other governmental entities, for instance, in wastewater treatment plants and waste-handling facilities. The Scanship wastewater technology is installed in many municipalities in the Nordic region to remove nutrient and organic matter. Also, it has delivered two larger waste management systems in the Jamaican airports Norman Manley in Kingston and Sangster in Montego Bay. These waste management systems include garbage recycling equipment and waste incinerators, processing all waste from arriving airplanes and terminals.

16.4 Restarting Scanship: Practical Challenges and Research Opportunities

The many examples outlined in the preceding paragraphs are illustrations of the ways in which Scanship attempts to develop new business models that are complements to its main business model in the cruise industry, while simultaneously “tweaking” the existing business model to function even better. As summarized after presenting the RESTART framework, one could argue that, in practice, a RESTART should perhaps rather be structured in the opposite direction—as a TRATSER. In many ways, one could argue that Scanship has gone through such a process. Scanship is trying to make cruise line companies take *three-dimensionality* seriously—to consider their footprints, but at the same time realize how reducing the footprints is possible to align with financial objectives. The value proposition of the company is based on a thorough understanding of what are the material concerns in the industries it aims to serve—food waste, energy usage and other forms of pollution on cruise ships, as well as sludge in the fish farming industry. In this way, it can identify the *results* managers in these companies aim for—or at least should be aiming for. Scanship's core value offerings are based on *the circular economy* since they build on upcycling various forms of waste and they employ *service-logic* in their attempt to turn their technologies into convenient bundles of services for their customers. And, in particular in the case of aquaculture,

the company enters into *alliances*. These alliances allows it to deliver value in ways it could likely not have done on its own. Finally, based on these characteristics and the company's identification of new market opportunities, it aims to conduct systematic business *experimentation* in pursuit of these market opportunities. This was in fact partly why Scanship first contacted us. The company wanted us to take part in the design of such experiments that could eventually contribute to a *redesign* of the company's business model, as well as the development of new business models in new markets.

This journey is far from complete, and even though Scanship has achieved a lot to move the company—and its customers—in a greener direction, the company is still navigating difficult waters. Among the challenges it faces is achieving profitability in the experimental business models in new markets, especially since the “burning platform” for adopting such solutions is still not as clear in, for instance, aquaculture as in the cruise industry. In addition, the relative inertia of regulators when it comes to imposing regulations that would be drivers of adoption for technologies offered by Scanship is also a challenge for the company's growth in these markets.

In collaboration with the managers of the company, we are currently in the process of planning empirical studies that can provide knowledge-based input for addressing some of the challenges the company—and companies offering similar solutions—is facing. At the time of writing, this work is very much in progress, and we are still to decide what are the most important issues to be studied empirically, both with regard to being crucial for the success of the company's business model and providing valuable insights to the scientific literature. We therefore end this chapter as a “cliffhanger”, by outlining two of our concrete research ideas here. This is an illustration of how we are approaching these issues empirically.

One of the potential research projects is tied to the end consumer in the cruise industry, who in an indirect sense can exert important influence on the competitiveness of Scanship's technologies. An important question in this regard is whether waste management and pollution issues are at all material from the point of view of consumers. That is, do these issues at all influence the consumer's choice of cruise? Part of the problem

in this regard is that consumers have little knowledge about, and ability to envision, the environmental impact of the cruise ships, beyond the evident emissions from the funnels atop the ships. Inspired by recent “artefactual” field experiments (cf. Harrison and List 2004) using virtual reality (VR) technology to visualize and make salient various aspects of a product or service, we are exploring the possibility to carry out such VR experiments on cruise travelers. Prior to a cruise or during the cruise, consumers could be exposed to the green technologies aboard the ship and how they lead to the avoidance of waste and pollution in the waters. By comparing consumers subject to such an intervention to consumers in a control condition who are instead shown VR videos of the cruise without such emphasis on environmental dimensions, we could in turn investigate a potential influence on important outcomes such as attitudes, willingness to buy, willingness to pay or experiential dimensions of the actual cruise. It could be added here that a similar design could be used in the setting of fish farming as well, and it would even be possible to conduct comparative analyses across the two sectors. Such research designs would provide important insight into how sustainability improvements in value delivery that are not necessarily possible for consumers to observe can influence consumers’ experience and thus the relative attractiveness of the offering.

A second research opportunity relates to the strategic alliances Scanship has entered into, for instance with Skretting, IVAR and HØST for the aquaculture project. As discussed in the chapter on avenues for future research, there is a need for further research on such cross-sector collaborations that include both sustainability-related and financial objectives for all alliance partners. There are several possibilities for empirical investigation in such an alliance, but we are particularly intrigued by the question of how to design a value capture model that allows for successful business modeling on the part of all business partners. This is a main challenge in strategic collaborations—how to design an alliance that benefits all partners and that—as far as possible—aligns their different objectives and priorities. Several different research designs could be applicable in such a project, including a case study combining qualitative and quantitative data sources as well as simple experiments comparing various payoff structures under different versions of the value capture model.

Such a study could contribute valuable knowledge on designing value capture models across organizational boundaries in such cross-sector collaborative business models.

References

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