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Two sides of a coin: Complementary resources as a source of M&A success and failure

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ABSTRACT

M&A activities aim at exploiting synergies between formerly separated business firms in order to create a future surplus in returns. Nevertheless scholars and practitioners have acknowledged the economic failure of the majority of M&A efforts. The strategic literature puts forward various - but relatively unrelated - explanations for the high failure rate such as agency, conflicting organizational culture or the redistribution of power; we suggest that a major reason of M&A failure can be found in the process of M&A itself: while exploiting increasing returns in the form of synergies from complementary resources, firms may become trapped with a complementary resource allocation, that becomes more and more persistent over time due to self-reinforcing feedback. Therefore the mechanism of complementary resources that make M&A appear attractive and may proof profitable at first, may also carry the cause of downfall from the very beginning on, especially in dynamic and complex environments that require flexibility and the ability to adapt to a new set of resources. By combining the theoretical framework of the established resource-based-view with relatively new path dependence theory, we analyze the process of M&A to uncover its inherent source of failure.

Introduction

Regarding the decisions for M&A, synergies from complementary resources of the former separate corporate units are recognized as the main driver (Barney 2007). Nevertheless most M&A activities do not achieve the goal of higher returns from synergetic effects – may they be measured by performance or innovation proxies – and ultimately fail, leading to unintended consequences such as a lower innovation rate and decreased profits in the long run (Hitt et al. 1991a; De Man/Duysters 2005). Since the ‘positive feedback economics’ (Arthur 1990: 99) may offer an explanation that draws on the mechanisms lying in the M&A process itself, we try to unfold the M&A process to uncover the two sides of complementary resources.

M&A

We understand M&A as a contractual and equity-based cooperation between enterprises, which are legally and economically independent from each other (Wirtz 2003). The prevalent literature basically distinguishes two types of M&A: related and unrelated M&A. Related M&A on the one hand assume a certain similarity among the set of resources between the merging companies (Barney 2007); unrelated M&A on the other hand are characterized by a lack of existent linkages between the fusing companies (Singh/Montgomery 1987). The process of forming M&A encompasses three phases, the pre-merger-, transaction-, and post-merger-phase (Wirtz 2003). The pre-merger-phase serves the goal to find an acquisition target that possesses the essential resources necessary to close a particular resource gap (Bausch 2003). Within the transaction-phase the eligible resources are evaluated concerning their value-creating potential. Only in the integration-phase – and thus in retrospect – it is possible to judge whether engaging in a merger has been successful and value creating (Bamberger 1994; D’Aveni/Ravenscraft 1994). In order to differentiate success from failure, defining a notion of M&A-success is an essential issue.

M&A – success

Generally the success of M&A can be measured by comparing the returns to the shareholders before and after the merger. If the returns increase after the merger it is ought to be successful. It is generally argued that an increase of returns is achieved through synergy effects (Lubatkin 1983; Seth 1990). Synergistic production in company mergers is typically classified in three types: Operational synergy, financial synergy and managerial synergy.

Operational synergy points to the synergy potential of merchandise market sector and can be classified in two types: economies of scale and economies of scope (Hofmann 2004). Economies of scale can be achieved if the costs per unit decrease with increasing output (Seth 1990) while economies of scope result from reduced costs through the joined production of heterogeneous products within M&A (Panzar/Willig 1981). Financial synergy refers to synergy potential of the capital market sector (Wöginger 2004) and the management oriented synergy potential serves the internal purpose of assessing the efficient application of management know how (Singh/Montgomery 1987).

These different types of synergies are crucial for increasing the innovation ability within a merger. Since synergies mainly lead to cost reduction (economies of scope and scale), they leave more scope for investments into R&D activities and therefore a higher potential for innovations. In our study we focus on synergies that result from the efficient combination of two or more resources (particularly complementary resources) as well as on particular endorsement of certain resources. Therefore we prefer a more general definition of synergies. Basically synergy in M&A exists when the value of the merged company is higher than the total of the independent values of individual companies before merger (Settnik 2006). Formally the synergy concept can be expressed as

$$\text{Value (A+B)} > \text{value (A)} + \text{value (B)}$$

whereas A and B stand for two individual companies. These kinds of synergies often emerge through the amalgamation of resources within the merger. The predominant role of resources with regards to M&A can be traced back to implication from the Resource-based View (RBV), which attributes them a leading role in generating a competitive advantage. Since our argument is based mainly on interdependent resources there is a need to first elaborate on resources and their role in the RBV on a more general level.

Resource based view: A brief summary

Other than the industrial economic approach, the RBV takes on an inside-out perspective and attributes permanent business success to various company resources and their combinations with each other (Penrose 1959; Wernerfelt 1984). Hence, the focus is no longer put onto the company's external determinants but on the internal factors of success (Dierickx/Cool 1989; Grant 1991; Peteraf 1993). These internal factors of success are defined as resources, which support the implementation of strategies and thereby raising productivity and efficiency

(Barney 1991). They can be further classified in material and immaterial resources (Barney 2001). Material resources refer to all tangible, mobile and stationary, wearable and usable, real assets. The immaterial resources can be classified into “skills” and “assets” (Rodermann 1999). In order to secure sustainable competitive advantage and generate healthy returns, these resources need to fulfill the criteria of the so-called VRIN-framework. Following the VRIN-criteria a resource should be valuable, rare, inimitable and non substitutable (Barney 1991). This framework implies that all resources should be examined in light of the four above-mentioned attributes to identify them as strategically relevant resources and separate them from other common resources. As such resources are very difficult to develop entirely within the own firm boundaries, it is very tentative to acquire them mainly or partially through M&A. Therefore, we state that from a resource-based point of view M&A definitely present a strategic tool for the management to acquire novel resources or to reconfigure the already existent resource equipment. Moreover M&A often tend to be the only chance to keep pace with the constantly changing environmental circumstances (Capron et al. 1998, Capron/Hulland 1999). The concepts and assumptions of the resource-based view do play a major role in conjunction with M&A-decisions. In this context complementary resources have received an extraordinary attention. The assumption is that if the resources of the fusing firms complement each other in the most efficient and value creating way, a sustainable competitive advantage can be generated through their mutual combination. Following this train of thought adherents of the resource based view have identified complementary resources as a source of strategically valuable resources and therefore as a source of competitive advantages. That is why Amit and Schoemaker (1993) even plead for extending the notion of strategically valuable resources by another attribute, which they name the criteria of complementarity. Therefore it is inevitable that we look at the concept of complementary resources more closely.

The concept of complementary resources

Complementary resources are on very general basis described as resources that a company needs to acquire externally in order to advance innovation and increase M&A success (Teece et al. 1997). The notion of complementary resources is frequently depicted in the concept of resource relatedness, which refers to the relatedness of resources within M&A (Rumelt 1974; Singh/Montgomery 1987). In the prevalent literature one often finds a distinction between similar and complementary resources (Harrison et al. 1991). There are several studies that contrast these two types of interdependencies of resources in order to analyze their different

effects on success and performance of a merger (Harrison et al. 2001). It is questionable whether this strict classification of complementary and similar resources is legitimate or whether similar resources also have the potential to be complementary and therefore more or less constitute a subset of complementary resources. The term “similar” describes a compliance of distinctive characteristics (Salter/Weinhold 1979), which still leaves scope for slight differences among the resources. One can conclude that as soon as resources show the slightest difference between them and therefore are “just” similar, they do have the potential to complement each other. The extent of completion differs within each combination of resources and should be analyzed in the post-merger phase. Hence similar resources should not be excluded from the analysis of complementary resources.

There are various domains within an organization that profit from the fusion of complementary resources as they set free the above-mentioned synergies. The following section will focus on the most frequently analyzed domains in prevalent literature, providing detailed account and explaining how complementary resources affect M&A performance and success, thereby encouraging incentives to merge.

COMPLEMENTARY RESOURCES: THE UPSIDE

As mentioned above, increasing the innovative output via M&A becomes more and more important and is at the heart of many ventures (King et al. 2003). Since a rising number of companies operate in hypercompetitive markets and face frequent environmental changes, they are constantly forced to adjust their set of resources in order to prevent a depreciation of economic values within the boundaries (Capron et al. 1998). Therefore the aspect of time plays an important role. If the companies invest too much time and effort into detecting and creating an innovative idea or product on their own, they may forego a chance. That is why many managers opt for the strategic tool of M&A in order to remain competitive and innovative, as external growth and incorporation of resources can be accomplished faster than internal development of the crucial resources (Gaughan 2002). Through this kind of shared utilization of resources and competences the merged firms are able to realize synergies within central value chain activities such as R&D, production and sales (Wirtz 2003). Especially in the department of R&D complementary resources give major incentives to engage in M&A. First of all it is often the case that firms merge in order to increase their budget for innovations and R&D (de Man/Duysters 2005). Since some of them may not have the size and the budget for intensive fundamental research, they profit from a joined R&D department,

as they are able to work on a broader scale and more thoroughly. Inferentially, the employees of both of the merging firms develop complementary know-how, which from a resource-based point of view creates a competitive advantage, since the resource of combined knowledge complies with the four VRIN-criteria. Furthermore, the know-how for developing and producing the innovation stays within the corporation and would not have grown if each firm had researched and worked on its own (Gerpott 1993). In this context Hitt et al. (2001) argue, that organizations which possess different but complementary skills, competences and knowledge pools are able to exchange these amongst themselves and learn from each other. Also empirical results from Mowery et al. (1996) depict that there exists a positive correlation between the presence of complementary resources and inter-organizational learning success. Leonard-Barton (1995) even states that complementary resources form a major factor for learning processes and the generation of new and corporate competences. On the other hand learning success can also be achieved by merging similar resources. In that case it is not the main aim to create novel competences but to achieve economies of scale which result from learning curves and specialization effects (Wirtz 2006). Those effects arise if an employee learns to accomplish a given task in a more efficient way within a certain period of time (Wirtz 2006). There are indications that learning curve effects mainly occur within horizontal M&A that is to say when similar resources are being combined (Seth 1990). Economies of scale are mostly achieved in production department by output-oriented learning curve and specialization effects. It is necessary to note that similar as well as complementary resources affect the learning success and hence the generation of competitive advantages within a merger. However they influence the performance of mergers in different manners. On the one hand the effective and efficient utilization and accomplishment of already existent tasks and abilities lead to cost reduction and maximum capacity utilization. In other words merging similar resources leads to operational synergies (Perin 1996). On the other hand the learning success within a merger of complementary resources is characterized by the development and creation of totally new, interconnected and therefore unique competences. Exactly those competences do have the potential to create sustainable competitive advantages for the corporation. In this context Dyer and Singh (1998) claim that the more complementary resources are included in a merger the higher the learning success and the probability of generating sustainable competitive advantages. In order to actually gain those advantages and exploit the potential of complementary resources, it is inevitable that the top-management of an enterprise has certain abilities to combine the resources in the most effective and professional way.

With reference to complementary resources and the M&A management Jap (1999) states that „it is not just skills in one domain but rather the complementary combination of skills from several domains that gives many firms their competitive advantage“. Hence, it is not only necessary to hold complementary resources in order to gain competitive advantages but also to have the ability to combine these resources in a successful way. Bellmann and Hippe (1996) define certain management abilities as “complementary competences”, which include mainly the domains of communication, coordination and logistics. Therefore we claim, from a personnel policy point of view, that while combining complementary resources especially the managers of the merging enterprises should not be discarded in line with a cost cutting process because their specific knowledge and skills are definitely necessary in order to unite and coordinate the different complementary resources in a value creating way. In this context Harrison et al. (2001) developed a model which analyzed the countervailing forces during a merger. They observed that those were stronger in mergers of related enterprises since the probability of replacing the top-management or rather meld two top-managements into one is higher if similar resources are being combined. Supporting these results O’Shaughnessy and Flanagan (1998) and Walsh (1988) state that lay-offs in related mergers are higher than within unrelated ones. Therefore we conclude that it is on the one hand highly necessary to consider complementary resources as they reduce employee resistance while engaging in an acquisition but on the other hand also to ensure that the top management is equipped with the above mentioned complementary competences and skills in order to achieve competitive advantages.

COMPLEMENTARY RESOURCES: THE DOWNSIDE

As we presented above, there are good reasons to base the partner selection or the decision to opt for M&A in general on the quest to obtain complementary resources. However, there are two sides of the coin to consider. In face of M&A failure rates of nearly 70% (De Man/Duysters 2005) it is necessary to question whether the strategic decision in favor of complementary resources is free of side effects which may foil the positive effects of aspired synergies. The notion of side effects broadly refers to something unintended (Hampton 1970). We understand side effects of organization as unintended consequences that stem from initial strategic decisions and result in a modified outcome. In this paper, we want to examine a special kind of side effects, namely the lock-in of organizations caused by increasing returns, which are triggered by strategic decisions and small events. Side effects can result in failure –

however, this is not an inevitable consequence: Side effects in general and lock-ins in particular merely cause *potential* inefficiency as a collateral effect. Whether or not inefficiency and failure materializes depends on internal and external factors, on which we will elaborate in the following with reference to theoretical and empirical foundations.

What is M&A failure?

If the strategic intent of an M&A activity was to acquire complementary resources in order to raise competitiveness and thereby success, the opposite would be the loss of the competitive edge and failure. In accordance with our definition of M&A success, we therefore understand M&A failure as the loss of the ability to adapt to changing environments, ultimately resulting in the decrease of returns.

A primary success factor to create high returns in volatile markets is the rate of innovation and the ability to stay ahead of the competition through the creation of new superior products is crucial (Brown/Eisenhardt 1997; Hitt et al. 1991b). A prerequisite for achieving this goal is a balance between exploration and exploitation (Benner/Tushman 2003; Brown/Eisenhardt 1997; March 1991). However, research on the influence of M&A on innovative capabilities merely found negative or neutral effects at best (Hitt et al. 1991a; Hitt et al. 1996; De Man/Duysters 2005). This seems striking, since one could assume that pooling resources in general and complementary resources in particular leads to a higher innovation rate for multiple reasons. Not only do merged firms have a bigger endowment with resources and R&D budgets, but they can also profit from a facilitated knowledge exchange and access to technologies and best practices, which are likely to have a positive impact on the productivity of R&D measures (Gerpott 1995).

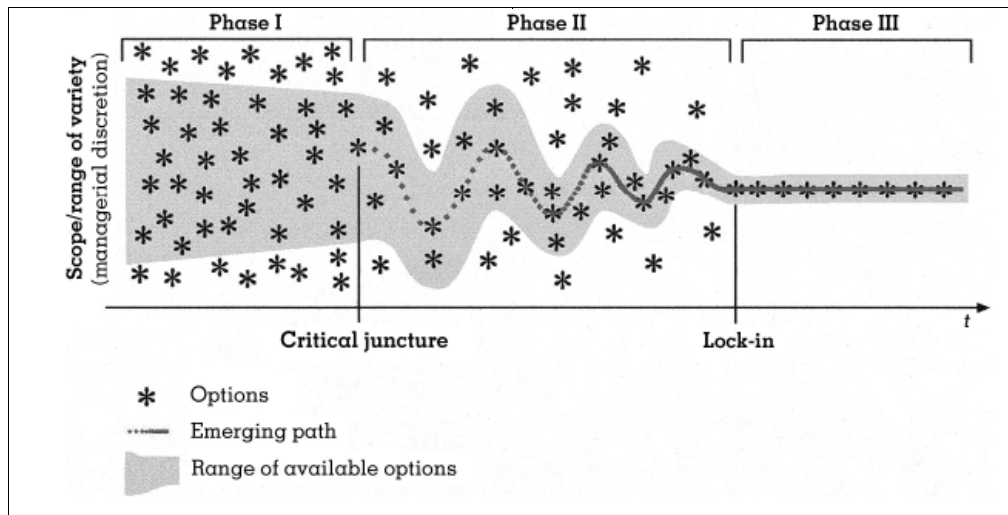
Much has been theorized about possible explanations for this phenomenon, such as a lack of or insufficient post-merger integration, but the exact cause thus far remains unclear (De Man/Duysters 2005). In this paper we claim that a reason for the failure of M&A potentially lies in the very reason for which they are formed: complementary resources. We base our hypothesis on insights from the theory of organizational path dependence, which sheds light onto the paradox duality of complementarity.

Path dependence theory

The theory of path dependence is a dynamic theory that aims at explaining how and why inefficient patterns in organizations can develop and prevail, potentially leading to a lock-in and inefficiency. It originates in studies by Paul David concerning the establishment of the

QWERTY keyboard as a technological standard and its maintenance despite superior alternatives (David 1985). Subsequent analytical work by W. Brian Arthur illustrate this curiosity and attributes it to a sequence of “small events” which trigger self-reinforcing mechanisms that lead to a lock-in of the inferior standard (Arthur 1989, 1994). Path dependence theory thus claims that “history matters” – in the sense that past decisions influence the future scope of action and have an impact on the evolution of strategic actions and organizations as a whole (North 1990; Foray 1997; Schreyögg et al. 2003; Beyer 2006; Schreyögg/Sydow 2010; Antonelli 1997). The process itself is characterized by non-predictability, non-ergodicity, inflexibility and potential inefficiency (Arthur 1989, 1990; David 2001; Pierson 2000). This means, that the path’s trajectory is not foreseeable since various outcomes are possible, the actual development is dependent upon “small events” as well as the influence of self-reinforcing mechanisms and can result in inflexibility and potential inefficiency. Path dependence is the potential outcome of a process, which moves along three subsequent stages and is characterized by an increased limitation in the managerial discretion and scope of action (Koch 2007; Sydow et al. 2009). In phase I decision makers can choose from a variety of alternatives and are merely influenced by the organizational setting and its history (as depicted by the shadow in figure 1). Small events can form a critical juncture upon which a self-reinforcing mechanism sets in which increasingly drive the path and restrict choices (phase II). However, the final outcome of the path is still not foreseeable and some scope of action remains present. The transition to phase III is marked by the lock-in of a dominant action pattern that gets reproduced with only insignificant variation (as depicted by the shadowed corridor in figure 1). In the lock-in state, actions undertaken from within the system are no longer able to create deviation from this pattern.

Fig. 1: The three-stage model of path dependence (Sydow et al. 2009)



The core of path dependence: Self-reinforcing mechanisms

Self-reinforcing mechanisms differentiate path dependence from mere “past dependence” and are at the heart of path dependence theory (Koch 2007; Sydow et al. 2009). Their existence implies positive feedback and a rising incentive to follow a certain institutional solution (Mahoney 2000). The key to understanding the logic of self-reinforcement is, that through the granting of increasing returns following the path is at first a completely rational choice for the individual actor or the firm as a whole (Koch et al. 2009). The downside becomes obvious when - through increasing returns - it gets increasingly difficult to pursue an alternative course of action, although being superior to the current one (Koch 2007). The research on path dependence theory has identified various forms of increasing returns. For technological and organizational path dependence six self-reinforcing mechanisms appear to be most relevant: 1) economies of scale and scope, 2) direct and indirect network effects, 3) learning effects, 4) adaptive expectations, 5) coordination effects and 6) complementary effects (Ackermann 2001; Arthur 1994; David 1985; Cowan 1990; Katz/Shapiro 1986; Regibeau 1995).

Out of those, the first three mechanisms are mainly related to diffusion processes and the possible establishment of inferior technological standards, as in case of the QWERTY keyboard or the VHS videotape format (David 1985, Foray 1997). Whereas economies of scale and scope refer to cost advantages resulting from an increase in production and product variety, direct and indirect network effects describe the additional utility that is generated by a higher diffusion rate of a technology. Learning effects result from cognitive investments into becoming familiar with a technology or an institution (i.e. a routine or practice), which subsequently lower the attractiveness of a deviation (Petermann et al. 2010). Apart from learning effects, adaptive expectations, coordination and complementary effects are the main drivers for organizational path dependence. Adaptive expectations effects relate to the

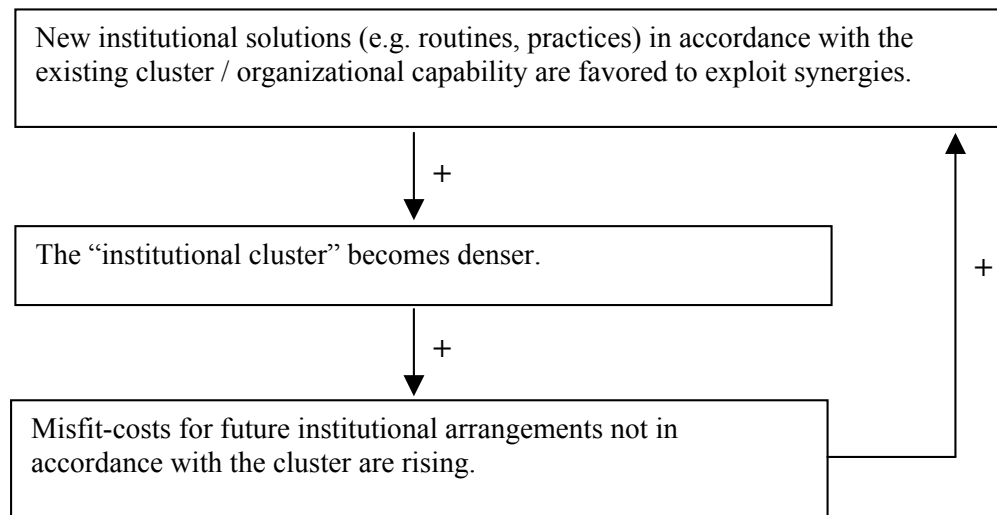
building of preferences through the interaction of agents: Due to possible coordination effects in the future agents prefer to follow a solution that is also preferred by others – i.e. individual preferences are not fixed but dependent upon the preferences of others whom they interact with (Arthur 1989). Coordination and complementary effects are related to the concepts of economies of scale and scope, but focus on reductions in the social costs of interaction through rule-guided behavior or regard synergies arising from the interaction of two or more interrelated parts on a more general level (Pierson 2000; Stieglitz/Heine 2007). In general, it is mostly a combination of more than one self-reinforcing mechanism that leads an organization to become path dependent (Sydow et al. 2009). For our quest to explain M&A failure through path dependence theory, we consider complementary effects, coordination and learning effects as most relevant. As we will show below complementary effects may trigger other self-reinforcing mechanisms such as coordination and/or learning effects. Therefore, those will be elaborated on in more detail and specific effects on M&A performance will be evaluated.

Effects of relevant self-reinforcing mechanisms on M&A

Complementary effects result from synergies caused by the interaction of two or more interdependent resources, practices or rules (Ackermann 2001; David 1994; North 1990). Synergy means that there is a bigger yield through the interaction of the respective items than there is when they are regarded independently, i.e. that the whole is more than the sum of its parts (Stieglitz/Heine 2007). Complementarity describes the relationship between elements of a system whose elements fit well together and either mutually increase their benefit or lower their disadvantages (Ackermann 2003; Deeg 2007). If a system – i.e. an organization or an organization's division – is comprised of complementary elements and thereby makes full use of the synergetic potential it can be called consistent (Schmidt/Spindler 2002). Since complementarity yields many advantages organizational actors will be inclined to reap the benefits of building and maintaining a consistent system. Depending on the given set of institutional solutions (i.e. routines, practices) and resources there will be a pull towards adding compatible new ones or reorganizing the existing ones in a complementary way, resulting in the formation of an “institutional cluster” (David 1994: 213ff.). The bigger the fit between the elements and the denser the cluster gets, the more attractive it gets to exploit the existing synergies – or on the flipside to avoid the rising misfit-costs caused by practices, strategies, routines or resources not in accordance with the existing cluster. As a result of this

self-reinforcing mechanism the once established cluster gets constantly reproduced and thus maintained through becoming embedded in the organizations “deep structure” (Sydow et al.: 699). The conceptual argument of complementary effects is displayed in figure 2.

Fig. 2: Conceptual argument of positive feedback created through complementary effects (Petermann et al. 2010)



Thus in the case of M&A, complementary effects result in strong ties between resources and practices of a company that comprise a consistent system und yield synergy effects. The cluster that evolves and tightens over time through increasing returns and positive feedback is dependent upon the resource endowment at the time the M&A is formed and the post-merger integration, as well as the strategic direction given by the management (see Schmidt/Spindler 2002 for a related argument). Since in case of complementary resources as a trigger for M&A the strategic intent is right from the beginning to exploit synergies and hence raise competitiveness, it can be assumed that the M&A management will put some effort into intentionally building initial clusters in the integration phase. Such a cluster can e.g. exist between marketing skills and R&D capabilities, which may combine to a “core competence” (Prahalad/Hamel 1990) – or between different but interrelated innovation-producing resources of the merged firms (King et al. 2003). Once some of the merged company’s resources are pooled in a consistent way - i.e. that they fit well together and mutually enhance each other or act as a “missing ingredient” (Deeg 2007: 613) – the there is a rising incentive to concentrate more complementary resources on the cluster and build routines and practices in a way that they exploit the arising synergetic potential.

This triggers various effects: First of all, increasing returns will be realized through either lower costs or improved performance, which act as an affirmation of the given course of

action. This is in accordance with studies that observe M&A based on complementary resources among the high-performing acquisitions (e.g. Harrison et al. 2001). The arising returns will thus encourage the M&A management and the individual actors to continue along the emerging path or to put even more effort into exploiting the synergies and dedicating more resources to the central activities (Leonard-Barton 1992; Levitt/March 1988; Miller 1994). Coordination effects additionally promote the establishment of what Miller and Friesen (1984) call “internal consistency”: Through the internal fit among various elements of an organization, the coordination among actors of an organization becomes more and more efficient and costs can be reduced (see also Miller 1992). This in turn is likely to result in higher returns, thus incentivizing the actors to follow along the path. Success hence leads an organization to become more “simple” through reinforcing existing practices (Barr et al. 1992). Learning effects also contribute to this evolution through a preference for exploitation over exploration. This is caused by a higher motivation for improving successful practices as opposed to exploring new alternatives, making exploration less and less attractive the more success is yielded by the exploitation of synergies (Sydow et al. 2009; March 1991, 2006). As demonstrated by the conceptual argument of complementary effects, other solutions not in accordance with the rewarding cluster will be either crowded out or not considered (Miller 1990, 1994; Walsh 1995), leading to denser cluster and a rising concentration of the activities incorporated by the cluster. Increasing returns will be generated up to the point, where the entire organization or a subunit in consideration can be regarded as consistent, i.e. solely comprised of complementary elements. A consistent system can be regarded as a “local optimum” on a performance landscape, where movements towards the “hill top” increase performance and movements away from the optimum decrease performance (Anderson 1999; Kauffman 1993; Schmidt/Spindler 2002). This way, it is easily understandable, why the initial cluster building will result in a better outcome. On the flipside though, this illustration shows the drawback of complementary effects, which we want to emphasize: The more returns are generated, the lower the incentives are to move away from the path and to pursue alternative options. Once the optimal configuration of resources, routines and practices is achieved, there is a high tendency of sticking with the cluster. Thus, through increasing returns companies are inclined to continue exploiting synergies until they end up in a lock-in. This does not automatically result in a failure – it first of all means that a dominant action pattern gets constantly reproduced. In case of no environmental or competitive shift, returns can still be reaped, leading an organization to not even notice the lock-in (see Miller/Chen 1996). However, being locked-in represents an inherent danger for organization to become

inefficient at some point. Problems become obvious as soon as a “rationality shift” (Koch 2007) occurs, requiring a different strategic response not in accordance with the established pattern (David 1994; March et al. 2000). Now it is questionable, whether the necessity to respond differently to the environmental shift 1) gets recognized and if so, whether 2) appropriate measures not in accordance with the cluster can be taken and 3) are taken.

Recognizing the need to react to the change requirements necessitates the ability to notice environmental signals and to interpret them correctly (case 1). However, we stress that through complementary effects other self-reinforcing mechanisms get triggered which might lead to myopia or misinterpretations of environmental changes. Most prevalent with regards to recognizing environmental shifts are learning effects. Those have two sources of positive feedback: Firstly, since established mental models provide a basis for new learning, it is much easier building upon them than turning to something completely new – hence they can be regarded as complementary effects on an individual level. Secondly, and most important in our context, established mental models influence which environmental signals are deemed relevant and which are not, leading to a selective perception of environmental signals (Ackermann 2003, Koch et al. 2009). This has the following implication: Signals contradicting the thus far successful practices and routines have a high tendency of getting blocked, since they require turning away from what has been learned so far about exploiting synergies resulting from complementary resources. Even if the signals are regarded as relevant, it remains questionable whether the organization is able (case 2) and willing (case 3) to respond to them in an appropriate way, which might deviate from current practices and contradict the established pattern. If organizations cannot adopt new solutions and are bound to the path of action, the so far latent inefficiency becomes evident (case 2) (Leonard-Barton 1995; Schreyögg/Kliesch-Eberl 2007). The underlying reason for being locked-in can be found in side effects stemming from complementary effects, coordination effects and learning effects. In this case, organizations cannot deviate from the pattern locked-in, which gets reproduced with only minor variation and can pave the path to failure. If the rationality shift however occurs before the lock-in stage, organizations theoretically still have the potential to adjust their focus and reallocate resources, routines and practices to an alternate – and potentially superior – course of action (case 3). There are multiple reasons though, why this option may seem unattractive and is not pursued. First of all, complementary effects - or the attributes of a consistent system – bring about that slight alternation in the system’s configuration lead to a decrease in returns and performance. This is likely to discourage change initiatives, since they are mostly conducted through changing small parts as opposed

to altering an entire system (Schmidt/Spindler 2002). Second of all, increasing returns from learning effects would vanish, since refocusing and reconfiguring comes along with relearning. Third of all, coordination effects through repeatedly performing the same or similar tasks are at stake – also resulting in decreased performance. All in all, there will be a big barrier to changing away from the dominant – however not yet locked-in – pattern and a pull to pursuing the emerged path further along. In case the rationality shift deems the existing course of action obsolete and inferior, there is a high potential for the organization run with one's eyes open into failure.

Implications

Taking into consideration the effects of relevant self-reinforcing mechanisms on M&A we can now attempt to explain the surprisingly less-than-desired outcomes of M&A regarding innovativeness and long-run returns. Apart from other rationales such as significant investments, absence of synergies and a lack of management commitment (Hitt et al. 1991a) we claim, that self-reinforcing mechanisms caused by the pooling of complementary resources eventually lead to a decline in innovation activities. This can be explained by the exact mechanisms elaborated on above. Also due to the investment in M&A, managers may feel obliged to make full use of the potential through complementary resources and may turn away from other unrelated R&D activities. The arising synergies between the resource bases of the merged companies offer high potential for increasing returns. This is likely to trigger innovation routines and practices that are aimed at exploiting those synergies. At first, this eventually yields success and high returns, which is why more and more resources are dedicated to those central activities. Over time this course of action inevitably leads to a reduction in explorative R&D activities. Despite being potentially successful with this strategy in the short-run, companies may find themselves losing innovative capabilities, which go beyond the exploitation of complementarities. This may lead to a lock-in of innovation routines, practices and resources and constrict the view of responsible managers for other promising domains of resource application. In face of increasingly volatile markets, merely exploiting opportunities provided by the combination of complementary resources is not enough in order to stay ahead of competition. In case of frequent environmental shifts it is more important to remain flexible to a certain degree and to be able to reallocate resources and attention if necessary. This critical degree of flexibility however is at stake if self-reinforcing mechanisms set in, constricting the scope of action and tempting an organization to become more simple, stable and rigid. Since the loss of innovative capabilities is closely

related to failure in volatile markets, the logic of increasing returns through self-reinforcement acts as an explanation for M&A failure and sheds a new light onto the role of complementary resources.

Diskussion: The bottom line

All in all, complementary resources are a two-sided sword: On the one hand, they provide great opportunities for M&A success through generating synergies and are thus an incentive to pursue M&A in the first place. On the other hand, complementary resources are likely to trigger self-reinforcing mechanisms and bear an inherent tendency of lock-in through strong concentration on a consistent cluster. Therefore, in order to make use of the positive aspects of complementary resources and generate M&A success, it is essential to consider both sides and be aware of possible side effects caused by the initial decision to opt for M&A in order to secure access to a complementary resource base. In light of those new insights presented in this paper, it is crucial for the M&A management to not only concentrate on exploiting arising synergies – which was thus far regarded as a major problem – but also to avoid a lock-in caused by complementarities. In order to achieve this goal, the biggest challenge is to remain critical even in light of short-term success. This implies various tasks: First of all, despite likely increasing returns generated by pooling resources and building a cluster, it is crucial to not focus too much on a few central activities. Remaining flexible to a certain degree first and foremost means not becoming too “simple”, but spreading the attention and resources over more than one prominent area. This enables the organization to react faster to environmental shifts. Related to this argument, it is also of big importance to keep a balance between exploitation and exploration. Specifically with regards to innovations, in order to stay ahead of the competition one needs to look for new inventions that go beyond mere incremental improvements through exploitation. In addition to that, a continuous screening of the environment for new threats or opportunities is needed, as well as a monitoring of strategic assumptions. This can be supported by various scenario techniques, which can potentially guard against a restrictive perception through learning effects. In conclusion, the theory of path dependence provides an explanation for M&A failure that goes beyond the conventional ones and claims that the source of failure is also the source of success and lies in the complementarity of resources. With our demonstrations in this paper we are able to shed a new light on synergies and M&A, providing an incentive to take both sides of the coin into consideration when opting for M&A due to complementary resources.

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