Choosing the “right” time is a broadly accepted success factor in new product development. However, the inconsistency of empirical findings on the timing of projects suggests that the range of relevant influencing factors is wider than expected. What factors do firms consider when they start the development of a new product and what shapes the decision to launch a new product on the market? In this paper, we summarise empirical and conceptual work on these timing decisions. We propose research consider the influencing factors as a necessary prior step before studies recommend a certain timing for new product development.

1. Introduction

Research on new product development and launch strategies suggests that the timing of development and launch of a new product on the market is critically aligned with subsequent product performance (e.g. Datar et al. 1997; Calantone/Di Benedetto 2012). However, insights from numerous studies vary in their implications for the timing-performance relationship. For example, findings on the relationship between speed and success include negative (Meyer/Utterback 1995), positive (e.g. Kessler/Berly 2002), and insignificant relationships (e.g. Griffin 2002). Similarly, studies on being early or late to the market show that both strategies can be successful, as they support the view of advantages for pioneers (e.g. Lambkin 1988) and early followers (e.g. Robinson/Min 2002), as well as late entrants (e.g. Tellis/Golder 1996).

While research seeks to provide answers and clear implications for marketing practice, conventional practitioner wisdom still believes in launching a new product generation as soon as it is available (e.g. Perez/Muller/Mahajan 2010). With divergent findings in research and a predominantly unidirectional view in practice, we seize the opportunity to take a step back and discuss what factors influence the realisation of timing strategies in new product development. Putting performance effects aside for the time being, and focusing on the factors that influence the implementation of timing strategies in new product development is important because the study of performance-enhancing effects often disregards those factors that enable or constrain the implementation of strategies. In order to answer the question, we require a better understanding of the factors influencing timing decisions in the development and supply of new products. We discuss the recent literature on these timing decisions based on a review of empirical findings and existing theoretical insights. Such a review is necessary as timing decision-related publications are scattered over a multiplicity of journals in the areas of economics, engineering, innovation, marketing, operations research, production, strategy, etc. It is also necessary as previous work in this area is rare. Reinganum (1989) discusses a collection of economic models to explain the timing of innovation from the industrial organisation perspective. Other review articles only account for timing decisions as an aside matter. Mahajan/Muller/Bass (1990) present the timing of product launch as a strategic variable by reviewing product diffusion models, and Krishnan/Ulrich (2001) analyse 30 fundamental problems in new product development, two of which refer to the timing of development activities and the timing of product launch. Buchholtz (1998) discusses the strategic importance of a joint consideration of optimal timing the start of new product development and new product launch for firms. Reviews that include the empirical literature on the timing of these decisions are missing.

In comparison to the timing of new product launch, deciding when to start the development of a new product...
has been even more underplayed. A reason might be the implicit assumption that a pioneer on the market has also been a pioneer in product development (Ansoff/Stewart 1967; Freeman 1982). Measurement problems in product development (Griffin 1993) may have prevented empirical research, yet the transition from the concept to the development phase represents a critical decision for a company (Datar et al. 1997; Katila/Chen 2008; Specht/Perillieux 1988, Song/Montoya-Weiss (1998) analyse several new product development activities and find that companies pay the greatest attention to technical development (i.e., to designing, engineering, testing, and building the desired physical product entity). Empirical work also provides evidence of the performance effects of timing decisions in the early phases of the new product development process, such as the timing of search activities relative to competitors (Katila/Chen 2008), or the lead/flag days with respect to the closest competitor at the end of concept generation (Datar et al. 1997). Specht/Perillieux (1988) highlight the necessity for relative timing strategies at the start of new product development. However, besides these results, there is little literature on the timing of new product development.

In this paper, we present past research on timing decisions and study factors influencing the timing. The review shows research progress and relations between publications, and suggests avenues of future empirical research. We begin with the timing of starting the development and continue with the timing of new product launch.

2. Timing the start of new product development

2.1 Empirical findings

Afuah (2004) studies the exploitation of a technological change and the decision of when to start the development of new products adopting new technologies in product applications. The study shows that incumbent firms are more likely to start development earlier than start-up firms when technological change is incremental. However, if technological change is radical, start-up firms are more likely to develop new products earlier than incumbent firms. Probably, incumbents fear that their capabilities could become obsolete and they will lose dominant customers on whom they depend. Research on industrial automation organisations shows that firms do not innovate in isolation, as their timing of searching new technological fields is influenced by competitors, and such coordinated search stimulates valuable mutual learning effects (Katila/Chen 2008). McGrath/Nerkar (2004) support the premise that competition in new technological areas has a strong effect on the propensity to initiate new product applications. They use real options reasoning to explain the hazard rate of a second patent being filed after the grant of the first. A growth option is more likely to be taken out, the greater the scope of opportunity of the first patent, the greater the commitment of competitors, and the less the firm has already taken out prior options in new areas that could expire. Building on resource-based view and institutional theory, Hoffmann/Trautmann/Hamprecht (2009) find that companies facing high regulatory uncertainty do not postpone R&D if the projects secure competitive resources, leverage complementary resources, or alleviate pressure from stakeholders. Finally, Fisch/Ross (2013a) study antecedents of the timing decision to start a material substitution project. Their findings suggest that uncertainty about material prices motivates firms to delay the start of developing a new product based on a new material. The negative effect of uncertainty of the new material price is reduced if the expected project duration is long and if the firm pre-empts its competitors. The common factors in these is that timing decisions for developing future products are influenced by the level of uncertainties that companies are exposed to as well as aspects of the competitive environment.

2.2 Future research

2.2.1 Strategy

Timing R&D projects can be the outcome of a firm’s systematic strategic planning process. For example, Venkatraman/Venkatraman (1995) suggest a stepwise methodology for streamlining R&D project schedules in tune with organisational goals. The components for this type of R&D project planning are the planned growth rate, the expected demand, and the shortfalls of existing products. Under the consideration of constraints, the starting dates of R&D projects are derived backwards from the desired time of the market launch. Thus, the R&D investment schedule is ultimately directed to achieve turnover targets.

As an alternative to such a predetermined plan, firms can also apply an option strategy and implement a strategy via an incremental-choice process (Hurry/Miller/Bowman 1992). In this case, strategies emerge by creating and exercising options in an option chain: first-stage investments provide access to follow-on investment opportunities. Only if the market develops favourably, the firm releases investments for the development of a new product. The timing of this investment will depend on the criteria which the management has defined as being relevant. An option strategy will build on insights from strategic and quantitative option assessments (Lint/Pennings 2001; Lee/Paxson 2001), proactively consider flexibilities, and emphasise the value of waiting for decision making. Instead, firms following a project strategy will more likely derive the timing decisions out of project schedules and performance forecasts (as discussed above).

The type of selection strategy can also change over time: Insights from dynamic programming models point out that firms vary their R&D project management policies (Chan/Nickerson/Owan 2007). Those policy changes are
due to a need to balance the portfolio of vertically interdependent R&D projects and influence the decision threshold at the advance-to-development gate. Hence, the timing decision of a specific project is contingent on the state of the firm’s R&D project pipeline.

The review of conceptual research suggests new empirical research questions. First, it could be of interest to study how planned targets and actual developments influence timing decisions of new product development. Second, one could examine whether a planning approach results in fewer changes in project schedules than the option approach. This could be the case, because firms that have built strategic flexibility might respond to market developments more rapidly than firms that develop their R&D schedule from scratch (Sanchez 1993), or, under different external situations, use their flexibility to delay projects and realise benefits of waiting. Thirdly, empirical research posits that the history of the firm’s market entries has an enduring impact on the actual product development strategy because firm proficiencies and corporate cultures are difficult to change (Robinson/Chiang 2002). Therefore, future studies could examine whether a historical leader-position in the market effects an earlier timing for contemporary product development projects and when those firms deviate from routinized paths.

Finally, the willingness to cannibalise investments in the form of assets or organisational routines, which are related to existing technologies, could explain the timing decision to abandon existing products and switch to new products. Firms are more likely to cannibalise their products when their marketing strategy places an emphasis on future markets rather than on existing customers and current markets (Chandy/Tellis 1998). Therefore, a valuable area of study could examine whether a combined effect of future-market focus in the strategic planning phase and willingness to cannibalise influences the timing of the start of new product development.

2.2.2 Competition

Once a firm is confronted with a technological threat from competition, it may decide to commit resources to the same new technology (Cooper/Schenkel 1976). Studies of herd behaviour provide insights into why managers decide to choose the same technology as their competitors. In particular, mimicking competitive behaviour can be substantiated by positive externalities (e.g., Katz/Shapiro 1985), reputational reasons (Scharfstein/Stein 1990), information cascades (Bikhchandani/Hirshleifer/Welch 1992), or uncertainty reduction (Anand/Mesquita/Vassolo 2009). Zhang (1997) reveals that agents do not only decide on which actions to take against others, but also on when to take actions. He shows that this decision depends on a trade-off between the decay in project value and the opportunity to observe the actions of others. The agent with the most precise decision will be the first mover, and everyone else follows immediately while ignoring private signals. Others argue that competitive interactions can influence the decision to start developing a new product. For example, Ait/Kalwani/Kovenock (1993) show that selecting a development project depends on the competitor’s project choice in reaction to the leader’s selection, and Stenbacka/Tombak (1994) argue that the leader’s and follower’s decision on when to start development depends on the rival’s timing. In general, R&D competition may lower incentives for delaying investments, but can also become a waiting game when imitation helps to reduce one’s own development cost (Katz/Shapiro 1987) or when there is a fear of starting a patent race (Weeds 2002). Empirical research of how competitive interactions relate to these is rare although McGrath/Nerker (2004) emphasise the importance of signalling effects on the likelihood of taking out a new R&D option. Investing makes the new technological area more attractive for competitors as it signals the scope of potential growth opportunities. Others use mimetic behaviour to explain investment decisions in new product technology (Anand/Mesquita/Vassolo 2009).

While some of the research insights discussed above promote the idea that herd behaviour can lead to immediate reactions (once the first mover has triggered the cascade), future research could study whether herd behaviour might, in some situations, also be related to a delay in planned development activities. This could be the case, when competitors coordinate their actions and align the adoption of new technologies within an industry. The conceptual model of technology adoption timing by Stenbacka/Tombak (1994) proposes that coordination benefits exist, and that collusive timing provides maximum industry profits. Thus, under specific conditions, it could be beneficial to coordinate the start of new product development. To illustrate the advantages of a coordinated waiting strategy, Smir/Trigeorgis (2006) use a simplified two-player symmetric innovation race where both firms plan to develop a technology and have the opportunity to invest or to wait. The model provides contingencies about when firms are better off by collaborating and when they benefit from the option value of waiting instead of playing the firm’s dominant strategy that reduces industry payoffs. Empirical research on coordinated waiting strategies and their underlying rationales could be topic of future study.

2.2.3 Resources and capabilities

Future empirical research could also shed light on the effect of resources and capabilities on the decision to begin the development of a new product. Previous studies show that a lack of financial resources makes firms refrain from investing in R&D (Cuervo-Cazurra/Un 2010). Others find that firms who possess more technological resources are more likely to enter new technological areas earlier because they have the ability to capitalise on opportunities in the environment (Schoenecker/Cooper 1998). Those opportunities often exist in markets with environmental change rather than stable markets. Firms with more absorptive capacity are more likely to
recognize those opportunities, create proprietary options, and strike them by introducing product innovations (Bowman/Hurry 1993). Others argue that a firm’s transformative capacity, as the ability to transfer technologies to later products, creates “future options by placing technologies on-the-shelf” (Garud/Neyyar 1994, p. 380). Those capabilities support the ability to maintain a technology and adopt it for a new product once positive market signals appear. To the best of our knowledge, empirical research on the role of different capabilities for the timing of new product development is still outstanding.

Previous work adopts the capability perspective and argues that platform investments provide capabilities that enable a firm to be flexible and react to market changes quickly (Kogut/Kulatilaka 1994). A firm that has experimented with new techniques enhances its flexibility and lowers the cost of switching to the new technology (Kogut/Kulatilaka 2001). Thus, firms that have (proactively) invested in research may be able to react to changes in the external environment and start developing new products more quickly than their competitors. This perspective suggests that a firm’s prior investments determine the likelihood of triggering new product development. So, timing heterogeneity at the start of developing a new product is state-contingent on path dependent capability development and market signals. At the same time this implies that capabilities, which a firm has built over time, can also have a decelerating influence on the development of new products because the firm’s existing capabilities can become core rigidities and hinder innovation (Leonard-Barton 1992). For example, the traditional experience in processing metal, which might have been a firm’s core competence in new product development over years, could become a core incompetence (Dougherty 1995) once alternative materials create a shift in the technological paradigm in an industry. Even if improvements based on current knowledge are still achieved, existing capabilities can still be a source of rigidity (Kogut/Kulatilaka 2001) and negatively relate to the timing of new product development using a new material.

3. Timing of new product launch

Early typologies of market strategies emphasise the importance of timing (e.g. Maidique/Patch 1982). Empirical studies find advantages for pioneers (e.g. Lambkin 1988), early followers (e.g. Robinson/Min 2002), or late entrants (e.g. Tellis/Golder 1996). Di Benedetto (1999) investigates activities influencing the success of new product launch and shows that the timing of market launch is as important as the question of whether to launch a new product at all. The decision of when to launch a new product belongs to the set of strategic launch decisions (Hultink et al. 1997) and it impacts on functional strategies and tactical decisions made later in the process (Hultink et al. 1997). Given the importance of timing decisions, it becomes of interest to investigate their influencing factors.

3.1. Empirical findings

The timing of new product launch has been investigated by several empirical studies. Mitchell (1989) extends the question of whether to enter a market to ask when to enter a market. He examines the timing of entry by industry incumbents into emerging technical subfields and argues that conflicting incentives to entry exist: on the one hand, the risk of investing in assets that may turn out to have no value; on the other, the risk of losing the value of assets the firm already possesses. The results show that the incentive to wait until technical and market uncertainties have resolved is less if the number of potential rivals is high and the core products are threatened. To find further relationships between competition and the timing of entry, Aboulnasr et al. (2008) investigate competitive responses to radical product introductions. They define competitive response as the time interval between a radical innovation by the introducer and a related innovation from the focal competitor. They found a positive impact of introducer firm size and market dependence on the likelihood of competitive response, and a negative effect of these variables when interacted with market size. These insights suggest that entry thresholds of introducing firms work as a signal for (future) market potential and therefore trigger competitive response. Turner/Mitchell/Bettis (2010) show that with increasing market concentration, the release of generational product innovations is less driven by historical introduction rhythm, and that innovation timing becomes more sensitive to external innovation events, such as competitor innovations. The results support the view that businesses are forced to undertake generational product innovations due to interdependencies in an industry. Under the application of a structural equation model, Green/Barclay/Ryans (1995) investigate relationships between context variables (sources of advantage, product-market characteristics) and the entry strategy. A high number of active competitors and a low concentration seem to induce an early timing of entry. Fisch/Ross (2013b) mention that on average firms seem to disregard sources of advantage that are rooted in the fluctuating input cost of new products for the timing of market launch. Their work leaves the question of why some firms are not able to capitalise on opportunities that arise from those dynamic factors.

According to Robinson/Fornell/Sullivan (1992), skills and resource profiles seem to be different between market pioneers, early followers, and late entrants. Schoenecker/Cooper (1998) also support the view that firm resources and organisational attributes influence the timing of entry. However, the results may not be generalised across industries, since the overall model is rejected for one of the two investigated industries. The results are basically unchanged, regardless of measuring timing by the point since first entry or by the order of competitors’ entries. Wally/Fong (2000) find significant effects of industry-specific entry behaviour as a control variable, while examining organisational factors and their impact on entry timing. Following the results of Kim/Kogut (1996),
organisations differ in accumulating know-how; those who gain experience in platform technologies that provide options on future opportunities are more likely to diversify into new markets; options will be struck earlier when the subfield market grows. Knowledge accumulation is also a central argument in Wyss (2006). According to the results, technical, market, and manufacturing knowledge foster an early product launch. Klepper/Simons (2000) show that, prior to entry, firms who have relevant experience to match the market requirements will enter the market earlier. The results suggest that firm capabilities are shaped by firm’s prior experience. Additionally, Lee (2008) finds that firms who initially have an unfavourable capability position can still achieve early entry, as long as they improve their capability relevance over time. Lee (2009) complements her previous work by distinguishing capabilities that are relevant for invention from those which are relevant for commercialisation, and examines entry timing after a firm missed the opportunity to pioneer in an emerging market. Both relevancies have positive effects on the timing of entry; however, the relevance in commercialisation is dominant.

To investigate the relationship of firm capability and the timing of entry, Atuahene-Gima/Ko (2001) differentiate between the capability to react to a market environment and the capability to alter the competitive landscape to the company’s advantage. Depending on these two orientations, called market orientation and entrepreneurship orientation, the timing of entry between four types of firms differs: First, market/entrepreneurship firms (ME), which have a high specificity in both dimensions, are earlier to market than market-oriented firms (MO), which have a high market orientation and a low entrepreneurship orientation, or conservative firms (CO), which have a low specificity in both dimensions. Second, entrepreneurial-oriented firms (EO) are faster to market than market oriented (MO) and conservative firms (CO). These insights emphasise the importance of the link between marketing and management perspectives to explain the timing of market launch.

Eggers/Kaplan (2009) argue that the attention of the CEO is an essential force in shaping the change from old to new technologies. They found that CEO attention when directed to an emerging technology or the affected industry has an accelerating effect on the timing of entry. In contrast, CEO attention to the existing technology will delay entry. Wu/Balasubramanian/Mahajan (2004) confirm that high senior-management emphasis will avoid delaying the new product. They investigate the question of when a preannounced product is likely to be delayed, and find further negative effects on delay for inter-functional coordination, partner power of complementary products, and the firm’s market dominance. Delay is likely to increase if the preannouncement is used as a competitive tool, if the potential for product cannibalisation is high, and if the innovativeness of the product is high. The latter factor points to the role of innovation characteristics. They are the subject of the empirical work of Gatignon et al. (2002), examining the timing of innovation introduction which is embedded in subsystems. Besides innovation characteristics (competence-enhancing vs. destroying), the time to introduction is significantly affected by the type (architectural) and the locus (core vs. peripheral) of innovation. Furthermore, innovations which are more complex take longer to reach the market. The results emphasise that adopting a structural approach is important for explaining the timing of innovations.

3.2. Future research

3.2.1. Competition

A firm can match rival’s actions by various kinds of strategic and tactical moves. Reactions to the launch of new competitor products can differ in speed (e.g. Bowman/ Gatignon 1995), type of reaction (e.g. Chen/MacMillan 1992), magnitude (e.g. Hultink/Langerak 2002), or even lack thereof (Debruyne/Reibstein 2005), or that decision makers mimic investment decisions if managers are concerned about their reputations (Scharfstein/Stein 1990). Future empirical research could take these specific competitive situations into consideration when examining the timings of investment. Conceptual research leverages game theory to model R&D and competitive entry decisions (e.g. Moorthy 1985), simulate sequential entry games when optimising the timing of market entry (e.g. Narasimham/Zhang 2000), or to analyse cases of entry decisions in specific industries (e.g. Bayus/Jain/Rao 1997). However, empirical tests are missing apart from the case study of Su/Rao (2011). Bayus/Jain/Rao (2001) find theoretical game arguments for their observations of preannouncement and introduction timing decisions, and discuss how preannouncement can be used to deter a competitor’s entry. While empirical work on the relationship between preannouncement as a competitive tool and entry timing exists (Wu/Balasubramanian/Mahajan 2004), future research could advance these insights and investigate the impact of concrete strategic interactions on timing decisions of new product launch.

Another stream of research builds on the intersection of game theory and real options (e.g. Smit/Trigeorgis 2006). The studies apply both theories to practical cases: While real option theory accounts for the value of waiting until more information is available, game theory argues for early investment in fear of pre-emption. The trade-off between the strategic incentive to invest early and the value of flexibility under uncertainty has been the subject of publications on oligopoly situations (e.g. Kulattilaka/Perotti 1998). Conceptual work suggests that real option models become more precise about the impact of competition when combined with game theory (e.g. Huisman et al. 2004), whereas empirical studies are missing for the time being. Smit/Trigeorgis (2006) suggest that a “commitment value” signalled to competitors, e.g. by an early
or high investment in R&D, could be part of appropriate timing decisions. The strategic investment in a first stage might influence competitors’ behaviour either by dissuading entry or by inducing competitors to “make room” (Kalaitzakos/Perotti 1998). In a second stage, the firm decides the timing of commercialisation. Future research could investigate whether signalling commitment values influences competitors’ option values and reduces part of the environmental uncertainties. Both effects might impact on the investment thresholds of the firm concerned. Empirical work on R&D competition is required to show how game theory helps to overcome the shortcomings of certain assumptions of real options theory (i.e. the monopoly power of an investment opportunity and the assumption of perfect competition). In order to avoid the problem of empirically testing the predictions of game theory, future studies may build on competitive dynamics research which traditionally seeks to produce insights from empirical observation of competitive interactions rather than from formal modelling (Chen/MacMillan 1992).

Finally, research points to the role of historical product development strategies in competition: a role reversal in historical product development strategies (Robinson/Chiang 2002) can lead to a regular rotation of industry leadership and be beneficial to follower and leader firms in hypercompetitive markets (Pacheco-de-Almeida 2010). Mitchell (1989) controls for past-entry waits to account for historical firm-specific behaviour and finds a positive but insignificant effect on the timing of entry. The results suggest that firms change waiting times in competitive environments. In addition to the factors discussed above, future empirical research on the timing of new product launch could investigate whether role reversal can explain timing decisions.

3.2.2. Product portfolio

If a firm decides to launch different qualities of a product in different customer segments, it will have to account for potential cannibalisation within the product portfolio (e.g. Moorthy/Png 1992). This problem could also appear when a new product follows an old, which is typical for launch strategies such as product replacements, line extensions, or upgrading (Purohit 1994). Firms may be inclined to delay the launch of the new product until R&D is finished, however, superseding the current best-seller product before a rival does (Conner 1988) or hedging one’s own competing technology designs (Hatfield/Tegarden/Echols 2001) could influence the timing decisions. Firms that are planning to replace existing products with new ones can choose different types of phasing strategies, and the timing of those product replacements is a critical factor for the success of the strategies (Saunders/Jobber 1994). However, the timing of product launch when replacing an older model has only been considered in the work of Wu/Balasubramanian/Mahajan (2004). They show that potential cannibalisation can delay a product launch beyond preannounced deadlines and argue that the delay is related to well-performing existing products or a limited profit position of the new product.

To further develop this previous work and account for performance differences in replacing products, diffusion models might help to substantiate the optimal entry timing of substituting products. Pae/Lehmann (2003) use S-curves to investigate technical changes that involve substitution of materials, processes, or products, and study the role of time between two adjacent technologies, the ‘intergeneration time’. They point out that an optimal market launch time may exist and that this is different from the moment when the product is actually available. They argue that managers will delay the launch when customers’ tendency to replacement is expected to be slow. Furthermore, firms might wait until the new technology’s performance is as high as the old one, and the product will be launched when technology performance trajectories are crossing. Sood/Tellis (2005) investigate whether the performance paths of old and new technologies actually have a single crossing point and whether technologies follow S-shaped paths. Their results contradict the standard view: Technologies develop like an irregular step function, competing technologies rarely have a single crossing, and new technologies enter above or below the performance level of existing technologies. Thus, future research needs to consider factors that account for technological differences between substituting products and their expected developments.

3.2.3. Company characteristics

Extant studies on timing decisions have considered the role of firm characteristics, such as resources (e.g. Mitchell 1989), capabilities (e.g. Lee 2008), knowledge (Wyss 2006), and firm size (Kim/Kogut 1996; Schoenecker/Cooper 1998). Other studies suggest that ownership structure could influence the timing of investments. For example, empirical work shows that ownership and board composition impact on R&D strategies (e.g. Kor 2006). This lets us assume that these factors might also relate to the timing decision of launching new products onto the market. Others find that capital markets reward timeliness of new product launch relative to preannounced dates (Hendricks/Singhal 1997). Thus, firms that are held by widespread shareholdings tend to avoid delays – even if these delays are strategically advantageous. Investor behaviour could also be influenced by analysts who create pressures to delay new technological substitution, because analysts seem to be more attentive and positive towards incumbents that preserve the old technology rather than focus on the new technology (Benner 2010). Furthermore, owners with long-term planning horizons tend to show more entrepreneurial behaviour (Zahra 1996). Consequently, these firms might switch to new technologies and launch new products earlier. Finally, Sirmon et al. (2008) found evidence that family firms reduce R&D investments less than other firms when facing a threat of imitation. Reducing R&D investments
might delay or even cancel initially planned R&D projects. Accordingly, research needs to investigate whether family firms are less likely to delay market introductions in threatening environments. Ward (1997) argues that family firms are more likely to stay flexible and hold options open. Whether family firms are more likely to delay commitment by launching new products and the contingencies that are involved in the causal mechanism could be a subject of future empirical research.

4. Conclusion

The goal of this paper is to emphasise critical timing decisions in new product development. We add to the ongoing discussion of factors that enable or impede timing strategies. In this way, the paper supplements reviews on timing decisions in new product development (Buchholz 1998; Krishnan/Ulrich 2001; Mahajan/Muller/Bass 1990; Reinganum 1989). In particular, we focus on two central timing decisions in new product development: when firms start development and the timing of market launch. We discuss existing empirical studies on both timing decisions, and structure the known factors. Although research on the timing of new product launch is more advanced than research on the start of development, we show that both decisions are still potential areas for empirical research. The review of articles provides an overview of the theories applied to timing decisions in new product development. In summary, empirical work has adopted the resource-based-view (e.g. Schoenecker/Cooper 1998), the knowledge-based-view (Wyss 2006), and the theory of real options (e.g. Kim/Kogut 1996). Other theories, such as game theory or the combination of theories, namely game theory and real option theory, have only been parts of theoretical papers on timing decisions in new product development so far (e.g. Narasimhan/Zhang 2000; Smir/Trigeorgis 2006).

This paper gives directions for future empirical research on both types of timing decision. Insights from understanding timing decisions can be used for future studies on performance effects of implementing timing strategies. Beyond these, there are research opportunities for the integration of both timing decisions: future research could investigate the relation between waiting time, cycle time, and performance, and thereby contribute to the field of time and performance (e.g. Datar et al. 1997; Pacheco-de-Almeida 2010). The theory of real options might be appropriate to investigate this integrated question, since it relates timing decisions to performance outcomes. Furthermore, we need to clarify whether firms can successfully differ in both timing decisions, e.g., being a follower in the start of new product development and being a leader in the launch on the market. A helpful study will provide answers to explain varying orders at different stages (Capon/Glazer 1987) and identify successful entry strategies.

There are some important implications for marketers. We collect factors that can be used to implement timing strategies. Furthermore, we review arguments to delay investments and thereby refrain from resource-intensive acceleration activities or even innovation races. The variables discussed could be used as stage-gate criteria (Cooper/Kleinschmidt 1991), in order to set up aggregated project plans (Wheelwright/Clark 1992), or to design and adapt technology roadmaps (e.g. Phaal/Farrukhi/Probert 2004).

References


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