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MNCs entering an emerging industry: The choice of governance mode under high uncertainty

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Abstract: This paper provides insights into the choice of governance mode among relatively similar multinational companies (MNCs) entering into an emerging industry characterised by high uncertainty related to technology, market and policy framework. The study utilises a multiple case study methodology, including interviews with members of five MNCs and the perspective of their investees. The case companies are global leaders in related industries (such as hydropower and wind energy), and they have all chosen to enter the tidal energy industry with a similar technology. Based on their choice of governance mode, the case companies are divided into two groups: "Flexibility" and "Control". The study elaborates on how the two groups' governance mode choices are driven by "real options" (RO) and "transaction cost economics" (TCE) logic when assessing the high uncertainty related to the technology, the emerging industry and the relationships with potential firms to be invested in.

Subjects: Strategic Management; Management of Technology & Innovation; Corporate Governance; Alternative & Renewable Energy Industries

Keywords: real options theory; TCE; entry mode; governance mode; uncertainty; tidal energy; emerging industry

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Øyvind Bjørgum (PhD) is an associate professor at the Norwegian University of Science and Technology (NTNU). His research interests include growth and management of technology firms, particularly related to new technology firms within new renewable energy industries.

PUBLIC INTEREST STATEMENT

New emerging industries may have a large economic impact on the success of firms and regions, and it is therefore important to understand how emerging industries develop and the role of relevant stakeholders such as large and resourceful firms. This paper discusses how the high uncertainty related to emerging industries affects the entry and governance modes of large firms. More specifically, it focuses on five large global firms and their entry into the emerging tidal energy industry. The findings suggest that firms' choice of governance mode when entering an emerging industry is affected by their different assessments of uncertainties related to technology, market and partners, the choice of competitors and preferences based on earlier experience. These insights can be useful for managers evaluating new business opportunities, and for policy-makers working to develop new emerging industries such as the tidal energy industry.

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1. Introduction

Emerging industries are new industries in the early stages of development (Low & Abrahamson, 1997); since emerging industries can propose new ways to grow and sustain competitiveness, they are attractive for existing firms that have been established in other industries. The choice of entering an emerging industry is an important strategic decision that could have long-lasting effects for the firm. Earlier studies have discussed the timing of entry into an emerging industry (e.g. Mitchell, 1989; Suarez, Grodal, & Gotsopoulos, 2015), the technology choice of entering firms (e.g. Eggers, 2012; Kapoor & Furr, 2015) and the pre-entry resources and capabilities of firms that enter new industries (e.g. Helfat & Lieberman, 2002). Few studies, however, have focused on existing firms' choice of governance mode when entering an emerging industry.

In the early phases of their existence, emerging industries typically go through a period without a "dominant design" (Anderson & Tushman, 1990; Utterback & Abernathy, 1975) where several different technologies compete and learn intensively (Kapoor & Furr, 2015), and where well-established product and marketing standards are lacking (Low & Abrahamson, 1997). In such early phases, many emerging industries are dominated by start-ups, which are important sources of innovative new ideas and technologies (Giarratana, 2004; Hill & Rothaermel, 2003). Meanwhile, larger firms from related industries might enter as the industry moves closer towards commercialisation, a pattern which is recognisable from an emerging capital-intensive industry such as biotechnology (Hopkins, Crane, Nightingale, & Baden-Fuller, 2013). Some studies suggest that established firms typically enter new industries organically through internal development (Lee & Lieberman, 2010), while others have found that acquisitions or corporate venture capital (CVC) investments are frequently used (Tong & Li, 2011; Van de Vrande, Vanhaverbeke, & Duysters, 2009; Vapola, Paukku, & Gabrielsson, 2010). Other studies have found that established firms often invest in entrepreneurial ventures in emerging industries in order to have a "listening post" so that they will be in a good position to take advantage as the new technology and industry matures (Benson & Ziedonis, 2009; Dushnitsky & Lenox, 2006; Schildt, Maula, & Keil, 2005).

Because the literature on emerging industries is underdeveloped and scattered (Forbes & Kirsch, 2011; Gustafsson, Jääskeläinen, Maula, & Uotila, 2015), earlier relevant studies are difficult to compare. Some studies have investigated companies' entry into new markets, focused on industries in the growth phase or the external sourcing of technology and have not necessarily focused explicitly on large firms' entry into emerging industries. Additionally, most studies on governance modes have taken the investing firms' perspective, without considering the needs and motivations of the acquired firms (Tong & Li, 2011), and research on larger firms' acquisitions and minority investments in young firms also remains limited (Benson & Ziedonis, 2009).

To the best of our knowledge, this study is the first empirical study to investigate the governance mode of relatively similar and large MNCs entering into a specific emerging industry where they choose a similar technology design. Furthermore, the focus of this study is on different equity governance modes; it does not include modes such as non-equity partnerships.

The tidal energy industry is an emerging industry that comprises firms that develop devices to harness energy from tidal movement. The industry is still in a pre-commercial state, as no commercially viable solutions exist (Magagna & Uihlein, 2015). Two special characteristics of this industry are the sheer size and mass of the technology that is involved, and the long and capital-intensive technology development process, which demands many rounds of installation and the operation of pilots in the ocean environment. Furthermore, because it is a pre-commercial industry, it faces several challenges, one of which is having no dominant design; this situation has led to a broad variety of technological solutions (MacGillivray et al., 2013), few industry standards and a limited supply chain (Krohn et al., 2013). Earlier studies have found the industry to be dominated by small, young and highly international firms (Bjørgum, Moen, & Madsen, 2013; Løvdal & Aspelund, 2011), but in later years, the industry has witnessed the entry of several MNCs from adjacent industries (Mofor, Goldsmith, & Jones, 2014; Renewable-UK, 2012). These MNCs in particular have entered with (or

invested in) the horizontal axis turbine technology; this technology shares many similarities with wind and hydropower turbines, and is the preferred technology design of roughly 75% of the 25 actively developing tidal energy companies (Mofor et al., 2014).

In this paper, we conduct a multiple case study that consists of five large MNCs and their choice of governance mode when entering the emerging tidal energy industry. Although the primary focus is on MNCs, the research design also pays attention to the perspectives of small firms that are being acquired or invested in since the primary data are comprised of interviews with representatives from both sides. The research questions are as follows:

- Why did the MNCs choose their specific governance modes when entering the tidal energy industry?
- How did uncertainty affect their choice of governance mode?

Few other in-depth studies have investigated the entry of relatively similar MNCs in the same emerging industry. The focus on one specific emerging industry and one specific technology design can help us to more explicitly examine the understudied link between specific sources of uncertainty and the governance mode that is chosen to exploit the opportunity. Furthermore, by also investigating the needs and motivation of the investee, our study also differs from most other studies, which primarily focus on the entering firms and often use large data-sets (Tong & Li, 2011); such studies might lack depth in explaining why firms choose different governance modes and the uncertainties are often difficult to separate and compare.

This paper is structured as follows. First, the theoretical section will present different governance modes, and will examine how uncertainty can affect choosing between different modes. The paper then describes the empirical method that was used and discusses the case companies, and then presents a cross-case analysis. Finally, there is a discussion on how the findings contribute to knowledge related to governance modes and uncertainty, and implications and suggestions for further research.

2. Theoretical frame of reference

This chapter first considers the different equity modes that established firms may choose from when entering a new industry; we will then investigate how different types of uncertainties related to entering an emerging industry can affect the entrants' choice of governance mode.

2.1. Equity-based governance modes

In addition to the motivation to seek new growth and earnings, a company's motivations for entering new industries could be to utilise the company's existing resources, or to obtain new resources that will complement its existing resources (Lee & Lieberman, 2010). When entering a new industry, established firms can choose from both non-equity modes (such as alliances) and equity modes (such as internal development, acquisitions and minority investments). Compared to entering a mature industry with an incremental innovation, the potential returns from entering an emerging industry are much higher. Although the possible outcomes are uncertain, firms that enter emerging industries with new technologies tend to opt for equity strategies in order to more easily attain the required return of investment (Ahuja & Morris Lampert, 2001; Van de Vrande et al., 2009). In this study, we will thus focus on three equity modes: internal development, acquisition and minority investments. These three modes differ in terms of risk, speed of entry and the demand of resources. When choosing between the different governance modes, a firm considers the mode's advantages and disadvantages compared to its own resources and capabilities, and the uncertainties related to the emerging industry it plans to enter.

Internal development is an option for all established firms; it includes developing technology within the existing organisation or through the establishment of an entity that is fully owned by the parent company. The relevance of the established firm's internal resources and capabilities is vital to

consider before entering a new industry; some scholars have argued that firms should develop technology or products internally if they want to be able to assemble the resources and capabilities that are required for the development of the new technology (Hoskisson & Busenitz, 2002; Lee & Lieberman, 2010). In addition, developing new technology internally is usually a time-consuming process that might take months or years; compared to most acquisitions and minority investments, internal development is not the preferred choice of firms when speed of entry is the most important factor. Another danger arises if the distance is too big between the firm's current capabilities and resources and the requirements for technology development. At such times, the risk of failure or of a difficult and time-consuming development path will increase.

An *acquisition* takes place when a company buys the stakes of another company in order to assume control of it. Acquisitions give the acquirer full organisational, strategic and technological control over the development of the acquired firm. After the takeover, the acquired firm may continue as an entity on its own, or it may be fully merged into the acquiring corporation's organisation. Acquisitions can be considered an attempt to create synergy effects and values that did not previously exist by uniting complementary resources of the acquiring and the acquired firm (Hoskisson & Busenitz, 2002), or as a vehicle for the acquirer to gain access to the "tacit" organisational knowledge of another firm. Furthermore, for an acquisition to be successful, the acquirer must be able to absorb and integrate the target firm's knowledge and skills: a capability known as "absorptive capacity" (Cohen & Levinthal, 1990). Acquisition can also be useful for overcoming entry barriers into new and desirable markets or industries, as it can relatively quickly and efficiently help the acquiring firm catch up with the technological development of a new industry. This could be especially important in emerging industries where innovations and other events can develop rapidly. The acquisition of an already existing firm in an emerging industry provides the acquiring firm with a record of accomplishment, as well as the possibility for analysing and evaluating the technology (Hitt, Hoskisson, Johnson, & Moesel, 1996); this can make an acquisition strategy a less costly form of entry into a new industry than internal development.

Recent years have witnessed an increasing interest in the option of *minority equity investment*—and especially *corporal venture capital (CVC) investments*—as an alternative governance mode (Folta, 1998; Tong & Li, 2011; Van de Vrande, Lemmens, & Vanhaverbeke, 2006). A minority investment does not create a separate entity, and it will have restricted strategic impact on the firm; a key objective of such investments could be to access knowledge and to learn from the young firm (Dushnitsky & Lenox, 2005). One clear advantage of minority investments is that they offer strategic flexibility through a staging of the investments, where the investing firm can evaluate its initial investments when conditions change, and can then decide if it wants to expand or perhaps abandon the investment (Folta, 1998; Tong & Li, 2011). From the investing firm's point of view, the minority investment provides quick access to external innovation, and the possibility of exploiting these innovations to achieve new opportunities (Basu, Phelps, & Kotha, 2011; Van de Vrande et al., 2009) with an entry cost that is only a fraction of the cost of an acquisition (Dushnitsky, 2011). Minority investments can also be beneficial for the investee firm because such investments provide access to a range of complementary assets that otherwise would be unavailable to the firm; they also increase the legitimacy of small- and medium-sized enterprises (SMEs) through a signal of quality to other potential stakeholders (Basu et al., 2011; Stuart, Hoang, & Hybels, 1999).

Van de Vrande et al. (2009) differentiate between CVC investments and minority investments by emphasising that CVC investments typically occur in start-up firms through a CVC unit, while minority equity investments are generally regarded as a first step towards a merger or acquisition. Using this distinction, they argue that CVC investments are more flexible and involve less commitment than minority equity investments, and are more suitable to use when coping with new technologies (Van de Vrande et al., 2009). Other studies have shown that typical motivations for CVC investments include securing strategic benefits such as gaining a "foothold in a new industry" and gaining a "window to a new technology" (Chesbrough, 2002; Dushnitsky & Lenox, 2006), or increasing the investing company's ability to innovate (Basu et al., 2011).

Table 1. Main differences between the governance modes

Governance mode	Flexibility	Control	Speed of entry
Internal development	Possible to scale up and down	Full control	Slow
Acquisition	Limited	Full control over development, but needs to implement investee into its own business	Fast
Minority investment/CVC	Possible to scale up or down; gain knowledge and experience in technology, industry and start-up	Some influence on strategy through the board; limited control over technology development	Fast

Overall, the main factors for a company entering a new industry to consider when choosing between governance modes appear to include (1) having the *flexibility* to invest in a step-wise manner or to divest if necessary, (2) having full *control* of its engagement in a new industry and (3) factoring in the *speed of entry* into a new industry. Table 1 summarises the basic differences between different governance modes and these three factors.

2.2. Flexibility and control

From Table 1, we can see that the two factors "Flexibility" and "Control" are especially important for the governance mode decision. None of these governance modes provides the benefit of both flexibility and control, however, which implies that firms have to choose between flexibility and control when entering a new industry. In order to understand the advantages of each factor, and at what times they are preferred, we apply different theoretical perspectives. The importance of having *flexibility* when entering an emerging industry can be understood by applying a real options (RO) perspective, while the importance of *control* can be understood by applying a transaction cost (TCE) perspective.

Real options are sequential and irreversible investments that are made under conditions of uncertainty. Such options provide flexibility by generating future decision rights (Vanhaverbeke, Van de Vrande, & Chesbrough, 2008); this flexibility is more valuable the higher the level of uncertainty. According to RO theory, when facing high levels of uncertainty, firms should make small initial investments in order to gradually learn about the industry (Janney & Dess, 2004), decrease the uncertainties involved and have the opportunity to make follow-up investments (Folta, 1998). These strategies will allow firms to cope with unforeseen problems and reverse investments with a low degree of financial commitment.

Transaction cost economics (Williamson, 1975, 1985) provides theoretical arguments for when to organise economic activities into hierarchies and when to organise them into markets. The primary target of TCE is to select the governance form that will minimise the sum of total production and transaction costs. TCE generally assumes that simple market contracts provide a more efficient (or lower cost) mechanism for managing economic exchanges than hierarchical organisation. Because of bounded rationality, however, most complex contracts are incomplete, and in such cases, the firms should internalise transactions (Leiblein, 2003). Furthermore, the choice of governance mode will also be affected by market characteristics, technological uncertainty and complexity in the economic exchange, all of which raise the potential for opportunistic behaviour and the expected cost of writing and enforcing relations (Williamson, 1985). According to Leiblein (2003), market failure is particularly likely in situations where high levels of asset specificity and uncertainty are both present; in such situations, TCE reasoning suggests that entering firms will choose governance modes that will give them control, such as internal development and acquisitions.

2.3. Governance mode and uncertainty

Scholars have recently pointed out that the RO and TCE theories address different types of uncertainties related to governance modes. Folta (1998), for instance, separates uncertainty that affects governance mode decisions into *exogenous* and *endogenous* uncertainties, both discussed below.

2.3.1. Exogenous uncertainty

Folta refers to *exogenous uncertainty* as something that "is largely unaffected by firm actions" (Folta, 1998, p. 1011) and that largely gets resolved over time. Exogenous uncertainty might refer to technological newness or "environmental turbulence", both of which can be associated with emerging industries' complex and unstable environments, which are typically characterised by high technological and market uncertainties (Gustafsson et al., 2015). Market uncertainty may be defined as the state of not knowing about (or having a lack of knowledge about) the future direction of a given market (Hoskisson & Busenitz, 2002), while technological uncertainties are related to the uncertainties of the potential of the developing technology (Van de Vrande et al., 2009). RO theory mainly deals with exogenous uncertainty, where the value of the option is determined by the uncertainty that surrounds the investment.

Earlier studies have found that in environments that are characterised by high uncertainty, minority investments (Folta, 1998) and CVC investments (Tong & Li, 2011; Van de Vrande et al., 2009) are preferred governance modes due to their flexibility and lower initial risk. Studies have also found that when the technology is nascent and the technological uncertainty is high, investing firms prefer governance modes that are reversible and require low commitment (Steensma & Fairbank, 1999; Van de Vrande et al., 2006), such as minority investments. An acquisition, on the other hand, will limit the options of the firm and will provide less flexibility in general since it usually is a one-time deal that provides few sequential investment possibilities. It is also more difficult to divest a company than to liquidate a minority equity investment or an internal project (Tong & Li, 2011), and potential losses are likely to be greater than those associated with minority equity investments and internal development (Hoskisson & Busenitz, 2002). Earlier studies thus suggest that flexible governance modes such as minority equity investments and CVC are more beneficial than acquisitions when entering emerging industries that are characterised by high uncertainty in terms of markets and technology.

2.3.2. Endogenous uncertainty

Endogenous uncertainty refers to uncertainty that "can be decreased by actions of the firm" (Folta, 1998, p. 1010). Endogenous uncertainty is typically caused by partners' asymmetry in size, knowledge bases and interfirm experience between the entering firm and the investee (Billitteri, Nigro, & Perrone, 2013; Van de Vrande et al., 2009). Both TCE and RO theories can be applied to decision-making activities under endogenous uncertainty, but the two theories stress different perspectives (Van de Vrande et al., 2009). RO theory, for example, focuses on the value that is embedded in the uncertainty about the opportunity. Using RO logic, a gradual decrease in endogenous uncertainty related to the firms' dissimilarity could be managed by incremental learning investments, which would be possible if the investing firms choose less integrated governance modes (such as minority investments). This idea is supported by Folta (1998), who finds that when the knowledge bases of the firms are too dissimilar, companies are more likely to use less integrated governance forms in order to delay part of the investment until further information becomes available. Van de Vrande et al. (2006) found, more specifically, that CVC investments were a preferred solution to source external technology when technological distance was high.

The use of TCE, on the other hand, is a way of circumventing the costs that are associated with the writing of contracts under higher levels of uncertainty (Van de Vrande et al., 2009). Thus, using TCE logic, the stronger the partners' asymmetry, the higher the risk of possible opportunistic behaviour. The less experience a company has with interfirm relationships, the higher the endogenous uncertainty, which leads to more structured and integrated governance forms (Billitteri et al., 2013), such as internal development and acquisitions. Earlier studies also suggest that firms tend to favour governance modes that give them control (such as internal development and acquisition) when their pre-entry resources related to technology, marketing and industry knowledge have great similarity with the required resources in a new industry or firm (Hagedoorn & Duysters, 2002; Helfat & Lieberman, 2002; Hoskisson & Busenitz, 2002).

In the tidal energy industry, both the uncertainty related to the industry (i.e. exogenous) and the uncertainty in the relationship between the entering MNCs and the established SMEs (i.e. endogenous) are expected to be high. Following Billitteri et al. (2013), entering firms are expected to adopt an RO perspective. This is because a hierarchical governance form does not help reduce the exogenous uncertainty, while a delay in binding investments in favour of small learning investments could reduce exogenous uncertainty and at the same time allow for the development of trust among the parties, which helps reduce endogenous uncertainty. Van de Vrande et al. (2009) state that each governance mode has its own strengths and weaknesses to cope with emerging industries, new technologies and technological distance between firms, and that different modes will be relevant, depending on the type of uncertainty that the firms have to cope with.

Overall, the literature on governance modes is fragmented; several studies on large firms' modes of governance have not specifically focused on emerging industries, but instead have been large quantitative studies on firms that operate within "exogenous uncertainty" (Tong & Li, 2011), "market uncertainty" (Hoskisson & Busenitz, 2002) or "environmental turbulence" (Van de Vrande et al., 2009). While earlier studies have compared internal development versus acquisition (e.g. Lee & Lieberman, 2010; Yip, 1982) or acquisition versus CVC investment (e.g. Tong & Li, 2011), no other study is identified that compares the choice of different governance modes within the same emerging industry.

Based on the case studies discussed below, we will be able to analyse and discuss these issues in more detail, and will therefore make a contribution within the literature on entry into emerging industries: specifically, on how and why firms' choice of governance mode differ under relatively similar conditions.

3. Methodology

This paper consists of an exploratory study of five MNCs, each of which represents an individual case study. Because the study as a whole covers five different MNCs, it can be described as a multiple case design (Eisenhardt, 1989; Yin, 2009).

The case companies were selected due to their entry in the tidal energy industry. This selection process is considered literal replication (Yin, 2009); the underlying replication logic assumes that the case similarities will cause the cases to support similar findings.

The primary sources are comprised of interviews with key representatives from the five MNCs, and the firms these MNCs have invested in (see Table 2, below). The representatives from the MNCs have been central on a strategic and operational level both before and after the decision to enter the tidal energy industry. Where possible, more personnel from the MNCs have been interviewed. The interviews with senior managers from the SMEs have been included to provide more information on the details around the investment and collaboration with the MNCs from their perspective. The interviews lasted 30–60 min, and focused on the motivation for entering the industry and the choice of governance mode. The study includes 7 interviews with MNC representatives and 4 with SME representatives, for a total of 11 interviews. Unfortunately, the tidal energy company invested in by Alpha could not participate in this study. The secondary sources consist of documents such as news articles, press releases, industry websites, industry reports and international industry conferences (in Canada, the US, the United Kingdom and Ireland).

Due to the emerging state of the tidal industry, the list of potential cases that have a presence in Europe was fewer than 10 companies. Because of the nature of the research questions, it was necessary to interview people within the MNCs at a strategic level. These are normally difficult individuals to reach, but after repeated effort, five companies agreed to participate in the study. The primary ways that were used to reach the contacts were through direct contact within the social network LinkedIn, and in person at industry conferences. While meeting in person was certainly the most efficient means, emails through LinkedIn also proved to be an efficient communications

channel. Some of the interviewees also recruited other people of interest (both within their own companies and from competing companies) to participate in the study. The interviewees from the MNCs were all central in the process of entering the tidal energy industry, and were knowledgeable on the strategic level in the MNC and had everyday familiarity within the respective SMEs. The SME representatives were all senior managers who were knowledgeable about the interactions with the respective MNCs.

All interviews were transcribed and manually coded. The interview data were combined with the data from the secondary sources to write four- to six-page case reports, which were then sent to the interviewees for approval and to ensure construct validity. This study followed the usual instruction on conducting multiple case studies by first analysing and reporting each case separately before conducting a cross-case analysis related to the research questions (Eisenhardt, 1989; Miles & Huberman, 1994).

Table 2 (below) provides an overview of the interview sources at the MNCs and the SMEs, respectively, while Table 3 provides a description of the MNCs. All three SMEs had between 10 and 50 employees when the MNCs invested in or acquired them.

Table 2. Overview of interview sources

Case companies	Informant	
	MNC	**SME**
Alpha	• Leader of the CVC unit, and board member of SME	n/a
Beta	• Manager of marine energy unit	• Senior manager
Gamma	• Head of controlling division, and board member of SME	• Senior engineer • Senior manager and board member
Delta	• Top manager in marine energy unit • Head of technology and innovation • New CEO in the SME recruited from MNC	• Senior manager
Epsilon	• Head of marine energy unit	n/a

Table 3. General descriptions of the case companies

Case companies	Revenue 2014 (in billion euro)	Employees 2014	Relevant industries they are engaged in	Time of entry
Alpha	25–50	100.000–200.000	Power generation; energy industries in general	2012
Beta	5–25	50.000–100.000	Hydropower industry, wind energy industry; energy industries in general	2009
Gamma	5–25	25.000–50.000	Hydropower industry	2010
Delta	50–100	200.000–500.000	Wind and hydropower industries; energy industries in general	2010
Epsilon	5–25	25.000–50.000	Hydropower industry	2009

3.1. The case companies

In this section, we briefly present the five case companies and their involvement in the tidal energy industry: specifically, their motives for entering the industry, their considerations about possible governance modes and their relationship with the SME.

3.1.1. Alpha

Alpha is one of the world's largest engineering firms, with major involvement in the entire electricity value chain, from generation to the end-customer. An important motivation for its entry into the tidal energy industry was the firm's target of being a significant supplier to the industry. The company is interested in developing a new industry, as this would provide it with new markets for its existing products. Alpha believes that the earlier it gets into an industry (and the earlier it helps design or define the standards), the more likely it is that its products will become dominant. The company entered the industry through a CVC investment in 2012, and made an additional investment in 2013. The interviewee stated that since Alpha's entry as an investor in the industry, the company has been involved in roughly 25 projects as a supplier for other tidal or wave energy companies.

An entry through internal development was not an option, as Alpha considered its skill base to be inadequate. The company considered pursuing an acquisition, but with the high uncertainty related to both technology and market development, the firm did not want to invest the necessary money before it had a chance to acquire a better knowledge of the industry. Its decision to invest through a CVC investment was preferred since that option allowed the company to learn about the industry first, while simultaneously making a few "bets". Furthermore, entering through a CVC investment provided Alpha with the opportunity to share its risk with its co-investors. These two partners were two other large firms that were willing to provide the necessary capital for further technological development, as well as know-how about the technology and the market. The difficulty of having a long-term strategy in an emerging industry with so much uncertainty also made the value of creating options through gradual small investments very important for Alpha.

3.1.2. Beta

This company is currently one of the largest global suppliers of equipment in the power generation market, and it follows a strategy of being present in all energy industries; it is also one of the main market leaders within the hydropower industry. Beta entered the tidal industry because of the similarities with hydropower, and the belief that the firm could bring added value to the industry. An equally important factor was to prevent competitors from gaining a "first mover" advantage. When entering new industries, its goal is always to become a market leader.

Beta felt that an internal development would be too slow and uncertain, and thus entered the tidal energy industry in 2009 by acquiring an exclusive technology license from a start-up company. This meant that the firm used the patented technology of this start-up, but it also needed to build up its own tidal technology division internally to further develop, test and commercialise this technology, which previously had only been tested on a small scale. Beta found this technology to be too inefficient, however, and it dropped it in 2012. Instead, the firm continued to develop its own technology in the tidal energy division until, in 2013, the opportunity arose to fully acquire another SME with a different tidal technology. Beta acquired this second SME and implemented the whole company in its marine energy division, which now doubled in size. This acquisition made the firm much closer to having a commercial product than the internal development project it had started earlier.

When Beta decides to invest in a company, it normally buys it outright, as the firm considers a full acquisition to be the best option (if such an option is possible). In total, the MNC buys a dozen or more companies every year, and it also has an extensive number of CVC investments through a designated CVC unit. Because minority investments and CVC investments do not give the company control over the technology or its development, however, these are not adequate strategies for Beta in industries like the emerging tidal energy industry, as the firm does not want to be put on the sidelines by other stakeholders. Furthermore, Beta's business model highlights the importance of being

a market leader in every market it enters; in order to achieve this goal, the firm considered a technology acquisition to be the only way to go. The interviewee emphasised that this governance mode allowed Beta to provide engineering knowledge to industrialise the prototype, to have control over technology development and to avoid being pre-empted by potential rivals.

3.1.3. Gamma

Gamma is a large industrial company, and is among the major actors in the global hydropower business. The firm's entry into the tidal energy industry was motivated by the sector's technological similarities with hydropower. In particular, it would be easy for its production facilities to switch to producing tidal energy devices, the end-customers would be the same and the firm has a strong belief that it can drive down costs by utilising its global supply chain and manufacturing facilities around the world. One of the firm's clear targets when it entered the tidal energy industry was to become an industry leader.

Gamma acquired around a third of the SME in 2010, and later increased that share to above 50% in 2012. Gamma does not have a CVC division, and rarely buys into small firms. (In fact, the interviewee believes that Gamma has not made any similar investments or acquisitions in such a small company before, nor at such an early stage in an industry.)

Before its entry, Gamma estimated that developing a tidal energy technology through an internal R&D project would take years due to a lack of relevant experience. With the expectation that the industry would soon break through, and seeing its competitors from the adjacent hydropower industry entering the tidal energy sector, Gamma started to search for an already existing technology to work with in order to be able to join the race for industry leadership. Gamma had little experience in investments and acquisitions of such small firms, however, and it had little experience with emerging industries with high uncertainty related to technology development, markets and policy frameworks. Thus, the firm did not want to fully acquire a company, but rather to start with a minority investment in order to learn about the industry. One important factor when choosing the specific SME was that two potential future customers were among the existing shareholders of the SME.

The SME, meanwhile, was seeking an industrial investor, but it did not want to sell the whole firm. Gamma was a good match for the SME, as the latter could leverage its global market presence and manufacturing capabilities to this new industry. All the technology development is still located within the SME, while Gamma has replaced many of the SME's former suppliers, and now produces around 50–70% of the devices in its own manufacturing facilities.

3.1.4. Delta

This company is one of the largest technology companies in the world, with extensive operations within several energy industries. The firm considered tidal energy to be interesting because of the similarities with its existing business in the wind energy and hydropower industries; one of its targets was to exploit know-how and synergies in manufacturing, technology development and value chain management from these industries. Its target when entering new industries is always to establish itself as a market leader, and usually among the three largest companies. When it entered the tidal industry, Delta bought a minor share of the SME in 2010; the firm increased its minority share to around 40% in 2011, and in 2012 increased its share to a 100% ownership.

Delta originally believed that it could develop the technology in-house, but decided that it would be faster and more secure to invest in a proven concept. It evaluated the possibility of investing through its CVC unit, but considered this not to be preferable during such an early and uncertain stage of the industry: this was because the firm believed that in order to be successful in the tidal energy industry, it needed a strong influence on the technology development, which a CVC investment would not be able to provide. Because of the new and uncertain state of the industry, neither Delta nor the SME wanted a full acquisition. Thus, in order to gain control and influence over the technology development, Delta decided first to make a minority investment, and later to increase

that shareholding position. This is not a standard procedure for Delta, but the firm chose this strategy because it had little knowledge about the industry and political frameworks, and it wanted to understand more from the inside: especially how the industry works, and how Delta could contribute and bring its synergies to bear. When entering a more mature industry, Delta's preferred choice is usually to make a full acquisition. In addition, this step-wise process is useful when entering emerging industries, as such firms are usually very small at this time, and require freedom to grow before they can be included in large bureaucratic organisations like Delta.

For the SME, the steps in the investment process made it easier for the small firm to become gradually included in the large corporate structure of Delta, which the SME considered to be a challenge due to the different cultures and working processes between the two firms. The SME was considering alternative MNCs at the time of the first investment, but Delta became its preferred MNC since it was willing to increase the size of the team, use its globally renowned brand, fund the technology from a demonstration stage through to a commercial stage and provide access to various forms of expertise within its engineering and global marketing divisions.

3.1.5. Epsilon

Epsilon is an engineering company with worldwide operations; the company is one of the largest suppliers of turbines and generators to the hydropower industry. Epsilon entered the tidal energy industry because of its huge growth potential and its similarity to the firm's core technology within the hydropower sector. The company's ambition is to become an industry leader.

The firm started from scratch in 2009 with the goal of developing a tidal energy technology. While it actually started as an 80:20 joint venture, its partner, a renewable energy investor, only supported the firm financially, while Epsilon held all of the internal technological and engineering resources that came from the hydropower division. Epsilon took 100% control of the technology in 2014; the interviewee considered tidal energy to be an internal Epsilon project from the time of the company's inception.

When entering an emerging industry such as the tidal energy industry, Epsilon considers a long-term commitment to be a key factor for success. The firm generally prefers to use or utilise its internal know-how, and will enter through internal development or through an acquisition; this is because its prime objective is to be in control of the technology development. Although the firm acknowledges that the step-wise process of a minority investor has its advantages when facing the high uncertainties related to the tidal energy industry, entering as a minority shareholder was not an option since this would have prevented Epsilon from being in control; as such, the firm would not have been able to intervene or make changes whenever necessary. Thus, having the ability to fully integrate the tidal technology with the relevant technology department and having both strategic and technological control were imperative for Epsilon when choosing its governance mode.

4. Analysis and discussion

In this section, we will analyse the research questions through a cross-case analysis. We will then group the case companies and discuss how uncertainty affected the firms' choice of governance mode.

4.1. Why did the MNCs choose their specific governance modes?

In addition to the forecasted growth opportunities, our case companies reported that their current positions in other (and related) energy industries made them believe that they could utilise existing resources and capabilities in the emerging tidal energy industry. All of the companies except Alpha believed that they possessed the necessary resources and capabilities related to technology, marketing and industrialisation in order to internally develop and commercialise a tidal energy technology at the time of entry. The similarities with wind and hydro turbines, and the opportunity to use existing manufacturing plants and supply chains, were prerequisites for investing in the tidal energy industry for these MNCs, but they were not decisive factors when choosing the governance mode. In

Table 4. Overview of governance mode choice and SME perspective

Firm	Governance mode	Reasons for governance mode choice	SME perspective
Alpha	CVC	Learn about the industry and the technology; wanted co-investors; market uncertainties related to the emerging industry	n/a
Beta	Acquisition	Gives them full control of the technology development, and utilises existing resources. No risk of being pre-empted by rivals	The company was for sale, as existing owners wanted an exit from the industry; wanted an owner with industry experience and financial resources
Gamma	Minority investment	Learn more about the industry and the technology; little experience with emerging industries and start-up companies; wanted co-investors	The SME did not want to be fully acquired; it wanted an industrial investor that could create synergy effects
Delta	Minority investment	Gave the firm more insights into how the industry and the technology worked before figuring out how they could contribute and bring in synergies	The SME did not want to be fully acquired; it wanted an investor able to contribute with technical expertise, network and financial resources
Epsilon	Internal development	Preferred this governance mode, as it gives full control and opportunities to utilise earlier experience and know-how within hydropower and wave power	n/a

addition, these five companies stated that they were among the market leaders in all industries where they were established, and that this had been a clear target when they entered the tidal energy industry for all of them except Alpha. Table 4 (above) shows the case companies' governance mode choices, and their reasons for choosing them.

Based on the case descriptions and Table 4 above, we can divide our case companies into two groups: "flexibility" and "control", discussed in turn below.

4.1.1. "Flexibility" (alpha, delta and gamma)

These firms wanted a step-wise involvement when entering the tidal energy industry because of the many uncertainties related to the technology, the SMEs and the emerging stage of the industry. The flexibility that was offered through minority investments gave them the possibility to scale up or down their initial investment without risking too much money or commitment at the initial entry stage; furthermore, a minority investment was a rapid way of entering the industry that did not risk the irreversibility of an acquisition. These findings clearly illustrate that the "Flexibility" firms were highly influenced by RO logic (low resource commitment and low risk in initial stages) when assessing the governance mode choice (e.g. Folta, 1998; Vanhaverbeke et al., 2008). Moreover, both Alpha and Gamma highlighted the importance of having co-investors, which help share the risk of the investment and may also become end-customers for the commercial technology since they are utility companies. In addition, the SMEs of both Gamma and Delta stated that they wanted a minority investment, and that a full acquisition was not possible at the time the MNCs entered the industry. The case companies also differentiated between CVC investments and minority investments. Delta and Gamma believed that a CVC investment was too passive; they emphasised that they invested with the aim of having the opportunity to control the technology at a later stage, while still being involved in the technology development from day one. This could imply, however, that the initial governance mode of Delta and Gamma when entering the tidal energy industry was influenced by RO logic, but that their plan for long run governance mode follows TCE logic since they believe that full internal control in later stages would increase their probability for success.

4.1.2. "Control" (beta and epsilon)

The most important factor for these firms when they enter an emerging industry is to have control over the technology development because this makes it easier to utilise the firms' pre-entry resources within (for example) technological expertise and supplier networks. Their preferred governance modes are therefore those that give them control, such as acquisition and internal development. These firms believe that minority investments do not provide adequate control of the technological development; this makes it difficult to develop synergies and utilise existing resources, and therefore would not be consistent with these companies' strategies when entering an emerging industry. The need for control is illustrated by one of the managers in Epsilon, who said: "From our perspective, we need drastic changes, or we want to integrate the technology into the technology department, then of course we need to have the control". Thus, this suggests that Beta and Epsilon's choice of governance mode follows TCE logic since they emphasise that control will remove the potential relational risks related to minority investments, and instead increase the possibility for success by exploiting internal resources and potentially obtain a higher return on their investment (Anderson & Gatignon, 1986). These companies also differentiate between minority investments and CVC investments, the latter of which they believe will provide even less influence and make a company "just sit on the sideline[s] and watch". Regarding their entry into the tidal energy industry, the companies emphasised that a long and thorough study of the industry was a prerequisite for their choice of entering the industry.

4.2. How did uncertainty affect the choice of governance mode?

Following the theory chapter and several earlier studies (e.g. Folta, 1998; Van de Vrande et al., 2009), we can separate the uncertainties into exogenous and endogenous forms of uncertainty.

4.2.1. Exogenous uncertainty in the case studies

The exogenous uncertainties that the entering MNCs face in the tidal energy industry are related to technology, market and policy. More specifically, no technology was close to commercialisation in the industry when the MNCs entered, no supply chain or industry standards existed (Krohn et al., 2013; MacGillivray et al., 2013), few countries had attractive market incentives and there were uncertainties related to the attractiveness of the long-term policy regimes.

The "Flexibility" group, following RO logic, emphasised the need to learn and understand more about the industry; they also highlighted the uncertainties surrounding policy schemes in the long run. This can be illustrated by one of the MNC interviewees, who stated that "the external challenges of course are the high technology risk, will this thing really work, how expensive will it be, will it scale, can people afford to pay for it. And then the market risk, which is, like we like to call it "will the dog eat the dog food?" Following RO logic, the minority investments created a series of options for the "Flexibility" group, which can lead the firms to invest more if the different investment stages appear to be successful. This was important for both Delta and Gamma, which believed that they could tackle the necessary technology challenges, but chose a minority investment strategy because of the high exogenous uncertainty associated with political frameworks and the progress of the young tidal industry.

The "Control" firms, on the other hand, were fully aware of the uncertainties related to the emerging industry, and the advantages of more flexible governance modes. Although exogenous uncertainty might be largely unaffected by firms' actions (Folta, 1998), the entry of large MNCs through acquisition or internal development could be a strong signal to industry stakeholders such as end-customers (the utility companies) and public policy-makers; this could secure these actors' interest in the industry, and thereby reduce some uncertainty, especially in such a transparent and small emerging industry like the tidal energy industry. A specific advantage of the governance modes of the "Control" firms was also that these modes provide the MNCs with the ability to react rapidly and decisively to any possible external events or opportunities. In fact, although high control typically is associated with higher risk within TCE logic because of the higher resource commitment (e.g. Anderson & Gatignon, 1986; Billitteri et al., 2013), using governance modes which give full control will also increase the companies' flexibility to do actions when facing opportunities or threats in dynamic environments such as emerging industries.

4.2.2. Endogenous uncertainty in the case studies

The endogenous uncertainty that the entering MNCs faced in the tidal energy industry relates to the huge differences in size, knowledge bases and interfirm experience between the MNCs and the young SMEs that are developing the tidal technology (Billitteri et al., 2013; Van de Vrande et al., 2009). The greater these differences are, the greater the uncertainty, which increases the risk of possible opportunistic behaviour (e.g. Leiblein, 2003; Williamson, 1985).

The "Flexibility" group, in line with RO logic, argued that their minority investments gave them the opportunity to gradually learn about the company and the specific technology they invested in (Janney & Dess, 2004). This form of investment decreased the endogenous uncertainties, while still giving them the option to withdraw or increase their involvement; this is especially favourable because of the nascent and highly uncertain technology (Steensma & Fairbank, 1999; Van de Vrande et al., 2006). The "Flexibility" group also emphasised that minority investments were advantages since they then could carefully implement the SME into the larger MNC's organisation, as illustrated by one of the interviewees: "You are talking about very small companies which need a lot of freedom to grow. Rolling out all processes [they] needed to be part of us [i.e. the MNC] would struggle them to death, so we gave them freedom to grow to a certain stage before fully including them in our business". Such a gradual inclusion could also help decrease the endogenous uncertainty as the inclusion gradually implements the SME into the MNC and the two parties have more time to get to know each other. Certain opportunity costs are related to the real options approach, however, such as forgone opportunities to learn and the risk of being pre-empted by co-investors or external investors (Folta, 1998).

The "Control" firms, in contrast, did not believe that the small SMEs had the necessary resources and competences to further develop and industrialise the technology. Thus, following TCE logic, they preferred to decrease any uncertainties related to investing through an existing SME by choosing governance modes (such as acquisition and internal development) that gave them full control of the technology development and (Billitteri et al., 2013) and removed potential relational risk. These modes also gave them the necessary control to utilise existing resources (Helfat & Lieberman, 2002), such as industrialisation competence, supply chain management and customer relationships from day one. This was illustrated by one of the interviewees, who said: "we come in and provide the engineering knowledge to take one-off prototypes towards industrialisation and make it into a product if it looks like it could go the distance". In addition, the "Control" firms did not face the risk of being pre-empted by external or existing investors.

Overall, these findings show that firms with relatively similar pre-entry resources could take different approaches to assessing the same uncertainties when entering an emerging industry. Furthermore, the findings show how TCE perspectives could explain the governance mode choice of the "Control" firms, while RO perspectives guide the governance mode choice of the "Flexibility" firms. Earlier studies have found that when facing high uncertainty, firms will most likely follow RO logic and use flexible governance modes such as minority investments and CVC (e.g. Folta, 1998; Tong & Li, 2011), also when facing both high exogenous and high endogenous uncertainties (Billitteri et al., 2013). This was not the case in this study, however; this can be illustrated by the "Control" firms, which acknowledged the high exogenous uncertainty of the emerging tidal energy industry, but did anyway prefer governance modes with higher resource commitment and higher risk (Anderson & Gatignon, 1986). Using TCE logic, they argued that having control was imperative for them to becoming an industry leader. They emphasised that when doing such uncertain investments, they wanted control precisely to have the flexibility to manage the technology commercialisation process without the interference from other parties. This flexibility is different than the flexibility emphasised by the "Flexibility" group which focuses on the limited resource commitment when entering the emerging industry and opportunities to divest without high losses in the earliest entry stages. Thus, this study suggests that the RO approach is not more consistent than the TCE approach to explain the choice of governance form when entering emerging industries, or highly "uncertain environments", as several earlier studies have suggested (e.g. Billitteri et al., 2013; Folta, 1998). Instead, this

study shows that the two groups ("Flexibility" and "Control") had a totally different assessment of relatively similar uncertainties, and how these uncertainties should affect the firms' choice of governance mode.

Furthermore, there are other factors that complicate the picture, but which also can help explain the MNCs' choice of governance mode. First, firms may favour certain governance modes where they have developed routines and preferences by earlier experience (Helfat & Lieberman, 2002); this might affect how the firms assess exogenous and endogenous uncertainties. Second, the competitiveness for industry leadership in the tidal energy industry could have an effect, as earlier research has shown that firms' entries into industries also increase the likelihood of the entry of similar companies (Debruyne & Reibstein, 2005). In the present study, both Gamma and Delta stated that a major driver for entering the tidal energy industry was that competitors from other energy industries had already entered the sector at least one year earlier. Because they considered internal development to be too slow for competing with Epsilon and Beta, they decided to invest in "proven" technologies within existing SMEs, and they preferred the minority investment approach to do this. In a similar fashion, Beta stated that its entry into the tidal energy industry was to prevent their competitors from the hydropower and other related energy industries in getting a "first mover advantage". Thus, competitors' actions could affect firms' decisions to enter an emerging industry, their assessments of uncertainties and their choice of governance mode. In addition, the situation of several large global MNCs entering the tidal energy industry might have decreased uncertainties related to policy framework and future market. Third, our findings also suggest that the view of the SME matters, and that an entering MNC will not end up with just any SME. For example, Beta could not have acquired the SMEs of Alpha, Gamma or Delta, as these were only willing to have a minority investor. This perspective of the SME has been overlooked in most of the literature on large firms' governance modes into new industries.

5. Implications and future research avenues

This paper contributes to the understanding of large firms' entry into emerging industries, and focuses on MNCs' choice of governance mode and how uncertainty affects this choice. Moreover, it is one of few in-depth studies of the governance mode choice of firms with relatively similar backgrounds choosing the same technology design when entering an emerging industry. The study shows that the MNCs have different assessments when facing similar uncertainties. Specifically, that firms choosing minority investments base their uncertainty assessments on RO logic, while firms choosing controlling governance modes such as internal development and acquisition base their uncertainty assessments on TCE logic. Thus, this study finds that the MNCs' choice of governance mode when entering into an emerging industry is not consistently better explained by neither RO nor TCE logic. Instead, it suggests that both perspectives should be applied to understand MNC's choice of governance mode under uncertainty, in combination with the firms' pre-entry resources and experience, the degree of competitiveness and the preferences of the SME.

Furthermore, the governance mode of large firms can have important implications for the development of emerging industries such as the tidal energy industry. First, if all large firms choose governance modes which give them full control, such as internal development and acquisition, fewer large firms will be stakeholders in the industry. Thus, much of the development of the industry can be dependent on a few firms and the resources these bring to the industry such as funding, industrialisation competence, global supply chain and legitimacy to the industry. If not meeting their ambitions, these firms can, however, divest on relatively short notice with possibly large consequences for the emerging industry. Second, if all large firms enter through minority investments, they will probably not be actively contributing in the technology development and industrialisation themselves in the beginning. This is especially valid for firms entering through a CVC investment which is more passive, with limited possibilities to take part in technology development and dependent on other owners. Thus, minority investments, and especially CVC, do not promise (and signal) the same long-term commitment as internal development and acquisition, both financially and technologically, to invest in the emerging industry. However, the approach of Alpha, which in addition to its CVC

investment aims to become a central part of the supply chain in the tidal energy industry, represents another possible way of developing (or nurturing) emerging industries. Based on the findings presented in this paper, it would be interesting to further investigate how the different governance modes of large firms affect the development of emerging industries, and if there is an ideal balance between entrants seeking control and flexibility in the development of emerging industries.

Like all studies, this one also has its limitations that could provide good opportunities for future research. The exploratory nature of the study means that the number of cases is limited to five companies entering the same emerging industry. With the limited number of cases, there will be a danger that the results are sensitive to the specific case selection. However, as the case companies represent around half of the MNCs having entered the tidal energy industry, they make a good representation of this specific industry with similar uncertainties. Further research in this direction could study whether similar results can be observed among companies in other complex emerging industries, or compare different governance modes across different industries. In addition, further studies on how RO and TCE logic affect minority investing firms' assessment of uncertainties when considering follow-up investments could be interesting. Another interesting study could be how MNCs' entry modes into complex emerging industries such as the tidal energy industry affect other stakeholders such as policy-makers, other investors, suppliers and financial institutions. Finally, caution is recommended in generalising the results of this study to other emerging industries. We do believe, however, that the findings in this study could be transferable to other capital-intensive emerging industries with similar characteristics as the tidal energy industry such as, for example, other renewable energy industries.

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References

Ahuja, G., & Morris Lampert, C. (2001). Entrepreneurship in the large corporation: A longitudinal study of how established firms create breakthrough inventions. *Strategic Management Journal, 22*, 521–543. http://dx.doi.org/10.1002/(ISSN)1097-0266

Anderson, E., & Gatignon, H. (1986). Modes of foreign entry: A transaction cost analysis and propositions. *Journal of International Business Studies, 17*, 1–26. http://dx.doi.org/10.1057/palgrave.jibs.8490432

Anderson, P., & Tushman, M. L. (1990). Technological discontinuities and dominant designs: A cyclical model of technological change. *Administrative Science Quarterly, 35*, 604–633. http://dx.doi.org/10.2307/2393511

Basu, S., Phelps, C., & Kotha, S. (2011). Towards understanding who makes corporate venture capital investments and why. *Journal of Business Venturing, 26*, 153–171. doi:10.1016/j.jbusvent.2009.07.001

Benson, D., & Ziedonis, R. H. (2009). Corporate venture capital as a window on new technologies: Implications for the performance of corporate investors when acquiring startups. *Organization Science, 20*, 329–351. doi:10.1287/orsc.1080.0386

Billitteri, C., Nigro, G. L., & Perrone, G. (2013). How risk influences the choice of governance mode in biopharmaceutical inter-firm relationships. *International Business Review, 22*, 932–950. doi:10.1016/j.ibusrev.2013.01.011

Bjørgum, Ø., Moen, Ø., & Madsen, T. K. (2013). New ventures in an emerging industry: Access to and use of international resources. *International Journal of Entrepreneurship and Small Business, 20*, 233–253. doi:10.1504/ijesb.2013.056281

Chesbrough, H. W. (2002). Making sense of corporate venture capital. *Harvard Business Review, 80*, 90–99.

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly, 35*, 128–152. doi:10.2307/2393553

Debruyne, M., & Reibstein, D. J. (2005). Competitor see, competitor do: Incumbent entry in new market niches. *Marketing Science, 24*, 55–66. http://dx.doi.org/10.1287/mksc.1040.0064

Dushnitsky, G. (2011). Riding the next wave of corporate venture captial. *Business Strategy Review, 22*, 44–49. http://dx.doi.org/10.1111/busr.2011.22.issue-3

Dushnitsky, G., & Lenox, M. J. (2005). When do firms undertake R&D by investing in new ventures? *Strategic Management Journal, 26*, 947–965. http://dx.doi.org/10.1002/(ISSN)1097-0266

Dushnitsky, G., & Lenox, M. J. (2006). When does corporate venture capital investment create firm value? *Journal of Business Venturing, 21*, 753–772. doi:10.1016/j.jbusvent.2005.04.012

Eggers, J. (2012). Falling flat: Failed technologies and investment under uncertainty. *Administrative Science Quarterly, 57*, 47–80. http://dx.doi.org/10.1177/0001839212447181

Eisenhardt, K. M. (1989). Building theories from case study research. *The Academy of Management Review, 14*, 532–550.
Folta, T. B. (1998). Governance and uncertainty: The trade-off between administrative control and commitment. *Strategic Management Journal, 19*, 1007–1028. http://dx.doi.org/10.1002/(ISSN)1097-0266
Forbes, D. P., & Kirsch, D. A. (2011). The study of emerging industries: Recognizing and responding to some central problems. *Journal of Business Venturing, 26*, 589–602. doi:10.1016/j.jbusvent.2010.01.004
Giarratana, M. S. (2004). The birth of a new industry: Entry by start-ups and the drivers of firm growth. *Research Policy, 33*, 787–806. http://dx.doi.org/10.1016/j.respol.2004.01.001
Gustafsson, R., Jääskeläinen, M., Maula, M., & Uotila, J. (2015). Emergence of industries: A review and future directions. *International Journal of Management Reviews, 18*, 28–50. doi:10.1111/ijmr.12057
Hagedoorn, J., & Duysters, G. (2002). External sources of innovative capabilities: The preferences for strategic alliances or mergers and acquisitions. *Journal of Management Studies, 39*, 167–188. http://dx.doi.org/10.1111/joms.2002.39.issue-2
Helfat, C. E., & Lieberman, M. B. (2002). The birth of capabilities: Market entry and the importance of pre-history. *Industrial and Corporate Change, 11*, 725–760. http://dx.doi.org/10.1093/icc/11.4.725
Hill, C. W., & Rothaermel, F. T. (2003). The performance of incumbent firms in the face of radical technological innovation. *Academy of Management Review, 28*, 257–274.
Hitt, M. A., Hoskisson, R. E., Johnson, R. A., & Moesel, D. D. (1996). The market for corporate control and firm innovation. *Academy of Management Journal, 39*, 1084–1119. http://dx.doi.org/10.2307/256993
Hopkins, M. M., Crane, P. A., Nightingale, P., & Baden-Fuller, C. (2013). Buying big into biotech: scale, financing, and the industrial dynamics of UK biotech, 1980–2009. *Industrial and Corporate Change, 22*, 903–952. doi:10.1093/icc/dtt022
Hoskisson, R. E., & Busenitz, L. W. (2002). *Market uncertainty and learning distance in corporate entrepreneurship entry mode choice strategic entrepreneurship: Creating a new mindset*. Oxford: Blackwell Publishers.
Janney, J. J., & Dess, G. G. (2004). Can real-options analysis improve decision-making? Promises and pitfalls. *Academy of Management Executive, 18*, 60–75. http://dx.doi.org/10.5465/AME.2004.15268687
Kapoor, R., & Furr, N. R. (2015). Complementarities and competition: Unpacking the drivers of entrants' technology choices in the solar photovoltaic industry. *Strategic Management Journal, 36*, 416–436. http://dx.doi.org/10.1002/smj.2223
Krohn, D., Woods, M., Adams, J., Valpy, B., Jones, F., & Gardner, P. (2013). *Wave and tidal energy in the UK. Conquering challenges, generating growth*. London: RenewableUK.
Lee, G. K., & Lieberman, M. B. (2010). Acquisition vs. internal development as modes of market entry. *Strategic Management Journal, 31*, 140–158.
Leiblein, M. J. (2003). The choice of organizational governance form and performance: Predictions from transaction cost, resource-based, and real options theories. *Journal of Management, 29*, 937–961. doi:10.1016/s0149-2063_03_00085-0
Løvdal, N., & Aspelund, A. (2011). International entrepreneurship in the offshore renewable energy industry. In R. Wüstenhagen & R. Wuebker (Eds.), *Handbook of research on energy entrepreneurship* (pp. 121–141). Cheltenham: Edward Elgar Publishing.
Low, M. B., & Abrahamson, E. (1997). Movements, bandwagons, and clones: Industry evolution and the entrepreneurial process. *Journal of Business Venturing, 12*, 435–457. http://dx.doi.org/10.1016/S0883-9026(97)00001-3
MacGillivray, A., Jeffrey, H., Hanmer, C., Magagna, D., Raventos, A., & Badcock-Broe, A. (2013). *Ocean energy technology: Gaps and barriers*. Retrieved from http://www.si-ocean.eu/en/upload/docs/WP3/Gaps%20and%20Barriers%20Report%20FV.pdf
Magagna, D., & Uihlein, A. (2015). Ocean energy development in Europe: Current status and future perspectives. *International Journal of Marine Energy, 11*, 84–104. http://dx.doi.org/10.1016/j.ijome.2015.05.001
Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: Sage Publications.
Mitchell, W. (1989). Whether and when? Probability and timing of incumbents' entry into emerging industrial subfields. *Administrative Science Quarterly, 34*, 208–230. doi:10.2307/2989896
Mofor, L., Goldsmith, J., & Jones, F. (2014). *Ocean energy: Technology readiness, patents, deployment status and outlook*. Retrieved from http://www.irena.org/DocumentDownloads/Publications/IRENA_Ocean_Energy_report_2014.pdf
Renewable-UK. (2012). *Wave and tidal energy in the UK—State of the industry report*. Retrieved from https://hub.globalccsinstitute.com/sites/default/files/publications/115703/marine-energy-UK-state-industry-report-2012.pdf
Schildt, H. A., Maula, M. V. J., & Keil, T. (2005). Explorative and exploitative learning from external corporate ventures. *Entrepreneurship Theory and Practice, 29*, 493–515. doi:10.1111/j.1540-6520.2005.00095.x
Steensma, H. K., & Fairbank, J. F. (1999). Internalizing external technology: A model of governance mode choice and an empirical assessment. *The Journal of High Technology Management Research, 10*(1), 1–35. http://dx.doi.org/10.1016/S1047-8310(99)80001-7
Stuart, T. E., Hoang, H., & Hybels, R. C. (1999). Interorganizational endorsements and the performance of entrepreneurial ventures. *Administrative Science Quarterly, 44*, 315–349. http://dx.doi.org/10.2307/2666998
Suarez, F. F., Grodal, S., & Gotsopoulos, A. (2015). Perfect timing? Dominant category, dominant design, and the window of opportunity for firm entry. *Strategic Management Journal, 36*, 437–448. doi:10.1002/smj.2225
Tong, T. W., & Li, Y. (2011). Real options and investment mode: Evidence from corporate venture capital and acquisition. *Organization Science, 22*, 659–674. http://dx.doi.org/10.1287/orsc.1100.0551
Utterback, J. M., & Abernathy, W. J. (1975). A dynamic model of process and product innovation. *Omega, 3*, 639–656. http://dx.doi.org/10.1016/0305-0483(75)90068-7
Van de Vrande, V., Lemmens, C., & Vanhaverbeke, W. (2006). Choosing governance modes for external technology sourcing. *R&D Management, 36*, 347–363. doi:10.1111/j.1467-9310.2006.00434.x
Van de Vrande, V., Vanhaverbeke, W., & Duysters, G. (2009). External technology sourcing: The effect of uncertainty on governance mode choice. *Journal of Business Venturing, 24*, 62–80. http://dx.doi.org/10.1016/j.jbusvent.2007.10.001
Vanhaverbeke, W., Van de Vrande, V., & Chesbrough, H. (2008). Understanding the advantages of open innovation practices in corporate venturing in terms of real options. *Creativity and Innovation Management, 17*, 251–258. http://dx.doi.org/10.1111/caim.2008.17.issue-4

Vapola, T. J., Paukku, M., & Gabrielsson, M. (2010). Portfolio management of strategic alliances: An international business perspective. *International Business Review, 19*, 247–260. http://dx.doi.org/10.1016/j.ibusrev.2009.12.004

Williamson, O. E. (1975). *Markets and hierarchies*. New York, NY: Free Press.

Williamson, O. E. (1985). *The economic intstitutions of capitalism*. New York, NY: Simon and Schuster.

Yin, R. K. (2009). *Case study research—Design and methods* (4th ed.). Thousand Oaks, CA: SAGE Publications.

Yip, G. S. (1982). Diversification entry: Internal development versus acquisition. *Strategic Management Journal, 3*, 331–345. doi:10.1002/smj.4250030405

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