

Strategic adaptation to regulatory shocks: Learning from a disruptive environmental regulation

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Abstract

As business systems are increasingly affected by regulatory changes and other changes in their macro environment, often addressed as shocks, the ability of organizations to respond by triggering strategic adaptations to these changes becomes critical for their survival and resilience. In this paper we explore, through a multiple case studies analysis, how different maritime shipping firms have responded to the International Maritime Organization sulfur cap 2020 regulation. A taxonomy of strategic reactions is developed, codifying the 4Cs (Circumvent, Comply, Combine, Conceptualize) as observed responses. We also argue that internal capabilities as well as adjustment costs are critical in the formation of adaptation strategies in response to external regulatory changes; and we propose that firms develop strategic responses to external environment shocks based on our proposed taxonomy of strategies and their awareness of their internal capabilities and resilience drivers.

Keywords: Generic strategies; maritime shipping; regulatory changes; case study analysis

1. Introduction

Disruptive regulations that radically transform the business environment in an industry are often acknowledged as shocks. According to Argyres et al. (2019), shocks are radical changes in a company's external environment that are beyond the company's control, or its rival companies' control. Such shocks can also occur from changes in regulation that substantially alter the structure of an industry (Garcia-Sanchez et al., 2014).

External regulatory and institutional shocks trigger internal organizational processes that aim at assisting organizational adaptability to changing conditions (Valikangas, 2020). As organizational reactions include instinctive tactical maneuvering (Collinson, 2014) or deeper strategic recalibrations. In the field of strategic management Wenzel et al. (2020) attempted to develop a typology of responses to the Covid-19 challenges. Still, the forms that this adaptation takes need further exploration, particularly as we observe that quite often similar organizations make different decisions.

In this paper we conduct a case study analysis of four companies in the maritime industry that responded to the International Maritime Organization (IMO) 2020 sulfur cap environment regulation to identify different strategic adaptations and recalibrations that aimed at protecting firms' survival and resilience. The IMO 2020 regulation is considered a disruptive regulation because it altered the established business paradigm in seaborne transportation (Sigalas, 2022). By framing and codifying the four different strategic responses, namely Circumvent, Comply, Combine and Conceptualize, we explore the conditions that drove companies into different directions, and we discuss the role of internal capabilities and innovation, strategic change costs and adaptability as critical factors affecting the strategic process. Ultimately, not only do we propose a summative taxonomy, but we also argue that regulatory shocks and radical external environment changes should be confronted on the basis of internal conditions and a dynamic process of adaptation that requires a rapid understanding of changes and awareness of internal capabilities.

The structure of this paper is as follows. In the following section a literature review is developed focusing on the field of strategic management, strategic responses to disruptive regulations and strategic shocks. In section 3 we outline our research design and methodology while in section 4, we provide information as to how first-mover companies managed to strategically respond to the industry shock. Our analysis is summarized and further discussed in Section 5 where a typology of four generic strategies to navigate disruptive regulations is proposed, followed by theoretical and practical considerations on the role of internal capabilities and adaptability. In

the final section we outline the limitations of this research and propose further directions for researchers and practitioners.

2. Literature review

2.1 Regulatory Shocks in Strategic Management

Studies on the impact of regulatory changes or de-regulation are not only scarce but they also lack the necessary depth and insightful analysis needed to understand how external disruptions affect strategies. Larsen & Bunn (1998) in discussing the strategic responses of companies to the electricity deregulation, they argue that conceptual models are important as we cannot implement analogical thinking and a best-practice methodology. While some studies attempt to explore symmetries between organizational performance and regulatory frameworks (e.g., Blind et al., 2017), these attempts assume that regulations are unfolding their effects in time. The “holistic regulatory change management” is a step-based model for adjustment (Sunkle & Kunkarni, 2015).

However, we often observe that regulatory changes constitute moments of critical change and a call for immediate and rapid adjustment to a new reality. They create a crisis rather than a new condition that companies can plan for. They are therefore addressed as shocks (Argyres et al., 2019). The need for strategic response to external shocks and crises, creates the front burner strategic issue for the industry participants of how to strategically reposition themselves after the occurrence of an industry shock (Argyres et al., 2019 Wang & Shaver, 2014). Aside from maintaining competitive parity or gain advantage over rivals, most companies following a shock need to reposition themselves in an industry simply to survive (Rumelt, 1984). The strategic reposition, on the other hand, is quite demanding process, because it requires investments in costly, specialized, and time-consuming to deploy resources and capabilities (Nickerson et al., 2001), such as new assets or development of new knowledge. For that reason, and since competition is fundamentally relative (D'Aveni & Gunther, 1994), strategic reposition requires from practicing manager to evaluate their own company's ‘adjustment cost’ (Cooper & Haltiwanger, 2006) in comparison with their rivals' ‘adjustment cost’ (Argyres et al., 2015; see also Madhok et al., 2015; Sakhartov & Folta, 2014).

2.2 Taxonomies and Drivers of Strategic Adaptability

How companies respond to external shocks and change has also been a concern in strategic management literature emphasizing on taxonomies of strategic responses. Wenzel et al. (2020) have developed a typology, codifying responses to the Covid-19 disruption in terms of retrenchment, persevering, innovating, or exiting. Lukito-Budi et al. (2023) have used the Miles and Snow (2003) typology which classifies response options of SMEs into defender–

exploitative innovation, analyzer–organizational ambidexterity, prospector-exploratory innovation and, reactor’s abandoning. In the context of regulatory shocks, the role of strategic adaptability has been highlighted. Adaptability and innovation have also been seen as two intrinsically links dimensions of the strategic process (see Reeves & Deimler 2011, Tumoninen et al. 2004). This highlights the importance of another key theme in this area, the internal capacity to think around problems and ensure adaptation through creative thinking and a problem-solving approach. Reeves and Deimler (2011) argued that “the ability to read and act on signals” and using new technologies to analyze new conditions, as Tesco did with their clubcard customer database, is key to strategic development.

Furthermore, resilience theory is keen to address how important it is for organizations to enter what is called Resilience Type I (see Valikangas, 2011) which requires from organizations to anticipate changes but also be prepared for rapid changes and adaptations to external conditions. In the light of the Coronavirus pandemic, these abilities to react and adapt have been further explored within organizational strategies (Bhattacharria & Thakre, 2021).

2.3 Strategic Adaptation in the Maritime Industry Context

Strategic Adaptation to regulatory changes has been investigated in many contexts, including the food industry, pharmaceuticals, and the energy industry. For the later, McCarthy (2018) did provide an interesting insight into response modes expressed as various modes of response (i.e., fight, flight, follow, fit), while other studies have explored how firms may comply or resist regulatory transformations on Facebook. However, in the context of the maritime shipping industry most efforts to understand regulatory changes focus on developing risk management scorecards (Karahalios et al, 2015), the economics of regulations (Abrahamsson, 1982) or the technical aspects of changing regulations, for example on the ballast water treatment systems (Gerhard, 2019).

The common denominator in these studies is that firms must use their internal resources to adjust to the changing conditions as a “given reality”. It is often neglected that there are variations of responding strategically to these external shocks while it is also critical for firms to be aware of different possibilities and choose among them the right one. It is precisely the aim of this paper to focus on these variations, possibilities and conditions that allow companies to strategically respond to external shocks by focusing on a regulatory transformation that constitutes a strategic disruption and shock.

3. Research Design

3.1 The Case Study Approach

In order to investigate strategic adaptability of firms in the context of regulatory shocks, this paper adopts a multiple case studies approach. We have used the wider context of the IMO 2020 sulfur cap regulation and we have screened responses of maritime shipping firms.

Our case analysis approach allowed us to examine in detail the strategic reconfigurations of the selected firms. Indeed, case studies are in-depth empirical descriptions of a specific business phenomenon or real management situation by using rich qualitative data (Gibbert et al., 2008; Yin, 1994). They are particularly useful in recognizing relationships patterns among constructs from business cases in their real-world context. More importantly, the main difference and advantage of the case study method, versus other research methods, is that it seeks to investigate business events in their contexts, rather than independent of their context (Gibbert et al., 2008). Moreover, the case study approach allows for a combination of various methods used and the amalgamation of diverse data and evidence.

Despite some methodological shortcomings, the case study method has provided “the strategic management field with ground-breaking insights” (Gibbert et al., 2008, p. 1465). Apart from strategic management, case study analysis is also a commonly accepted and frequently used method in transportation research (see Antoniou, 2020) because it provides deeper knowledge and offers better insights of a phenomenon (Osei-Kyei & Chan, 2016). In the field of strategic management, Sigalas and Papadakis (2018) encouraged future scholars to use alternative research designs and methods, such as the case study method, and did employ a case study research design in the setting of maritime shipping industry (Sigalas & Papadakis, 2022).

3.2 The Research Process

The companies for our case studies were selected through an initial screening process that started all active public maritime shipping companies as listed in the Stockwatch section of TradeWinds publications. Maritime shipping are the companies that provide shipping transportation services via ownership of cargo vessels. Maritime shipping industry was selected as our sampling frame because maritime shipping companies have been affected significantly by the recently introduced IMO 2020 sulfur cap regulation, which disrupted the traditional shipping business paradigm (Sigalas, 2022), therefore being the main setting to investigate strategic adaptation to regulatory shocks. The selection process of maritime shipping companies to conduct the case study analysis was based on a set of criteria, which included: i) size (we aimed at companies with a visible position in their business segment), ii) type of strategic response (we targeted companies that employed a novel strategy), and iii) timely response to

the IMO 2020 regulatory shock (we searched for first-mover companies). Based on the above three criteria, we selected four maritime shipping companies out of 126 in total active and publicly listed maritime shipping companies in 2019-2020. These four maritime shipping companies were the first movers in implementing a unique strategic response to IMO 2020 sulfur cap regulation, and at the same time they have a visible position in two shipping segments of maritime shipping industry, i.e., dry bulk and tanker segments.

The collection of data for the four case studies was based on published reports and press releases, as well as corporate filings with the U.S. Securities and Exchange Commission. The investigation took place in 2022, which means that it provides a retrospective review of strategic responses and we therefore allowed for a window of reaction (Collinson, 2014) after the announcement of the new regulation. The case studies development process has been straightforward. Secondary data from relevant presentations, press releases, and corporate filings to stock exchange regulator were collected to develop a timeline of strategic choices and actions per shipping company. As a second step, we organized the materials and analyzed the elements of each firm's strategy.

4. IMO 2020: How Four companies responded

Four first-mover maritime shipping companies responded to this unprecedented front burner issue by implementing four novel strategies to respond to this business paradigm change. Our analysis leads to the development of an analysis and proposed taxonomy of strategic responses.

4.1 The Star Bulk Case

Star Bulk Carriers Corp. (Star Bulk) is a maritime shipping company, one of the largest public dry bulk companies, with a fleet of 118 vessels of total cargo carrying capacity of 13 million deadweight tons in 2019 (Star Bulk, 2019a).

In 2019 the company stated its intention to install scrubbers on almost all its vessels, i.e., 114 vessels, which will be able to consume high sulfur fuel oil following the implementation of the IMO 2020. By the end of 2019, Star Bulk reported to have installed and successfully commissioned scrubbers on 106 of its vessels. The expected capital expenditure of the total scrubber installation project was estimated to be \$209 million. (Star Bulk, 2019b).

The positive aspect of the company's proactive strategy is that the company can profit from the spread between the price of high sulfur fuel oil and the price of low sulfur fuel oil. Following the implementation of the IMO 2020, demand was expected to be much higher for the low sulfur market than for the high sulfur type of fuel oil. At the same time, most of the world's dry bulk fleet would be vessels without scrubbers that will have to burn the more expensive IMO sulfur compliant fuel oils. Star Bulk had scrubbers installed to approximately 90% of its fleet

by the end of 2019, thus being among the few maritime shipping companies that were able to benefit from these changes in 2020. The rest of the vessels were planned to be fitted with scrubbers during the first quarter of 2020. If this strategy materializes as planned, based on the prices of the high and low sulfur fuel oils in the future, then the scrubber payback period will be quite short, and the expected return on the scrubber investment will be high.

However, the strategy of the firm also entailed risks and existing possible downsides. Firstly, there is the obvious risk associated with the spread of the high and low sulfur fuel oil prices. If fuel oil prices do not move in the anticipated direction, then Star Bulk will not be able to profit from lower fuel oil expenses, and its return on investment will be much lower than initially planned. In a worst-case scenario, the marginal fuel oil cost savings from the operation of the scrubbers may even fail to recoup the scrubbers' capital expenditure.

Furthermore, the owner of scrubber-fitted vessels will have to employ its fleet on a voyage basis to capture the increased net revenues from consuming the high sulfur-low-cost fuel oil. This is because during employment on a time-charter basis, the charterer, and not the ship-owner, is responsible for the procurement and for covering the cost of fuel oil. Lastly, using high sulfur fuel oil in conjunction with the use of scrubbers also introduces the logistical risk of high sulfur fuel oil procurement. This can be an important negative aspect of this strategy, since the availability of high sulfur fuel oil in various less busy ports of the world may become scarce, as more vessels start consuming the IMO sulfur compliant fuel oils.

4.2 Euronav

Another interesting strategy to cope with the IMO 2020 was implemented by Euronav NV (Euronav). Euronav, which is one of largest public tanker owning company in the world, provides seaborne transportation of crude oil cargoes. The company owned and operated a fleet of 2 V-Plus vessels, 42 VLCCs, 27 Suezmaxes and 2 FSO vessels in 2019 (Euronav, 2020a).

To comply with the disruptive the IMO 2020 sulfur cap regulation, Euronav established a specialized team responsible for the procurement of the IMO 2020 sulfur compliant fuel oils that decided to pre-purchased significant quantity of low sulfur fuel oil. The pre-purchased IMO sulfur compliant fuel oils and marine gasoil of total 420 thousand tons were stored onboard of one of its tankers with a cargo capacity of about 440 thousand tons. The company used its tanker as a floating bunkering station to store the pre-purchased fuel until their procurement team gain a clearer idea on which is the best way to comply with the new regulation. The average price paid for the pre-purchased fuel oils was about \$447 per ton (Euronav, 2020b). If the price of the IMO sulfur compliant fuel oils was higher than \$447 per ton during 2020, the company would had been able to realize a significant profit, the magnitude of which was based

on the difference between the average price paid (i.e., \$447 per ton) and the actual future price of the IMO sulfur compliant fuel oils.

It is obvious that the main positive aspect of Euronav's strategy is that it would allow the company to profit from a large spread in fuel oils prices in 2020. Furthermore, Euronav's strategy saved the company from any long-term commitment to scrubber devices. Therefore, in case regulations change in the future in any way that is detrimental to the use of scrubbers, this development would not affect Euronav's financial position.

The main downside is the fact that 420 thousand tons of fuel oils would only cover the needs of its fleet for the first six to nine months of 2020 and would not be enough to provide a longer-term hedge to a wide fuel oil price spread. If the price spread remains wider than expected and for longer period, Euronav would run out of the pre-purchased fuel oils and would have to continue consume fuel oils purchased at the prevailing market prices. The main premise of Euronav's strategy rests on the assumption that the price spread will contract after the first couple of months in 2020.

In addition, Euronav's strategy, apart from focusing on a short-term initial response, entails an increase in working capital due to the need to hold a large volume of bunkers as an inventory. Lastly, this strategy also entails a few operational and logistical risks as Euronav is responsible for blending the pre-purchased fuel oils in a way that would be safe for its fleet to use. Any mishaps with the blending process would also have a significant adverse result for the company.

4.3 Golden Ocean

Golden Ocean Group Limited (Golden Ocean) is another public dry bulk company. Golden Ocean pursued a different strategy towards the IMO 2020 that included scrubber installation on a part of its fleet and, in particular, on vessels with the highest fuel oil consumption. As end of 2019, its fleet consisted of 79 vessels with total cargo carrying capacity of approximately 10.9 million dwt (Golden Ocean, 2019).

Focusing on its strategy to tackle the IMO 2020, Golden Ocean has opted to install scrubbers on 23 out of its 46 Capesize vessels, which are vessels with the highest fuel oil consumption due to their larger size and cargo carrying capacity. For the non-scrubber-fitted vessels of its fleet, Golden Ocean will rely on IMO sulfur compliant fuel oils. In August 2019, Golden Ocean created a joint venture with the commodity trader Trafigura in order to establish a leading global supplier of marine fuel oils. The joint venture, apart from acting as the exclusive supplier of marine fuel oils to Golden Ocean and to other affiliated companies with Golden Ocean, also supplies third party maritime shipping companies. The joint venture structure aims to hedge the uncertainty associated with the implications of the IMO 2020, by ensuring enough IMO sulfur

compliant fuel oils supplies for both Golden Ocean and Frontline at competitive prices (Golden Ocean, 2019).

As in the case of Star Bulk, the main positive point of Golden Ocean's strategy is that the company will be able to benefit from a high price spread between high sulfur and low sulfur fuel oils. At the same time having installed scrubbers on only 23 out of total 79 vessels, allows Golden Ocean to minimize the total investment required to implement its strategy. As a result, if fuel oils price spread do not develop as anticipated, the financial loss for the company would be much lower compared to its peers following the scrubber installation on all vessels of their fleets, such as Star Bulk. It should be noted that a significant part of Golden Ocean's fleet consists of fuel-efficient vessels that have significantly lower consumption than the average. In a higher fuel oils price environment, lower fuel consumption also acts as a "natural hedge" to the voyage expenses. Therefore, Golden Ocean's overall strategy is centered around the aim of reducing the actual capital expenditure associated with the installation of scrubbers and at the same time ensuring the fleet's commercial relevance.

4.4 Seanergy

Another public maritime shipping company operating in the dry bulk shipping segment with an interesting strategy towards the IMO 2020 is Seanergy Maritime Holdings (Seanergy). As of 2019, Seanergy had a fleet of 10 Capesize vessels with a total cargo carrying capacity of approximately 1.7 million tons.

In response to the regulatory changes and in out of its total 10 vessels, Seanergy has opted to install scrubbers on five vessels and consume IMO sulfur compliant fuel oils on its remaining five vessels. The innovative element of its strategy is that the cost for the scrubbers' installation will be covered by three of its charterers under strategic partnership agreements. In particular, the scrubber-fitted vessels have been fixed on long term time charters, ranging from three to five years, with first class charterers, who have also agreed to cover the acquisition and installation cost of the scrubbers. The scrubber-fitted vessels will earn an index linked floating daily hire. (Seanergy, 2020).

There are several positive aspects to Seanergy's strategy. Firstly, Seanergy will be able to ensure that half its fleet will be compliant with the IMO 2020 by using the non-compliant high sulfur fuel oil at no cost for the company since the scrubber investments burden its charterers. At the same time, the commercial relevance of the vessels is ensured since the vessels will be employed with first-class charters for a long period. Secondly, Seanergy can also benefit from the potential positive price spread of fuel oils, through the profit-sharing agreement without having to take any risk on something that is outside the scope of its main business. Thirdly, by

employing the vessels on time charter the company will be able to avoid the potential logistical problems of having to source IMO sulfur compliant fuel oils for its whole fleet.

In addition, during the second half of 2019, the company procured enough maritime gasoil at competitive price to cover the needs of its five non-scrubber fitted vessels for the first quarter of 2020 (Seanergy, 2020). As a result, this is a well-balanced strategy that greatly mitigates the risks of the IMO 2020 without putting the company to large financial risks that are outside the main shipping business. There is no required investment to be made by the company so a negative development on price spreads of the fuel oils would not have an important negative effect. Therefore, the timely installation of scrubbers to all five vessels before the IMO 2020 implementation date, as well as to the proactive procurement of low sulfur fuel for its non-scrubber fitted vessels, ensured the successful transition of Seanergy into the new regulatory environment. Lastly, Seanergy achieved its goals as regards to the technological and environmental quality of its fleet, while enhancing the market value of its vessels in close cooperation with its strategic partners without capital expenditure outlays from the company.

A comparison of the novel strategies to respond to business paradigm change caused by IMO 2020 by four first-mover maritime shipping companies, appears in Table 1.

Table 1. The 4Cs of Strategic Adaptation to IMO 2020

Strategy	Advantages	Disadvantages
Circumvent	<ul style="list-style-type: none"> • Profit from the positive spread between the price IMO sulfur compliant fuel oils and the price high sulfur fuel oil, via use of scrubbers • In a wide fuel oils price spread environment, the payback period of scrubber investment can be very short 	<ul style="list-style-type: none"> • Low, or even negative, spread between the price IMO sulfur compliant fuel oils and the price high sulfur fuel oil can be detrimental to the scrubber investment • Restrictions regarding the type of vessels' employment, i.e., conduct only voyages to capture the benefit of the fuel oil price spread • Logistical risk associated with the procurement of the high sulfur fuel oil
Comply (Strategically)	<ul style="list-style-type: none"> • Benefit from hedging the price of IMO sulfur compliant fuel oils, at a time when the positive spread between the price IMO sulfur compliant fuel oils and the price high sulfur fuel oil was very narrow • Opportunity benefit from the widening price spread between the IMO sulfur compliant fuel oils and the high sulfur fuel oil • No scrubber investment or any other long-term capital commitment 	<ul style="list-style-type: none"> • Short-term solution, since after six to nine months the pre-purchased and stored IMO sulfur compliant fuel oils will be depleted • Significant working capital requirement for the stored IMO sulfur compliant fuel oils • Operating risks regarding the safe blending of the IMO sulfur compliant fuel oils
Combine	<ul style="list-style-type: none"> • Benefit from a high spread between the price IMO sulfur compliant fuel oils and the price high sulfur fuel oil, via use of scrubbers, while minimizing the required investment size • Unhindered procurement of i) unadulterated IMO sulfur compliant fuel oils, ii) high sulfur fuel oil, through strategic partnership 	<ul style="list-style-type: none"> • Low, or even negative, spread between the price IMO sulfur compliant fuel oils and the price high sulfur fuel oil can be detrimental to the scrubber investment, to a lesser extent though compared to entire circumvention of legislation via scrubber installation, or "Circumvent" strategy • Restrictions regarding the type of vessels' employment, i.e., conduct only voyages to capture the benefit of the fuel oil price spread, for the scrubber-fitted vessels
Conceptualize (Innovatively)	<ul style="list-style-type: none"> • Commercial competitive scrubber-fitted vessels with no additional capital expenditure • Participation to the positive spread between the price IMO sulfur compliant fuel oils and the price high sulfur fuel oil through profit sharing scheme, without any downside risk • No logistical risk associated with the procurement of the high sulfur fuel oil for the scrubber-fitted vessels • Benefit from hedging the price of IMO sulfur compliant fuel oils for the non-scrubber-fitted vessels 	<ul style="list-style-type: none"> • Opportunity cost if the spread between the price IMO sulfur compliant fuel oils and the price high sulfur fuel oil remains high for prolonged period • Short-term solution for the non-scrubber-fitted vessels since after some months the pre-purchased IMO sulfur compliant fuel oils will be depleted

5. Generic strategies to navigate through disruptive regulations

The analysis of the four cases resulted in the identification of four different implemented strategies by four different companies. Interestingly, the same shock led to different sense-making processes that resulted in diverging strategic propositions and a different “reading” of new regulations and challenges. We analyze these identified strategies and outline its key components.

5.1 Generic Strategies

Strategy 1: Circumvent

The first case study (Star Bulk) identifies a strategy focusing on circumventing IMO’s policy, regarding the use of the low sulfur fuel oil, which is more expensive, by carrying on using the less expensive high sulfur fuel oil for its vessels and remove excessive sulfur emissions via scrubbers. Therefore, the “Circumvent” strategy can be implemented by finding new ways (i.e., installation of scrubbers in the case of Star Bulk) to restore parity when a regulation is disrupting the business paradigm (e.g., IMO 2020). Such strategic direction is based on investments in specialized assets based on internal resources and capabilities.

Strategy 2: Comply (Strategically)

The second case study describes the purpose of Euronav’s strategy that is to simply comply by adjusting its strategy with IMO’s regulation regarding the use of the low sulfur fuel oil, which is less polluting but more expensive, by procuring itself with IMO sulfur compliant fuel oils at favorable price. Therefore, the “Comply” strategy can be implemented by timely and proactively coping with a disruptive regulation (e.g., IMO 2020) when the environment conditions are more favorable (i.e., low prevailing market price for the IMO 2020 sulfur compliant fuel oils in the case of Euronav).

Strategy 3: Combine

Drawing on the third case study, the idea behind Golden Ocean’s strategy is to combine all available options (i.e., partial scrubbers’ installation and access to unadulterated low sulfur fuel oil in the case of Golden Ocean) to tackle the IMO 2020, by minimizing the overall expenses. Therefore, the “Combine” strategy can be implemented by balancing the risks, and of course, the returns for the company from a disruptive regulation, such as the IMO 2020.

Strategy 4: Conceptualize (Innovatively)

Based on the fourth the last case study, the goal of Seanergy’s strategy is to innovatively conceptualize ways to deal with the IMO 2020, by coming up with ground-breaking ideas to restore parity via strategic partnerships with charterers to cover the scrubber cost. Therefore,

the “Conceptualize innovatively” strategy can be implemented by thinking out of the box and coming up with not just new, but ground-breaking ideas to restore parity (in the case of Seenergy, strategic partnerships that nullify compliance cost or ‘adjustment cost’) following the introduction of a disrupting regulation (e.g., IMO 2020) and at the same time trying to limit the downside risk (with profit sharing schemes and prepurchase of fuel oil inventories to minimize the cost incurred) by giving up, on an educated basis, the upside return in an external environment of high uncertainty.

5.2 Conditions of Strategic Adaptation: Innovation Drive, Financial capabilities and Resilience Leadership

It is obvious from the cases studies that the IMO 2020, which is an industry shock and regulatory change, called for a strategic modification and recalibration. While such change did not happen suddenly, the moment of change (Kellerman, 2016) becomes an important symbolic element of necessary transformation. We argue in this paper that internal conditions and capabilities affect the strategic response to external regulatory shocks. Three dimensions were identified, namely innovative capability, financial conditions, and leadership for resilience.

Figure 1. The “4Cs” strategic typology to navigate disruptive regulations

		Severity of the regulation / Financial impact	
		low	high
Company’s ability to innovate	low	<i>Comply (Strategically)</i>	<i>Circumvent</i>
	high	<i>Combine</i>	<i>Conceptualize (Innovatively)</i>

In Figure 1 we outline how innovative thinking affects strategic adaptation decisions. As Pisano (2015) argued, strategy itself is influenced by creative thinking and knowledge creation processes in the organization. More modern accounts have built on the strategy-as-a-process

tradition and discussed strategy making as a design process itself. Our case studies highlight how different innovation capabilities lead the organizations to different approaches and responses.

Choosing among the four novel strategies implemented by first-movers in maritime shipping to adopt to new regulatory environment, is not an easy task for practitioners, since each of the four generic “C” strategies to navigate disruptive regulations, like the IMO 2020, has its own merits and shortcomings (see Table 1). For example, the “Comply” company has historically been making more conventional decisions, adopted best practice strategies and has avoided risky maneuvering. The “Conceptualize innovatively” firm has an internal drive to adapt creatively and find solutions, also due to its size that affects the capacity to support some investments in response to regulatory changes.

This leads to the second identified internal condition that affects strategic adaptation, namely financial capabilities, and performance. Firms with adequate cash reserves and access to capital may choose large-scale investments to Circumvent or anticipate changes and be prepared for the shock before it happens. To draw on Regester & Larkin (2008), to be able to address issues, mitigate risks and be fully prepared for possible changes is a big ask for companies with financial constraints and existing investment plans. It is therefore useful to see the strategic responses also as reflections of financial capabilities as companies must navigate with the available resources. Still, the development of joint ventures, the “smart” strategy developed by the Conceptualize innovatively firm highlights that there are options in response to shocks, even when change seems to lead to a strategic bottleneck (Ponis & Koronis, 2012).

Finally, our investigation indicated a factor which is worth further exploring both in research and practice. Who makes the decisions and what is the corporate governance in the analyzed companies? In a rather leader-centric industry, we have identified how stock-listed first-mover maritime shipping firms have responded by complying with or circumventing the challenges while more flexible and leader-driven ones have gone for alternative options. Although the Circumvent strategy option entails risks related to spread of fuel prices, it may be seen as a widely accepted and a “normal” response that enhances the confidence of shareholders and in implementing regulatory changes.

From the above, we propose that various strategic options, in response to regulatory shocks, also require a preceding internal analysis and awareness of internal capabilities and dynamics. A firm’s ability to innovation, financial strength and leadership will define which option is best to choose to protect its long-term strategic resilience.

6. Concluding Remarks

The analysis of the case studies in maritime shipping industry resulted to the development of a typology of generic strategies that can be used by companies in various industries to manage disruptive regulations. Particularly, the aim of “Comply” strategy is to timely and proactively cope with disruptive regulation when the environment conditions are more favorable. The purpose of “Circumvent” strategy is finding new ways to restore parity when a regulation is disrupting the business paradigm. Furthermore, the objective of the “Combine” strategy is to synthesize all available options to tackle a disruptive regulation by balancing the risks, and of course, the returns for the company. Lastly, the “Conceptualize innovatively” strategy is about thinking out of the box and coming up with not just new, but ground-breaking ideas to restore parity following the introduction of a disrupting regulation and at the same time trying to limit the downside risk by giving up, on an educated basis, the upside return in an external environment of high uncertainty.

The newly developed generic four “C” strategies provide practicing managers with a useful typology to choose among effective strategic responses to disruptive regulations and policies from regulatory authorities, improving their decision making. Still, as our research suggests, there is no “best practice” to follow because the selection of the appropriate strategic response must fit with firms’ internal resources and capabilities. Rather than relying on emerging strategies and situational responses, firms should work around taxonomies and prepare for regulatory shocks by matching their internal capabilities which must be further enriched.

This paper addresses the issues of regulatory shocks and strategic responses and proposes further directions for theoretical research. As a case study-based research, it needs further insights into other industries and sectors. The case studies themselves need updates and investigations as time will also show the results and strategic outcomes of the selected strategies. Despite these limitations, we believe that introducing regulatory shocks and abrupt changes or crises into the vocabulary of strategic management is necessary in a volatile and crises-based world where unexpected events happen more often than before, and response abilities define the resilience of companies (Vogus & Sutcliffe, 2009).

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