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Confident or Competent? How to Avoid Superstitious Learning in Alliance Portfolios

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Impressive studies show that sharing alliance experience and having a dedicated alliance function lie at the foundation of repeated alliance success. However, with increasing experience, the dangers of overconfidence loom. In other words, certain learning mechanisms may well foster the adoption of inadequate cause-and-effect relationships derived from prior experience. Using such insights in other strategic alliances is likely to foster an imbalance between competence and confidence in alliance management. Hence, the challenge for today's firms seeking to improve their alliance portfolio outcomes lies in optimising the use of prior experiences by institutionalising routine activities, while also ensuring that new practices can be adopted. Using the insights of expert interviews and detailed analysis of 192 alliance portfolios containing over 3400 strategic alliances, convincing evidence shows how firms can ensure they increase their alliance capability with experience, without falling prey to the overconfidence trap. Important managerial lessons on how to avoid overconfidence in alliance portfolio management are discussed.

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“In complex decision problems the discovery of the optimum is an extremely difficult task... This makes it imperative to use building blocks derived from previous ‘good’ solutions (Holland, 1975) even though so doing contributes to inertia.”

Daniel A. Levinthal (1991: 140)¹

Introduction

As scores of newly formed strategic alliances continue to make headlines, the importance of alliances as potential revenue sources only seems to increase.² Yet, while stock markets generally reward alliance announcements,³ firms continue to report high failure rates.⁴ Not only novices but also alliance-active firms fall victim to the hazards involved in alliance management. While some firms like Coca-Cola generate the vast majority of their revenues via strategic relationships,⁵ the causes of persistent success in alliances are understood by few.

In this study, (strategic) alliances are defined as temporary cooperative agreements in which two or more firms share reciprocal inputs in order to realise improved competitive positions, while maintaining their own corporate identities.⁶ Previous research has found that the more alliances firms engage in, the more successful they are likely to become at them.⁷ Beyond experience, some recent studies have shed light on the drivers of such so-called 'alliance capabilities'.⁸ For instance, recent research has pointed to a variety of solutions available to firms to build alliance capabilities as their portfolios grow.⁹ Another recent study found that firms that establish a dedicated alliance department achieve higher alliance performance.¹⁰ Notwithstanding the contribution of these studies, it has remained unclear whether the reported benefits of such departments are caused by the departments themselves or by underlying mechanisms.¹¹ And though some studies look at multiple mechanisms, their effect has mainly been studied for separate items.¹² Recently, the calls for inquiries into the adverse effects of learning investments have been intensifying.¹³ As Kale *et al.* (2002: 761) also underline, there may well be other 'unobservable firm characteristics' that may positively or negatively affect alliance outcomes. Hence, not only may the benefits observed pertain to other (groups of) mechanisms, but there may well be conditions under which such mechanisms negatively affect alliance portfolio performance.

Previous research has found that the more alliances firms engage in, the more successful they are likely to become at them

What's more, understanding which factors increase competence and confidence is of great importance to those managing alliances. Indeed, some claim that overconfidence is a trap that can ruin success in repeated deals, particularly for those firms that have built up sizeable alliance portfolios.¹⁴ In other words, superstitious learning in alliance portfolios, or the degree to which firms fall victim to deriving and repeating incorrect causal links, may be cumbersome for alliance-active firms. However, the question of which mechanisms nurture and which inhibit repetition of inadequate lessons in future alliances has received remarkably little attention. Therefore, with many firms deriving substantial portions of their market value from alliances, understanding the sources of genuine competence (and those that foster overconfidence) requires further inquiry. Hence, while the spurious assumption that knowledge management and the mechanisms used to achieve it have positive effects often remains unverified,¹⁵ the main question this study seeks to answer is: what (groups of) learning mechanisms are likely to foster superstitious learning in alliance portfolios? Or, in other words, how can firms avoid semi-automatic repetition of 'old' lessons and ensure that novel lessons are used instead to optimise alliance portfolio outcomes?

How can firms avoid semi-automatic repetition of 'old' lessons and ensure that novel lessons are used instead to optimise alliance portfolio outcomes?

To better understand whether and when the mechanisms used to manage a firm's alliance portfolio nurture competence or confidence, this study analyses 192 firms that formed over 3400 strategic alliances in the period 1997–2001. Responding to recent calls for better understanding foundations in capability research,¹⁶ the purpose of this study is to resolve some of the lack of clarity surrounding superstitious learning effects in alliance portfolios. This is done by analysing two distinct sets of learning mechanisms that firms have used to advance their skills in managing their alliance portfolios. Moreover, outcomes of 15 in-depth expert interviews shed further light on the factors that prove to foster and deter learning in alliance portfolios. The results show that on average the most experienced firms performed worse than firms with moderate experience. To understand why, we have factor analysed and meticulously assessed which (groups of) mechanisms are likely to result in firms falling into the overconfidence trap when managing alliance portfolios. The outcomes reveal an interesting picture of the delicate balance that firms need to strike between institutionalising and renewing alliance practices by using experiences from recent alliances formed. Important lessons are identified to direct management attention towards minimising the chances of superstitious learning in their alliance portfolios.

Learning to manage alliance portfolios

The notion that firms learn in different ways is well established. In the field of alliances, some firms like Hewlett Packard, Xerox and the US pharmaceutical giant Eli Lilly follow a structured and formally organised approach to develop their ability to manage their alliance portfolio (i.e. their alliance capability). Other enterprises like Corning, the US-based specialist glass and ceramics firm, do not formally organise this process and rely more on individual exchanges.¹⁷ In essence, these two examples relate to two distinct learning processes that firms can use to improve their ability to manage alliance portfolios: experiential and deliberate learning.¹⁸ On the one hand, Corning has relied mainly on the transfer of prior experiences from person to person, over the years making alliance management part of its culture and identity; Hewlett Packard, Xerox and Eli Lilly, on the other hand, have chosen to deliberately share and derive lessons by codifying best practices and setting up dedicated departments to oversee and manage this process.¹⁹ Either of the exemplary firms will – with an increase in experience – formally or informally standardise practices and develop routines.²⁰ This is characterised respectively by, for instance, an increase in recurring action patterns, or the appearance of specialised staffing functions (e.g. alliance managers and vice-presidents of Alliances) and alliance departments.

As mentioned, a growing body of literature is attempting to uncover underlying processes explaining persistent alliance performance differences between firms.²¹ Table 1 provides an overview of relevant prior studies that examine these issues. Most prior alliance studies analyse success from repeated alliance formation by pointing to alliance experience as the main determinant of alliance outcomes.²² Typically, these studies analyse the role of experiential learning (or trial-and-error, learning-by-doing, or semi-automatic learning), which is defined as the knowledge acquired through direct experience enhanced by the analysis and availability of feedback.²³ In essence, each strategic alliance can equip the firm with knowledge of alliance management. The vast majority of these studies report positive and decreasing marginal returns to prior alliance experience. Hence, the success that some firms experience is attributed to *learning-by-doing effects*, such as the application of lessons learned in earlier deals to subsequent alliances formed. Indeed the use of insights from prior alliances seems quintessential to prevent failure as a consequence of repeating mistakes. Nevertheless, in addition to experience effects, these studies also find significant fixed-firm effects, which suggests there are factors above and beyond mere alliance experience that explain why some firms outperform others in managing their alliance portfolios.

Adding to these findings, some recent studies aim to extend the learning-by-doing argument. These studies examine ways in which firms have been committed to deliberate learning, which is defined as the conscious attempt to further the use of knowledge throughout the company by limiting search processes and making available lessons learned.²⁴ In contrast to experiential learning

Table 1. Alliance research aimed at studying learning⁵⁶

Author(s)	Key concept	Conceptualisation	Empirical validation	Outcomes
<i>Experiential learning studies</i>				
Lyles (1988)	Strategic capability	Past JV experience and the methods used for transference of learning	Interviews among four firms with JV experience	JV sophisticated firms make extensive use of decision rules, best practices, structures, reporting systems, management methods
Gulati (1999)	Alliance formation capability	Experience as number of past alliances, diversity of governance modes and nationality of partner firms in past alliances	2400 alliances formed by 166 firms, 1980–89	Experience was found to increase likelihood of alliance formation; diversity of alliances has no influence on performance
Anand and Khanna (2000)	Alliance capability	Estimation of firm-fixed effects over and above alliance experience to capture unobserved heterogeneity in firm-level alliance capability	Secondary data on 1976 joint ventures and licensing agreements	Results show strong and persistent differences across firms in their ability to create value in alliances; the authors interpret this as differences in alliance capabilities
Reuer, Park and Zollo (2002)	Alliance experience heterogeneity	Experience as log of 1 plus number of IJVs and skill novelty and heterogeneity on basis of sectoral diversity	Secondary data on 1318 international joint ventures	The effect of past IJV experience on IJV performance is contingent on the characteristics of the focal acquisition, which suggests that heterogeneous experience increases chances of success in novel IJVs
Hoang and Rothaermel (2005)	Alliance capability	General and partner-specific alliance experience	Survey of 30 firms with 145 alliances in pharmaceuticals	While general experience does positively influence alliance performance, partner-specific experience does not
Rothaermel and Deeds (2006)	Alliance management capability	The number of alliances a firm is able to manage productively (point of diminishing returns indicates level of capability) determines alliance management capability	Survey of 325 biotech firms with 2226 R&D alliances	While high-tech upstream alliances demand more capability (and downstream demand less), firms with greater experience are able to manage larger sets of alliances more successfully (measuring new product development outcomes)

Deliberate learning studies

Simonin (1997)	Collaborative know-how	Five dimensions: collaborative management, negotiation, partner searching know-how, knowledge and skill transfer, exiting skills	Survey of 151 large and medium-sized US firms from different industries	<p>The higher the level of collaborative know-how, the greater the tangible and intangible benefits obtained; experience does not directly influence benefits</p> <p>Relational capabilities or relation-building skills are argued to be necessary to employ effective governance mechanisms, create relation-specific assets and develop knowledge-sharing routines</p> <p>Coordinative capacity and knowledge management processes positively influence alliance performance; alliance experience also has direct effect, but significance reduces upon inclusion of the knowledge variables</p> <p>Both experience and investment in a dedicated alliance function are found to positively influence performance</p> <p>Joint alliance competence is directly positively related to alliance performance, and indirectly related via the combination of complementary resources in an alliance and the creation of idiosyncratic resources in the alliance</p> <p>At different levels of alliance capability, firms may benefit from different management techniques: inexperienced firms learn from training and individual alliance evaluations, while more experienced firms benefit from an alliance specialist and comparison of alliance evaluations</p> <p><i>(continued on next page)</i></p>
Dyer and Singh (1998)	Relational capability	A firm's willingness and ability to partner	None, conceptual	
Kale and Singh (1999)	Alliance capability	Alliance capability measured as the coordinative capacity and processes for articulation, codification, sharing and internalisation of alliance-related knowledge	Survey of 160 US firms in different industries where alliance are key to firm strategy	
Kale, Dyer and Singh (2002)	Alliance capability	The presence ($X = 1$) or absence ($X = 0$) of an alliance function	Survey of 78 firms and their 1572 alliances	
Lambe, Spekman and Hunt (2002)	Alliance competence	Alliance competence as organisational ability to find, develop and manage alliances: alliance experience, alliance manager development capability and partner identification propensity	Survey among 145 alliances from 71 different firms	
Drulans, De Man, Volberda (2003)	Alliance capability	Use of alliance experience, evaluation, alliance specialists and training	Survey among 46 large firms	

8 Table 1 (continued)

Author(s)	Key concept	Conceptualisation	Empirical validation	Outcomes
Hoffmann (2005)	Alliance management tools	Multi-alliance management practices and the degree to which these help executive four alliance portfolio tasks: strategy, monitoring, co-ordination, and establishment of alliance management system	43 interviews and survey at 25 leading European companies	Firms should institutionalise formulation, monitoring and adaptation of alliance strategies at business unit level, and alliance policy at corporate level
Heimeriks and Duysters (2007)	Alliance capability	Alliance capability as a sum of 29 firm-level learning mechanisms which help to accumulate and share prior alliance lessons	Survey among 192 firms worldwide and interviews	Alliance capabilities partially mediate between alliance experience and alliance portfolio performance, indicating firms can improve their performance by dispersing lessons from prior alliances
Kale and Singh (2007)	Alliance capability	Alliance learning process involves articulation, codification, sharing and internalisation of alliance management know-how	Survey among 175 US firms over the period 1994–98	Four learning processes mediate between an alliance function and alliance success

which relies on automaticity, deliberate learning reflects the decision to invest in the codification, articulation and transfer of knowledge to consciously improve performance in subsequent alliances. As firms are different in the way they share and internalise lessons learned, there is evidence that certain internal mechanisms help firms to deliberately share insights from prior alliances. These studies point, for example, to the relevance of an alliance function or the use of alliance managers and databases to explain this *deliberate learning effect*.²⁵ Clearly, firms that invest in deliberate learning do so to gain a better understanding of underlying cause and effect relationships, and to make more effective use of their experiences. This suggests that these two forms of learning are distinct but nevertheless complement each other. They complement each other because the process of codifying and articulating naturally depends on the firm's prior experience: the greater a firm's experience, the larger the pool of knowledge from which it can derive lessons.

Certain internal mechanisms help firms to deliberately share insights from prior alliances

While some experienced firms have established an alliance department, the many underlying mechanisms they use *in addition* tend to obscure the performance benefits reported. Therefore, although some studies help unlock certain differences between firms, there is little insight in the relative contribution of such mechanisms.²⁶ It is often assumed that having such mechanisms to encourage knowledge transfer is by definition appropriate and beneficial. Perhaps more importantly, it is often assumed that the insights transferred are accurate and applicable in (seemingly) similar circumstances. Hence, while such studies have clearly contributed to our understanding of how firms can foster deliberate transfer of prior experiences, little attention has been devoted to the potential drawbacks of knowledge transfer and the prescription of task execution in alliance portfolios. So, an important question is: beyond experiential learning, which mechanisms are beneficial (and which perhaps detrimental) in deliberately transferring knowledge to further alliance portfolio performance?

Recently, some conceptual and empirical work has brought together the experiential and deliberate learning literature.²⁷ This work specifies that firms benefit most from trial-and-error or experience-based learning if these lessons are consciously fed from individuals to a group level (i.e. by integrating knowledge); once groups of people have shared insights, actions may become part of routines which mean the knowledge shared is raised to an organisational level (i.e. institutionalisation). In this light, advances in capabilities can be fostered if firms deliberately start raising knowledge from one level to the next. Or, in other words, by sharing experiences through learning mechanisms, firms raise their competence with respect to a certain activity.

In line with the logic presented in these recent studies, this study suggests that firms improve their alliance capabilities by following a similar path: by sharing individual experiences with a group of employees involved in alliance management, for example by using alliance training sessions, firms increase their alliance capability. Once a firm's alliance portfolio starts to increase in size, it can establish certain functions like an alliance department. This helps to institutionalise that capability. However, although anecdotal evidence suggests that the most capable firms have institutionalised their alliance activities to a great extent,²⁸ it is unclear what really explains the success of certain firms such as Corning or Hewlett Packard. This study therefore aims to detect the degree to which different learning processes foster confidence or competence.

Once a firm's alliance portfolio starts to increase in size, it can establish certain functions like an alliance department

The confidence-competence paradox in alliance portfolios

During one of the interviews with corporate executives responsible for alliance management, a vice-president of Alliances noted: 'We have years and years of experience, in fact forming dozens of alliances on a yearly basis. Though sometimes painful, we surely have become aware what the odds of alliance success are.'

According to Levitt and March (1988: 325), superstitious learning occurs when 'the subjective experience of learning is compelling, but the connections between actions and outcomes are mis-specified.' Such superstition is nurtured by routine behaviour that is based upon incorrect or incomplete causal links. Overconfidence, or excessive levels of confidence relative to actual level of experience and competence, looms particularly large for firms with alliance portfolios of substantial size. This is likely because, as experience with alliance management tasks increases, managers derive action-outcome linkages; the greater a firm's experience, the more developed the ideas about causes of success. Moreover, with the increasing complexity of the actions involved – and the subsequent difficulty of establishing a sound causal link between action and outcome – managers are more likely to equate accumulated experience with competence.²⁹ For instance, the large number of actors simultaneously involved in alliance decision-making further increases the likelihood that inferences shared are obscure and incomplete. And what is perhaps more important, when firms manage large alliance portfolios, the likelihood of repeating such imperfect causal links increases.³⁰ In short, with increases in experience, espoused practices are likely to persist and variation is likely to be resisted.

From prior literature, we know that deliberately designing and implementing mechanisms that accumulate, store, integrate and diffuse organisational knowledge can advance a firm's alliance capability. Extant literature has also stressed the need to embed recurring practices in routines and define standard operating procedures.³¹ However, the inertial effect of the institutionalisation of practices has received far less attention. Similarly, although we know that firms can use different mechanisms to develop alliance capabilities, we know little about whether and when such mechanisms effectively nurture competence (rather than merely confidence). In fact, the costs and benefits of knowledge transfer efforts are often ignored. For instance, some firms, like Eli Lilly, use a centralised approach by installing an alliance department as a staff function, positioned so as to direct all business level activities in alliances. Others such as Corning, however, have decided to decentralise alliance practices by allowing each business unit to manage and develop its own skills. Although these observations have been made, little attention has been paid to the extent to which the learning mechanisms used in these different firms contribute to alliance portfolio success.

In spite of the impressive scores of prior studies,³² it remains obscure how firms can avoid falling prey to superstitious learning when managing alliance portfolios. This is particularly important as it is not obvious that with increasing alliance experience, a firm's level of alliance capability increases.³³ While few studies have tried to uncover inertial forces, the dual effect of experience is well-documented.³⁴ Firms learn from experience and such lessons can then be institutionalised. However, by institutionalising certain practices such as a standard partner selection protocol, employees involved are likely to be less prone to use their own knowledge, novel insights and experiences. This notion has also been referred to as the 'dual nature of routines'.³⁵ As mentioned, this overly optimistic use of predefined practice can foster 'superstitious learning' in an organisation, characterised by an implicit assumption that lessons drawn from earlier experiences will apply to similar events in the future. While this behaviour is well-reported on in the psychology and sociology literature,³⁶ extant alliance literature has still to critically assess the downsides of certain learning processes.

It is not obvious that with increasing alliance experience, a firm's level of alliance capability increases

As one of the interviewed vice-presidents of Alliances indicated during the interviews: ‘We use a standard procedure to select partners for our strategic alliances. Detailed lists specifying essential partner characteristics help us find the right partner for specific strategic objectives. This procedure is an efficient and focused effort to routinise partner selection, enabling us to avoid common pitfalls in this phase.’³⁷ In this example, the use of procedures for partner selection is deemed advantageous, but it is uncertain whether the underlying heuristics (i.e. the sets of rules connecting action and outcomes) are well-specified and accurate. These procedures are based on documented material, implicitly assuming that the use of partner selection protocols helps find the *optimal* partner; in other words, by standardising how partners are selected, lessons from prior alliance experiences can be applied in subsequent deals so as to guarantee repeated success.³⁸ However, not only may the underlying heuristics be incomplete or even inaccurate, but in addition the standardisation of alliance partner selection limits a firm’s capacity to experiment with alternative behaviour (i.e. the heuristics serve as a proven method to solve a problem). Given that the only way to find out whether there is a causal link is to experiment, which is often considered too costly by corporate management in case of strategic alliances, potentially suboptimal heuristics are likely to persist — in particular in cases where there are high levels of institutionalisation.

Origins of superstitious learning in alliance portfolios

In this study, two specific groups of mechanisms are studied to examine the potential origins of superstitious learning in alliance portfolios: integrating and institutionalising mechanisms (see also ‘measures section’ in research design). *Integrating mechanisms*, on the one hand, help firms share individually held knowledge in groups; such social interaction is critical to generate variation in extant practices, as these mechanisms help feed-forward new insights.³⁹ *Institutionalising mechanisms*, on the other hand, help routinise behaviour and decision-making in alliance portfolios; these processes function as feedback loops to help spread standardised practices throughout the organisation.

While prior studies assume that both integrating and institutionalising mechanisms improve a firm’s ability to manage alliance portfolios, it is so far unclear whether these mechanisms mirror confidence or competence. Managing the confidence-competence paradox is complex, and even the most dedicated firms with high levels of experience can fall victim to the confidence trap. However, as integrating mechanisms foster variation and help refine causal inferences, which is helpful in complex activities, these are particularly likely to *improve competence*. Institutionalising mechanisms, on the other hand, reflect routine behaviour translated into established perceptions of success. Given that decision-making in alliance portfolios is inherently complex, institutionalisation of practices may be a misleading instrument, as experiential records of success may be a poor predictor of future success. Therefore, the degree to which firms use institutionalising mechanisms may well *mirror confidence*.

While alliance-active firms are likely to use both groups of mechanisms, there are a number of specific reasons why firms are likely to fall into the ‘overconfidence trap’ if they use a relatively large number of institutionalising mechanisms. First of all, once the portfolio starts to grow, firms will often put into place a senior staff member as vice-president of Alliances or set up an alliance department to oversee the alliance portfolio. However, simply having such a function does not mean alliance management skills will improve. The alliance department or other alliance management functions are instruments intended to improve alliance portfolio outcomes by spreading alliance skills throughout the firm. A quote of one of the vice-presidents of Alliances interviewed is used to illustrate that such behaviour may increase confidence but not improve competence: ‘Corporate management acknowledged the increasing importance of alliances for our business success. Therefore, an alliance department was set up. From the start, our team had to demonstrate how to earn our keep. In order to ensure alliances were on the top management agenda, we tried to “sell” the business case to corporate by defining practices for different alliance phases which were then rolled-out company-wide.’

In fact, as firms tend to mimic behaviour of other firms, alliance-active firms are likely to install an alliance department to copy behaviour by others (potentially without regard for their performance implications).⁴⁰ Another alliance manager interviewed mentioned: 'I see different firms that have an alliance department; to me it often seems they are barely effective in helping employees out by sharing insightful experiences.' Perhaps having an alliance department then merely serves to benchmark the mimicking of other firms' practices, based on the inaccurate belief that competence is improved as a consequence. Rather than accurately assessing what practices cause success in their alliances, such firms incorrectly conclude that the action of assigning an alliance manager or installing an alliance department will produce positive outcomes; while in reality, success may be caused by the processes such an expert or department proposes to share knowledge. While confidence is likely to have increased in such instances, it is less likely that competence has also risen.

'I see different firms that have an alliance department; to me it often seems they are barely effective in helping employees out by sharing insightful experiences'

Second, past success will exacerbate the likelihood of overconfidence, as individuals tend to link success to ability and failure to luck.⁴¹ As the previous quotes also suggest, the possibility that inadequate practices may be imposed on other business units by those responsible is particularly likely for firms managing alliance portfolios of substantial size. By rolling-out the predefined practices in the various business units, the corporate alliance department is particularly likely to spread rules of thumb which may well cause undesirable outcomes. One of the executives interviewed also indicated that there was initially a clear need to legitimise the existence of the alliance department. Given the need to legitimise its existence internally, the practices spread by the alliance department may be well-intended but are likely to be imperfect, as contexts and goals differ per alliance. In fact, centralised alliance departments may even pursue alliances to be formed in order to promote and legitimise investment in alliance activities. A director of Alliances noted that: 'As an alliance department we have tried to initiate and form deals which were more or less imposed on lower level management. ... While on paper seemingly ideal, these not only met with resistance, but most such deals did not succeed due to business unit make up or partner mismatch.'

Sharing lessons across alliances can foster a seemingly high level of competence, which in fact may well be based on incorrect or incomplete causal links. As individual business units may have context-specific knowledge or prior experience with a certain firm that adds value to that specific decision-making process, imposing standardised practices may unnecessarily restrict their decision-making. Hence, the likelihood of overconfidence increases substantially with a relative overload in institutionalising mechanisms.

Third, being able to experiment and alter behaviour is of critical importance in complex tasks like decision-making in strategic alliances.⁴² The degree to which employees can vary their behaviour in alliances (i.e. the opposite of routinised practice implementation) predominantly depends on their ability to share new experiences with other people involved (i.e. the use of integrating mechanisms). The use of centralised and prescribed practices by a centralised staff unit dedicated to alliance management is likely to favour exploitation of existing practices and restrict variation in, for example, partner selection. In particular, if codified lessons are the main means used to transfer alliance lessons internally and embed behaviour in processes and structures, practices may become difficult to change.⁴³ In other words, variation in the experience base needs to be feed-forwarded to refine causal inferences in alliance portfolios. As prior success will engender a self-reinforcing cycle, insights will be repeated rather than altered.⁴⁴ The importance of adjusting alliance practices is

exemplified by the next quote, which shows that each alliance is likely to require some adjustments of extant routines independent of the level of the firm's prior alliance experience. 'We explicitly support comparison of alliance evaluations with our partners. By comparing how we perceive the progress made in the joint project, we can improve our understanding of how we can co-operate successfully in the future with them and in other alliances.'

Being able to experiment and alter behaviour is of critical importance in complex tasks like decision-making in strategic alliances

Fourth, as the benefits from alliance experience deteriorate quickly, the benefits from institutionalising mechanisms are likely to be marginal.⁴⁵ Everything else being equal, decision-makers are likely to repeat prior behaviour in future alliances. More importantly, by suggesting alliance activities are occasions in which standard operating procedures apply, firms implicitly motivate employees to continue to implement out-of-date or inadequate practices. Rather than enabling the variation and rejuvenation of alliance practices, institutionalising mechanisms are therefore unnecessarily restricting the complex activities involved in managing alliance portfolios. Hence, although firms with similar levels of experience may hypothetically be equally likely to fall into the overconfidence trap, the use of institutionalising mechanisms is likely to articulate and prolong the negative effect of false assumptions and incorrect cause-and-effect relationships. The next section outlines the data and methodology of this study and describes how we have analysed superstitious learning in alliance portfolios.

The use of institutionalising mechanisms is likely to articulate and prolong the negative effect of false assumptions

Research design

Survey

To examine what causes actual learning effects in alliance portfolios, and detect mechanisms that foster competence in managing alliance portfolios, a survey was conducted among 650 vice-presidents and alliance managers worldwide. Two databases were used to address the right people: the Association of Strategic Alliance Professionals (ASAP) and the Internet Society (ISOC). These databases allowed us to address the questionnaire to those who oversaw and managed the alliance portfolios at the respondent firms. The survey was aimed at collecting data on the use of learning mechanisms and managerial assessments of a firm's alliance portfolio performance. After pre-testing with various experts, the questionnaire was sent out to key informants who reported on their firm's alliance activities and related management practices.⁴⁶

After sending out the survey and a reminder message to all the potential respondents, we received 192 responses. This resulted in a response rate of 29.5 per cent. The firms in the dataset were active in a variety of industries such as information and communications technology (ICT) (17 per cent), ICT services (26 per cent), financial services (5 per cent), other services (e.g. consultancies) (30 per cent), pharmaceuticals and biotechnology (3 per cent), chemicals (3 per cent), other manufacturing (10 per cent) and public sector (e.g. education and non-profit organisations) (4 per cent). The remainder (2 per cent) is missing data. As the 192 firms included in the dataset each manage on average 18 alliances, the total dataset refers to an estimated 3477 alliances.⁴⁷

Expert interviews

In addition to the survey, expert interviews were conducted. Fourteen experts in the field of alliances and capability development were selected worldwide. Within the group of experts, there was a clear division between practitioners (eight in number) and academics (five in number). Among these experts were vice-presidents of Alliances, directors of Alliances and alliance managers from firms in different industries that are renowned for their alliance capabilities, such as Glaxo-SmithKline, KLM Royal Dutch Airlines, Royal Philips Electronics and Oracle. These experts were interviewed to examine how firms nurture alliance capabilities and analyse what mechanisms foster or inhibit learning from prior deals. The interviews consisted of two distinct sections, one that confronted them with initial findings and one that dealt exclusively with the use of integrating and institutionalising mechanisms. Each interview lasted between 60 and 90 minutes and provided in-depth understanding of the mechanisms firms use to manage their alliance portfolios.

The post-survey fieldwork – consisting of semi-structured interviews and follow-up interaction with executives, which were both recorded and transcribed – served two important purposes. First, the fieldwork helped validate the interpretation of the findings. Mirroring the findings against the opinion and insights of experts greatly increased the insights drawn from the various analyses performed, nurturing stronger and more reliable results. Second and more importantly, the interviews revealed that lessons from prior alliances were transferred in these organisations in a way that matched the use of integration and institutionalising mechanisms as discussed in this study. Analyses of the results were done by comparing the individual arguments and comments of the interviewees to the findings and categorising any arguments given to provide additional support for those findings.

Measures

To examine the confidence-competence paradox, learning mechanisms used to manage alliance portfolios were analysed, as these may indicate to what extent firms are prone to be overconfident.⁴⁸ We distinguished between integrating and institutionalising mechanisms to assess the degree to which these mechanisms nurture competence or mirror confidence.⁴⁹ Two types of mechanisms were used to examine the way in which firms improve alliance portfolio management. Using the input of an expert panel, a list of the mechanisms that firms use to manage alliance portfolios was put together. Using the outcomes of the exploratory factor analysis, a group of integrating and institutionalising mechanisms was derived. Subsequently, the interpretation of the factor structure was verified during the post-survey interviews.⁵⁰ All experts confirmed the importance of both groups of mechanisms to advance a firm's alliance management skills, as well as the distinctness of the two factors. Indeed, experts indicated that with experience, the use of institutionalising

Table 2. Integrating and institutionalising mechanisms used to manage alliance portfolios

(A) Integrating mechanisms ^a	(B) Institutionalising mechanisms ^a
(1) Internal alliance training (.575)	(1) Alliance department (.986)
(2) External alliance training (.495)	(2) Vice-president of Alliances (.732)
(3) Training in country differences (.502)	(3) Alliance manager (.844)
(4) Alliance best practices (.857)	(4) Local alliance manager (.764)
(5) Culture programme (.562)	(5) Partner selection programme (.591)
(6) Comparison of alliance evaluations (.603)	(6) Intranet to disperse practices (.567)
(7) Alliance metrics (.685)	(7) Rewards alliance managers tied to alliance performance (.851)
	(8) Formally structured knowledge exchange between alliance managers (.623)
	(9) Country-specific alliance policies (.510)

^a Results from Varimax factor analysed loadings ($N = 192$, CA: 0.71 for (A) and 0.83 for (B)). Factor loadings in parentheses (cutoff level for $N = 200$ is 40 or higher).

mechanisms increased relative to integrating mechanisms. They stressed that before formal structures and processes were installed, best practices were shared and training sessions organised, which confirmed the face validity of the measures. The next table shows the results of the factor analysis. Appendix 1 provides a detailed account of the methodological issues underlying these two measures.

As shown in Table 2, the measure for *integrating mechanisms* is comprised of internal alliance training, external alliance training, training in country differences, alliance best practices, culture programme, comparison of alliance evaluations and alliance metrics. This measure assesses the degree to which a firm uses certain group-level activities to enable employees to share recent experiences and improve their ability to solve problems. The measure for *institutionalising mechanisms* consists of the following nine items: alliance department, vice-president of alliances, alliance manager, local alliance managers, partner selection programme, intranet, rewards for alliance managers tied to alliance success, formally structured knowledge exchange between managers and country-specific alliance policies. These institutionalising mechanisms represent the level of established routines. As mentioned earlier, integrating mechanisms forward individual-level knowledge by sharing it in groups, which is likely to foster variation in alliance practice as new insights are shared. Institutionalising mechanisms aim to proffer efficiency by formalising decision-making and routinising behaviour.

Institutionalising mechanisms aim to proffer efficiency by formalising decision-making and routinising behaviour

Research findings

To analyse the degree to which integrating and institutionalising mechanisms foster confidence or competence, we first constructed the descriptives table. Table 3 presents these descriptive statistics and the correlations among key variables.

The table shows that the average alliance portfolio performance in our dataset is 52 per cent (3.22 in table). On average, firms use 1.9 out of 7 integrating mechanisms and 3.7 out of 9 institutionalising mechanisms. As a number of the variables were highly correlated with the interaction terms, the variables were mean-centred to avoid issues of multi-collinearity.

After having centred the data, we used ordinal logistic regression to verify the specific effects of alliance experience (learning-by-doing effect) and integrating and institutionalising mechanisms (deliberate learning effect). Ordinal logistic regression was the appropriate estimation technique, given the nature of our dependent variable. Table 4 shows the outcomes of the ordered logistic

Table 3. Descriptive statistics and correlations (N = 192)

	Mean	S.D.	(2)	(3)	(4)	(5)	(6)	(7)
(1) Alliance portfolio performance	3.22	1.31	0.25**	0.23**	0.14	0.08	-0.02	0.04
(2) Alliance experience	2.13	1.41	1					
(3) Integrating mechanisms	1.90	2.93	0.19*	1				
(4) Institutionalising mechanisms	3.65	1.38	0.52**	0.42**	1			
(5) Firm size	2.72	1.31	0.26**	.022**	0.52**	1		
(6) ICT industry	0.42	0.50	0.14	-0.16*	.20**	-0.03	1	
(7) Service sector	0.65	0.48	-0.12	-0.02	-0.11	-0.06	-0.14	1

Mean and standard deviation are uncentred, correlations are centred; ** $p < .01$; * $p < .05$.

Table 4. Regression analyses on alliance portfolio performance

Ordinal logistic regression	
<i>Main variables</i>	
Alliance experience	0.781**
Integrating mechanisms (A)	0.374***
Institutionalising mechanisms (B)	-0.009
Alliance experience* integrating mechanisms	0.037
Alliance experience* institutionalising mechanisms	-0.126**
Integrating mechanisms* institutionalising mechanisms	-0.071
<i>Control variables</i>	
Firm size (sales revenues)	0.191
ICT industry control	0.313
Service industry control	0.403
-2 Log likelihood	506.758**
Nagelkerke R ²	0.147

∅ = not significant; * $p < .05$; ** $p < .01$, $N = 176$ (due to missing values); outcomes were comparable with alternative statistical techniques e.g. ordered probit or logit; all variables are mean-centred to overcome problems associated with multi-collinearity and ease interpretation of findings; informal tests using OLS demonstrated variance inflation was not an issue (VIF < 10).

regression by specifying the coefficients of the independent variables and their significance level. Also, the explanatory power of the estimated equation (measured by the Nagelkerke R-squared and -2 log likelihood) is significant at the 1 per cent level. Using alternative techniques (i.e. probit and logit analysis) to verify the robustness of the outcomes rendered comparable results.

When regressing the main variables on alliance portfolio performance, the results show that integrating mechanisms positively influence alliance portfolio outcomes (and mirror competence), while with increasing experience, institutionalising mechanisms negatively influence the outcome variable (and reflect confidence rather than competence).⁵¹ Interestingly, the significant negative interaction between alliance experience and institutionalising mechanisms implies that the positive effect of alliance experience is reduced, the more a firm relies on such mechanisms. Given the insignificant interaction between alliance experience and integrating mechanisms, they do not substitute and can therefore be used simultaneously without affecting their joint effect on alliance portfolio performance. These are important insights: experiential and deliberate learning are distinct learning processes. More importantly, from the results we know that integrating mechanisms (and *not* institutionalising mechanisms) cause positive effects of deliberate transfer in alliance portfolios. And, in general, institutionalising mechanisms, while used excessively by very experienced firms, do not seem to improve competence but rather mirror confidence.

Institutionalising mechanisms, while used excessively by very experienced firms, do not seem to improve competence but rather mirror confidence

To detail these findings, we also compared firms in our dataset using a number of descriptive statistics. First of all, we compared the percentage of market value (share price multiplied by number of outstanding shares) derived from alliances in 2001 and 2006 by firms in our dataset. Table 5

Table 5. Market value generated via strategic alliances

Percentage of market value	2001 ^a	2006
<40%	60%	28%
>40%	39%	67%
Average	38%	51%

^a Rest are missing observations; note that percentages mentioned are weighted averages. *N* = 192.

shows that in 2001, i.e. at the time of the survey being filled out, the average firm in the dataset generated 38 per cent of its market value from strategic alliances. This figure was estimated to increase to over 50 per cent in 2006, suggesting that strategic alliances continue to increase in importance for many firms.⁵² This increase, and the gains to be made from optimising alliance outcomes, underlines the importance of using the right mechanisms to avoid overconfidence when managing alliance portfolios.

Secondly, we compared the use of integrating and institutionalising mechanisms per experience level as shown in Figure 1. The figure shows that increases in experience bring forth higher levels of institutionalisation. More specifically, as firms manage portfolios of more substantial size, they start using relatively more institutionalising mechanisms in comparison to integrating mechanisms. With experience, the ratio of institutionalising over integrating mechanisms increases substantially (from 1.2 for low experience group to 1.63 and 1.67 for the moderate and high experience groups). This may explain not only why firms continue to report high alliance failure figures, but also why prior studies find that firms with greater experience are capable of managing larger alliance portfolios.

Thirdly, we ran a series of descriptive statistics to verify the performance effect of integrating and institutionalising mechanisms at different experience levels. The results are shown in Figure 2. The results clearly demonstrate that the most experienced firms perform worse than their less experienced counterparts. Linking these performance figures to Figure 1, it becomes more clear why these firms may be falling prey to suboptimal levels of alliance performance: the more firms gather experience and institutionalise alliance knowledge by installing various functions (such as alliance

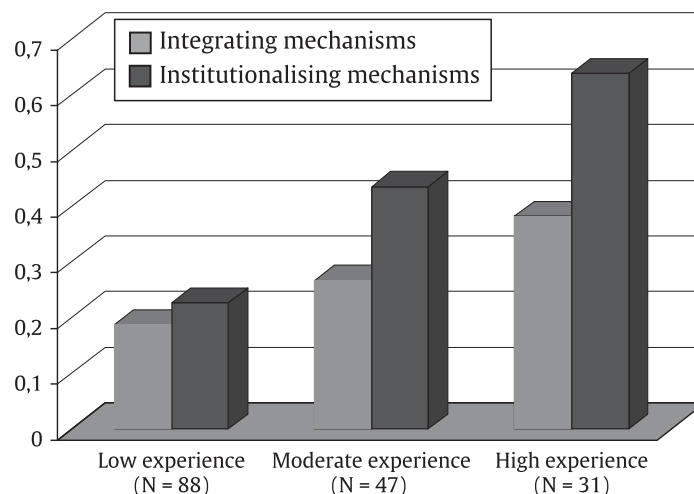


Figure 1. Use of integrating and institutionalising mechanisms per experience level* (*N* = 192)

*Please note that the scales in the figure have been standardized to allow comparison of the relative use of the two groups of mechanisms. The absolute number of mechanisms in each experience category has therefore been divided by the number of mechanisms (the measure 'integrating mechanisms' contains seven items and 'institutionalising mechanisms' contains nine items).

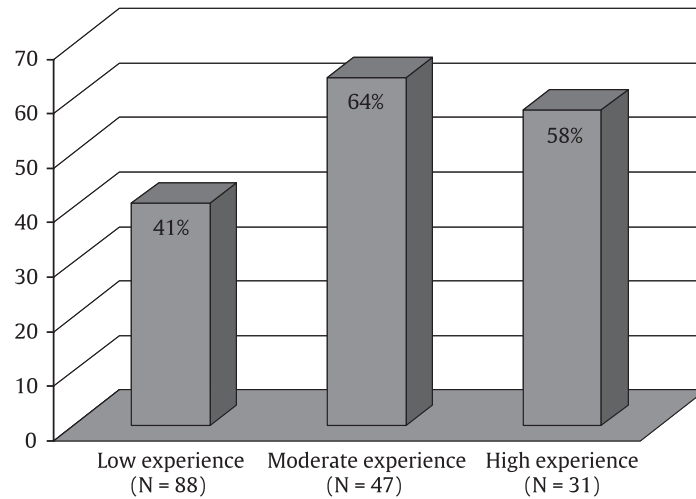


Figure 2. Alliance portfolio performance per experience category ($N = 192$). High experience ($N = 31$)

departments, alliance managers, partner selection programmes, etc.), the greater the likelihood of excessive confidence over competence. In other words, the use of relatively large numbers of institutionalising mechanisms increases the chance of repeating inaccurately defined lessons, which reflects overconfidence.

Last, we sought to contrast the effect of different combinations of integrating and institutionalising mechanisms at different levels of experience. Therefore, we split the low, medium and highly experienced firms into those that make extensive use of integrating mechanisms and those that make extensive use of institutionalising mechanisms. To do this, we compared lowest and highest quartiles for both measures. As the results of Table 6a show, with the exception of the low-experience group, firms that make extensive use of integrating mechanisms outperform those that prefer institutionalising mechanisms.

These results were corroborated when we compared alliance portfolio performance for three groups of firms: (1) firms making little use of either integrating or institutionalising mechanisms; (2) firms that make little use of integrating mechanisms but extensive use of institutionalising mechanisms; and (3) firms that use integrating mechanisms extensively but few institutionalising mechanisms (see Table 6b). Interestingly, as shown in the next table, firms that predominantly rely on institutionalising mechanisms achieve an alliance portfolio success rate of 50 per cent, which

Table 6a. Performance figures per experience category for different combinations of integrating and institutionalising mechanisms

Alliance portfolio performance (%)		
	Extensive (little) use of integrating mechanisms (A)	Extensive (little) use of institutionalising mechanisms (B)
Low experience	51% (40%)	55% (48%)
Medium experience	70% (55%)	63% (67%)
High experience	64% (52%)	57% (60%)

Please note that the average alliance portfolio performance for firms in our dataset is 52% ($N = 192$); Low = lower quartile users (25%)/High = highest quartile users (75%) of integrating and institutionalising mechanisms; Performance figures for groups with little use of mechanisms in brackets.

Table 6b. Performance figures for combinations of integrating and institutionalising mechanisms

Alliance portfolio performance (%)	
Integrating* institutionalising mechanisms	
Little use of integrating mechanisms, little use of institutionalising mechanisms	38.1%
Little use of integrating mechanisms, extensive use of institutionalising mechanisms	50.4%
Extensive use of integrating mechanisms, little use of institutionalising mechanisms	70.5%

($N = 192$); Little = lower quartile users of integrating and institutionalising mechanisms (25%); Extensive = highest quartile users (75%).

is somewhat *below* the average of 52 per cent in the database. Firms that – on the contrary – make extensive use of integrating mechanisms realise an average success rate of 71 per cent in their alliance portfolios.

The results suggest that overconfidence is most likely when firms have extensive experience in alliances *and* use a relatively large number of institutionalising mechanisms. Such conditions, our data shows, are most likely to nurture overconfidence and cause sub-optimal performance. Comparing these results with the performance reported in Figure 2, it appears that the moderate experience group in this study is closest to optimising the relative use of integrating and institutionalising mechanisms; these firms reach an average performance level of 64 per cent. The next section discusses important lessons from this study and how insights gleaned from it can help firms avoid overconfidence when managing their alliance portfolios.

How to avoid overconfidence in managing alliance portfolios

Prior research has shown that being repeatedly successful in alliances characterises the exceptional firm. Yet little is known about the specific factors that promote and inhibit learning when managing alliance portfolios. The outcomes of this study represent a first step towards a more detailed understanding of key learning processes and their contribution to superstitious learning in alliance portfolios. There are four main lessons that can be derived from the findings of this study, and which may serve as a guide for management practice.

Invest in deliberate learning

While overconfidence may loom for many alliance-active firms, the results of this study suggest that the imperfections of learning are not so great as to recommend that firms abandon any attempts to improve their alliance capabilities. On the contrary, both trial-and-error (or experiential) and deliberate learning using integrating mechanisms greatly enhance the chances of success when managing alliance portfolios. Firms in our dataset not only benefit from experience but also from investing in mechanisms to consciously derive lessons from these experiences, thereby underlying the complementary nature of these two distinct forms of learning. Hence, in line with prior studies, our results suggest that firms that invest in deliberate learning outperform those that do not.

Both trial-and-error and deliberate learning using integrating mechanisms greatly enhance the chances of success when managing alliance portfolios

What previously remained unspecified is the finding that the two sets of mechanisms studied here (i.e. integrating and institutionalising mechanisms) have distinct and markedly different effects on alliance portfolio outcomes. In particular, the results show that these two groups of mechanisms have different implications when it comes to nurturing confidence and competence. First, integrating mechanisms facilitate experimentation, which stimulates the adaptation of practice to the context at hand; they also help employees to engage in group problem-solving by sharing recent insights. As a consequence, competence in managing alliance portfolios is nurtured through the ongoing sharing of experiences and the commitment to learn by deriving lessons from success and failures.

Second, in contrast to integrating mechanisms, the abundant use of institutionalising mechanisms is likely to nurture confidence rather than competence in the context of alliance portfolio management. In general the benefits of such institutionalising mechanisms do not outweigh the 'costs' involved. However, as the results show, in the absence of integrating mechanisms, firms with little experience do benefit from deploying institutionalising mechanisms. This suggests that in cases where firms use very few integrating mechanisms, an obvious substitution effect occurs.

Hence, although recent research has pointed to the importance of specific deliberate learning mechanisms such as an alliance department, the results of this study offer a more fine-grained picture of the complexities of such learning processes in the context of alliance portfolio management: experiencing *and* deliberately sharing new lessons and insights using integrating mechanisms will raise the likelihood of constructive variation in alliance management practices. In line with the Levinthal's (1991) quote, the first lesson of this study delineates the way in which overconfidence causes suboptimal outcomes as a consequence of inappropriate use of such 'building blocks'. Hence, in spite of the negative institutionalising effect with increasing experience, firms may decide to install an alliance department as it may help to provide an overview to corporate management. Clearly, there may be motivations beyond coordinative or knowledge-sharing purposes that make firms decide whether to rely on institutionalising mechanisms (and incur the costs involved). For instance, firms may wish to create external visibility signaling that alliances are deemed important, or seek to ascribe responsibility for alliances to specific persons inside the firm.

Balance the use of integrating mechanisms and institutionalising mechanisms

As we have seen, balancing the use of integrating and institutionalising mechanisms is important to avoid overconfidence in alliance portfolio management. Our findings demonstrate that it is easy for firms to over-invest in the latter type of mechanisms, consequently nurturing confidence over competence. There are several reasons for this. First of all, the use of a large number of institutionalising mechanisms (relative to integrating mechanisms) may be a major source of overconfidence, as they suggest the firm has all the required expertise available in-house. This perception is likely to be reinforced if specialised managers, for example vice-presidents of Alliances or managers working for an alliance function, are given responsibility for the entire process. Second, as alliance practices to manage the alliance process are often put together by such staff personnel, the required use of such practices by other managers may suggest these are optimal. Therefore, to the degree that institutionalising mechanisms stimulate the use of espoused practice, it is more likely that decision-making is formalised and standardised, making alliance management less flexible.

In practice, this means that firms managing large alliance portfolios will have to resist relying too much on standardised, predefined lessons spread throughout the company, without allowing individual employees to alter decision-making and behaviour dependent on contextual forces. For instance, to avoid the confidence trap in alliance portfolios, management has to ensure employees continue to be motivated to share recent insights (rather than only having centralised staff prescribe decision-making in detail). While an alliance department or other specialised personnel located centrally is likely to help coordinate alliance activities and oversee the alliance portfolio, it is essential to make sure that new experiences are used to improve existing heuristics. Once firms become too reliant upon extant alliance routines, the likelihood of outdated and incorrect causal inferences being applied increases substantially. Therefore it is important for managers to continue to share new insights and best practices. One alliance manager recalls: 'Our company is involved in

hundreds of alliances. Our alliance department sees to it that corporate management can maintain an overview of the most important alliances. Without this, it would be impossible to verify strategic commitments in ongoing projects – our alliance database is key in this... Furthermore, alliance managers meet to discuss recent experiences so that new insights are being shared.'

To avoid the confidence trap in alliance portfolios, management has to ensure employees continue to be motivated to share recent insights

Learn to experiment

While it may be useful to make use of certain institutionalising mechanisms to ensure coordination and standardisation across alliances, the contribution of such mechanisms to actual competence is questionable, as the results demonstrate. Alternatively, firms can stimulate employees to experiment in order to generate alternative solutions in complex management issues such as alliances.

Undoubtedly, retaining extant knowledge while ensuring new experiences are used to update extant practices is complicated. However, if firms choose to avoid experimentation (i.e. if they adhere to strict guidelines on alliance management), any event or activity is likely to be associated with high performance. To complicate matters further, if firms deploy a variety of mechanisms simultaneously, the performance effects are likely to be confounded. Therefore, firms can tolerate productive mistakes by letting employees experiment incrementally. If decision-making in the alliance process is then altered, changes can be observed and assessed to avoid performance effects being confounded. The outcomes of such experiments can thereafter be feed-forwarded using integrating mechanisms. This way, firms that train their personnel can develop nuanced decision-making criteria rather than policies and guidelines that typically contain facts and figures. Also, training can help to make those involved more aware of the decision rules applied.⁵³ One of the vice presidents of Alliances interviewed indicated how his firm tries to ensure employees apply the right lessons in new alliance projects. 'Employees use our intranet to access the codified practices defined for each alliance phase. This ensures that decision-making and behaviour is similar for the different alliances we manage. In addition, we use training sessions to have alliance managers experiment with challenges in recent alliance projects and go beyond standard guidelines to maintain stability in partnerships to come. This helps them anticipate hazards in the future.'

Firms that train their personnel can develop nuanced decision-making criteria rather than policies that typically contain facts and figures

Hence, experimentation is important in order to continue to verify the value of the alliance practices. It will help validate and update practices used to manage alliance portfolios, thereby avoiding the risk that only successes (and not failures) are observed. Detecting the value of alternative solutions can therefore help to reduce judgmental distortions and is an important way to avoid overconfidence.

Make managers accountable

In spite of highly ambiguous settings, managers can be remarkably and unjustifiably certain. As the underlying causes of successful alliance management are very hard to disentangle, providing managers with the right set of mechanisms is critical to avoid overconfidence. Besides training, another measure to stimulate experimentation is the use of aspirations and goals to make managers accountable. The goals may be constructed so as to allow for variation in behaviour. In doing so, firms

can avoid overconfidence among managers by deliberately allowing for failures (to complement and verify the understanding drawn from successes). If productive mistakes are tolerated, after which lessons can then be shared, superstition is less likely to occur as managers are given room to incrementally experiment.

There are two ways to do this. First, firms can use metrics to follow progress of the alliance, and measure the effect of the decisions taken. By using such milestones, it becomes easier to isolate the effects of certain practices used and their contribution to success. This will then help determine whether to continue with those practices or alter them. Therefore, to avoid misinterpretation, it becomes important to disentangle the distinct effects so as to understand which new experiences really help improve performance. While a number of new lessons may prove worthless or 'foolish',⁵⁴ occasionally a few will contain important and novel insights to improve extant practices.⁵⁵ One alliance professional indicates that his company uses performance metrics to steer behaviour and encourage people to share new insights: 'A lot of creativity comes from stimulating our alliance managers the right way. By tracing exactly how the deal progresses from one phase to the next, they are responsible for finding solutions fit to the deal at hand.'

'By tracing exactly how the deal progresses from one phase to the next, managers are responsible for finding solutions fit to the deal at hand'

Second, firms can make use of alliance evaluations and compare such evaluations. By using such evaluations as a formal instrument, the decisions taken can be assessed and the underlying cause-and-effect relationships reconsidered. If mistakes are tolerated and subsequently used in a productive way, superstitious beliefs can more readily be acknowledged. Repetition of such behaviour can be avoided if such insights are then shared within the firm. One of the vice-presidents interviewed said: 'Evaluations form the backbone of learning — that's where we derive insights that make a difference. ... We evaluate typically at the end of each important phase, but also discuss what the differences were with earlier alliances. These experiences are then shared and documented to be used for future deals.'

Hence, performance metrics and evaluations can be used to direct attention to sound decision-making (rather than to strict adherence to guidelines). Employees are particularly likely to rely on espoused practice in complex decision-making processes. As learning from failure is critical in such instances, the use of metrics can enable learning from failure rather than from success only. Past successes create self-reinforcing cycles, driving out the experimentation and change which is needed to improve the firm's ability to manage its alliance portfolio optimally. However, when using the right instruments, the chances of overconfidence are likely to be reduced and more productive decisions taken, which will contribute to long-term success in alliance portfolios.

Summarising, institutionalising mechanisms (for example the use of intranet to share codified practices) help formalise decision-making and enforce standard operating practices. Yet, while these mechanisms may offer efficiency, they oftentimes lack the flexibility to encourage employees to share and implement novel experiences. The latter is why the use of integrating mechanisms is critical; these stimulate those involved to engage in group problem-solving, thereby nurturing a collaborative mindset and willingness to experiment. By allowing for variation in practice and making managers accountable, such experimentation facilitates an adaptation of practices to new circumstances. As the results show, this can foster competence instead of mere confidence. Hence, the outcome of alliance portfolio performance is sensitive to a delicate balance between experiential learning, sharing of new alliance experiences among employees involved, and (re-)defining guidelines by institutionalising mechanisms. Such a balance will enable a firm to reduce the chances of implementing inadequate lessons in future alliances, and to avoid falling prey to superstitious learning in its alliance portfolios. The following case illustrates how KLM Royal Dutch Airlines tries to avoid overconfidence in managing its alliance portfolio.

Integrating mechanisms stimulate those involved to engage in group problem-solving, thereby nurturing a collaborative mindset

Short case: How KLM avoids overconfidence in alliance portfolio management

At KLM Royal Dutch Airlines, alliance portfolio management has been an important building block for corporate growth for a long time. Ever since its cooperation with Northwest was initiated in 1989 and a joint venture established in 1997, KLM has been aware of the fact that the successful management of alliances requires corporate relationships to be managed in a highly competent and flexible way. In 1997, an alliance department was established to manage the growing importance of alliances.

Given the growing importance of alliances in the airline business, KLM is aware of the fact that it should continue to share new experiences throughout its matrix organisation. So while its alliance department includes a number of alliance managers and has defined clear alliance policies, numerous mechanisms are used to update alliance practices and avoid the danger that old lessons are applied inadequately. One of KLM's directors of Alliances stresses that: 'We provide training to ensure that new knowledge is shared with those responsible for line management.' This provides them with details of important alliance practices and keeps them up to date on the do's and don'ts. To further stimulate experimentation, KLM also encourages its employees to adapt practices to the context of the particular deal. The director of Alliances explains: 'Especially in joint venture alliances such as those with Northwest Airlines, Kenya Airways and China Southern, the alliance department plays a supporting role by sharing its experiences and facilitating a good business process when line management of KLM meets with its partners.' Also, while guided in the alliance process by KLM's alliance department, line managers often meet on a regular basis to ensure deals proceed as planned and engage the group in constructive problem-solving. He adds: 'Clearly, we know the process, they know the intricacies of the particular business case. The sheer complexity requires alliances practices to be adapted to the deal at hand — that's where we as alliance professionals continue to learn about important nuances which we then share among our group.' Through this continuous cycle, the managers responsible for decision-making the alliance at hand apply alliance practices as they see fit, thereby ensuring that the company's alliance competence is both applied and updated at the same time.

In addition, KLM's alliance department also makes sure it derives new insights from deals by evaluating their alliances. 'Much more than before, we use steering mechanisms that enable us to share knowledge on a continuous basis,' KLM's director of Alliances indicates. For instance, KLM uses meetings and reporting processes in the metrics of the whole organisation, which steer behaviour at critical moments as the alliance progresses. Such metrics create accountability that helps the professional be sensitive to feedback. Doing this has helped executives in KLM to continue to learn by fostering the sharing of specific knowledge which results from new deals, thereby balancing internal learning processes. 'Genuine competence does not come from throwing things over the fence for implementation ... We know the most common pitfalls, but to remain competent requires much more: it demands a commitment to constantly learn and apply processes tailor-made for each deal.' So, besides documenting lessons learned electronically and obviously reducing employee turnover to the minimum within the alliance department, KLM seeks to nurture competence (thereby avoiding excessive levels of confidence) by both guarding and renewing employees' knowledge on alliance management frequently.

Conclusions

With alliances becoming ever more important for value creation in firms, the fieldwork and unique data generated from 192 firms that reported on over 3400 alliances helped us discover important lessons on how to avoid superstitious learning in alliance portfolios. With an emerging understanding of how firms can develop alliance capabilities, it becomes more important to understand the ways in which certain groups of mechanisms facilitate or inhibit alliance portfolio performance. By distinguishing between integrating and institutionalising mechanisms, we have uncovered how firms can both optimise the use of prior alliance experience and also minimise the chance that standard practices are being applied in dissimilar circumstances. Using the results from a worldwide survey and fieldwork, we have unraveled different ways in which executives at leading firms try to avoid applying incorrect insights. In addition, the outcomes of more detailed analyses show that balancing the use of integrating and institutionalising mechanisms can help firms increase their performance to over 70 per cent (while alliance portfolio performance in this database averages 52 per cent). It would be interesting for future studies to observe whether and how individual managers become overconfident and get trapped in repeating inadequate behaviour, by studying their behaviour in different settings.

A number of important lessons clearly stand out. First, being overconfident about the ability to manage alliances can be a costly game: sharing erroneous lessons by using an excessive amount of institutionalising mechanisms can cause alliance portfolio performance to drop to 38 per cent. This marks an important finding as it shows that even (or perhaps more accurately, in particular) experienced firms are prone to below-average alliance portfolio performance. This makes it imperative for firms to proceed cautiously when developing alliance capabilities. By deploying the right mechanisms and for instance using training sessions, firms can stimulate experimentation to ensure that thereafter, new lessons are feed-forwarded to improve alliance practices.

Being overconfident about the ability to manage alliances can be a costly game

Second, while it is impossible to derive an optimum for problems involving complex decision-making, as the quote of Daniel Levinthal's 1991 article suggests, the results of this study show that it is essential for firms to jointly use relatively small numbers of institutionalising mechanisms and relatively large numbers of integrating mechanisms. This can be done by standardising certain practices to help alliance managers anticipate a number of recurring pitfalls, while simultaneously granting them room also to experiment with and use more recent or contextualised heuristics. For instance, firms can train their personnel to develop and apply nuanced decision-making criteria rather than predefined guidelines. Also, they can steer behaviour using performance metrics in alliances and compare evaluations of different deals. By specifying a number of origins of superstitious learning, we have laid bare important elements that can cause suboptimal alliance portfolio performance even for very experienced firms. The lessons drawn aim to ensure a continuing success for alliance-active firms now and in the future.

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Appendix 1. Measurement details

The survey data gathered for this study detail the mechanisms that firms use to learn how to manage their alliance portfolios. The respondents reported on the mechanisms used to manage the portfolio of strategic alliances over the period 1997 to 2001. The main *dependent variable*, alliance portfolio performance, is assessed as an organisational effectiveness measure related to 'alliance performance'. This measure determines the overall satisfaction with the firm's alliances over the five-year period (0–20 per cent, 21–40 per cent, ... 81–100 per cent) which is both an effective and a scientifically established manner to access the success of alliances (Geringer and Hebert, 1991; Mohr and Spekman, 1994).

Three main key *independent variables* were used in this study. First, alliance experience was measured as the number of strategic alliances formed by the respondent firm over the period 1997–2001. A categorical variable measured how many strategic alliances a firm formed (0–5, 6–15, 16–25, 26–40, >40). The remaining two independent variables, integrating and institutionalising mechanisms, consist of a number of different items related to alliance portfolio management. Using the input of an expert panel, a list of 29 mechanisms critical to alliance capability development was constructed. Based on Heimeriks *et al.*'s (2007) framework and to detect the underlying integrating and institutionalising mechanisms, we made use of exploratory factor analysis (EFA) alongside the interview insights to construct these scales and verify the validity of the constructs. Given the binary nature of our measures, Mplus was used as a specific software tool to run a VARIMAX factor rotation. As our sample contains approximately 200 cases, 0.4 is used as a cut-off level to determine what items to include (Hair *et al.*, 1998). Two scales were obtained which included the reported seven items for group level learning or integrating mechanisms (eigenvalue = 1.955; CA: 0.71) and nine items for organisation level learning or institutionalising mechanisms (eigenvalue = 7.564, CA: 0.83). The remaining factors shown had eigenvalues lower than 1 and were therefore excluded (remaining loadings were substantially below the required values). The respective variance explained was 23.507 and 31.983. The root mean square residual is 0.0722, which is an acceptable level (Hair *et al.*, 1998). The factor correlation is .554, which is a moderate level of intercorrelation, suggesting that the factors overlap to some degree but also represent conceptually distinct measures. Harman's (1967) single factor test was used to rule out significant amounts of common variance (Podsakoff and Organ, 1986). As our independents showed relatively high levels of intercorrelation, the variables were mean-centred to obtain more meaningful results and ease interpretation (Cohen *et al.*, 2003). To analyse the data, ordinal logistic regression was used, as this technique takes into account the ordinal nature of the dependent variable.

The *face validity* of the measures was confirmed by the results of the interviews: all experts confirmed that (1) the mechanisms were all 'important' to 'very important' to improve alliance capabilities; and (2) their firms had first started sharing general lessons from prior experiences between individuals by, for example, distilling best practices before they installed formal structures and processes using alliance managers and rewards systems. This confirmed the not only our interpretation of the factor structure, but also that these were distinct measures.

In addition, a number of *control variables* were included in this study: firm size (annual sales revenues in US\$ in 2000), ICT industry dummy and service industry dummy, as these firms tend to be very active in forming alliances. In addition to these control variables, a number of variables were inserted to verify whether our dependent measure was contingent of other factors. We inserted multiple variables for: (1) the type of decision-making in alliances ('process', i.e. formal top-down '1' versus informal bottom-up '0'), (2) the percentage of equity alliances in the portfolio ('equity', i.e. categorical variable 0–20 per cent, ... 81–100 per cent), (3) external advisors ('external' 0–4), i.e. sum of consultants, mediators, financial and legal advisors), (4) respondent position ('position' (0–1) as alliance manager or vice-president of alliances), (5) alliance department ('dep' (0–1) if alliance department was present), (6) nationality of headquarters ('dumgeo' (01-) to compare firms headquartered in North America versus Europe). However, none of these variables were significant, nor did they influence the outcomes reported.

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11. Kale et al. (2002: 765) note that: ‘... we have only highlighted the importance of having a dedicated alliance function. Yet we have suggested that the value of the alliance function may actually lie in the specific learning and coordination activities it performs and in the future it may be valuable to probe deeper into the direct impact of those factors on alliance success.’ They continue by stating that: ‘apart from the benefits stated, setting up an alliance function may involve some costs and risks’ (p. 765). In fact, though they expect the alliance function to retain its significance, they do stress the need to ‘understand the influence of the alliance function after controlling for the [other] learning processes’ (p. 764).
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 37. During the interviews, it became obvious that managers responsible for these processes are unaware or even reluctant to acknowledge that such procedures may have unintended or adverse effects, let alone negatively impacting alliance portfolio performance. As a consequence of a relatively short term focus, repetition of action is favoured over repeated and conscious deliberation (i.e. an exploitation effect). While this may not be very surprising given the competitive landscape many of these firms operate in, it is noteworthy to point to the difficulty and relative obscurity of fieldwork evidence on the origins of such superstitious effects.
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 43. G. Szulanski, Exploring internal stickiness: impediments to the transfer of best practice within the firm, *Strategic Management Journal Special Issue 17*, 27–43 (1996).
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 45. It is well established in extant literature that exploiting extant routines is likely to lead to reduced performance if criteria for success change prior to adoption of such routines; e.g. J. A. C. Baum and P. Ingram, Survival-enhancing learning in the Manhattan hotel industry, 1898–1980, *Management Science* **44**, 996–1016 (1998).
 46. As Tippins and Sohi (2003: 757) note, the use of key informants is currently the standard methodology in strategy research. Also, using key informants is an established way of gathering corporate level data (Philips, 1981). See M. J. Tippins and R. S. Sohi, IT competency and firm performance: is organizational learning a missing link?, *Strategic Management Journal* **24**(8), 745–761 (2003); L. W. Philips, Assessing measurement error in key informant reports: a methodological note on organizational analysis in marketing, *Journal of Marketing Research* **18**(4), 395–415 (1981).
 47. The number of prior alliances from 1997–2001 was measured with a five-scale categorical variable (0–5, 6–15, 16–25, 26–40, >40); to estimate the total number of alliances, the average of the final category was set at 50.
 48. While Zollo and Singh (2004) posits that codification efforts foster clarification of causally ambiguous relationships, this study posits that a) institutionalising mechanisms exploit existing insights by embedding behaviour in routines (potentially fostering overconfidence), and b) integrating mechanisms increase variation in the templates (potentially increasing competence).
 49. The logic underlying these measures is the following: we assume bounded rationality and that neither all alternatives nor consequences of any one alternative can be known (March and Simon, 1958). While there is neither an established test for verifying superstitious learning nor any way to control for alternative

explanations, measuring the use of institutionalising practices reflects routinisation and the degree to which a firm uses feedback relative to feed-forward processes i.e. prescribes preferred practices (Crossan et al., 1999). With increases in experience, the likelihood of systematic suboptimal choices increases due to a bias against risky and new alternatives (Denrell and March, 2001). We argue that institutionalising mechanisms increase the chance of overconfidence as they increase the likelihood of repeating suboptimal behaviour derived from prior alliances. Alternatively, the use of integrating mechanisms is likely to stimulate experimentation which helps to optimise practices to detail their contents (e.g. Stinchcombe, 1990). Hence, we argue that inappropriate generalisation is more likely with institutionalising mechanisms, since such mechanisms may for example exert authority over less experienced personnel and therefore resist (risky) alternatives (thereby more likely sticking to espoused practice). In other words, as Simon (1947) stressed, firm behaviour is influenced by the channelling of information; and imposing such institutionalising mechanisms can compromise decision-making (Walsh, 1995). This logic is in line with the findings of prior studies. For instance, Haas and Hansen (2007) find that sharing codified knowledge in electronic format saves task execution time (but does not improve work quality), while sharing personal advice improves work quality, signaling competence (but not saving time). Similarly, Reuer et al. (2002) find that the relevance of prior alliance experience hinges on the characteristics of subsequent deals, indicating heterogeneity is needed to manage complexity in strategic alliances. Extrapolating from the results to the measures of this study, this implies that integrating mechanisms are more likely to generate variation in practice (i.e. mirror competence), but also that institutionalising mechanisms nurture a false belief of competence (i.e. superstitious learning). See footnotes 12, 24; M. R. Haas and M. T. Hansen, Different knowledge, different benefits: toward a productivity perspective on knowledge sharing in organizations, *Strategic Management Journal* 28(11), 1133–1153 (2007); J. G. March and H. A. Simon, *Organizations*, Wiley, New York (1958); J. J. Reuer, K. M. Park and M. Zollo, Experiential learning in international joint ventures: the roles of experience heterogeneity and venture novelty, in F. J. Contractor and P. Lorange (eds.), *Cooperative Strategies and Alliances*, Elsevier Science, Oxford, 321–344 (2002); H. A. Simon, *Administrative Behavior: a study of decision-making processes in administrative organization*, Macmillan & Co, New York (1947); A. L. Stinchcombe, *Information and Organizations*, University of California Press, Berkeley (1990); J. P. Walsh, Managerial and organizational cognition: notes from a Trip Down Memory Lane, *Organization Science* 6(3), 280–321 (1995).

50. This logic is firmly grounded in organisational learning theory explicated in the work by Mary Crossan and colleagues (e.g. Crossan et al., 1999), Conny Helfat (e.g. Helfat and Peteraf, 2003) and Koen Heimeriks and colleagues - see endnote 17 and 20. See [Appendix 1](#) for more details on the measures.
51. Please note that the results did not change in case analyses were repeated in which individual items of the two factors were deleted, suggesting the findings to be insensitive to changes in the two main independent variables: integrating and institutionalising mechanisms.
52. These figures are in line with prior studies e.g. C. Freidheim, *The Trillion-Dollar Enterprise. How the Alliance Revolution will Transform Global Business*, Perseus Books, Cambridge, MA (1998); M. Margulis and P. Pekar, *The Next Wave of Alliance Formations: Forging Successful Partnerships with Emerging and Middle-Market Companies*, Houlhan Lokey Howard & Zukin (2001).
53. Training in use of collaboration tools breeds culture of togetherness, *Financial Times*, (2006b) 4 December 2006.
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55. This is also referred to as working towards the ‘arrow core’ or the optimal routine, see S. G. Winter and G. Szulanski, Replication as strategy, *Organization Science* 12(6), 730–743 (2001).
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Biography

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