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**CONTEXTUAL DETERMINANTS OF
ORGANIZATIONAL AMBIDEXTERITY**

**CEO PUBLICATION
T 02-6 (415)**

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February 2002

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The contributions of Tom Williams, Jim O'Toole, and others at Booz Allen Hamilton, the World Economic Forum, and the Centre for Effective Organisations are acknowledged. Earlier versions of this paper were presented at the AIB conference (2000) and the AOM conference (2001).

CONTEXTUAL DETERMINANTS OF ORGANIZATIONAL AMBIDEXTERITY

Abstract

We empirically investigate predictors and consequences of organisational ambidexterity, defined as the capacity to simultaneously achieve alignment and adaptability. Building on leadership and organisation context literatures, we argue that when leaders develop a combination of stretch, discipline, support and trust, this facilitates the emergence of ambidexterity, and subsequently superior performance. Hypotheses were supported using data collected from 4234 individuals in 41 business units. Interviews allowed insight into the processes through which ambidexterity is created.

Key Words: Ambidexterity, self-organisation, organisational context

A recurring theme across a variety of organisational literatures is that successful organisations in a dynamic environment are those that are *ambidextrous* -- able to manage today's business in an efficient way, while also being adaptable to changes in the environment so that they are still around tomorrow (Duncan, 1976; Tushman and O'Reilly, 1996). The simple idea behind this is that the demands on an organisation in its task environment are always to some degree in conflict (e.g., investment in current vs. future projects, differentiation vs. low-cost production) so there are trade-offs that need to be made. While these trade-offs can never entirely be eliminated, the most successful organisations reconcile them to a large degree, and in so doing enhance their long-term competitiveness.

This line of argument has been presented in a wide variety of contexts, from the logic of mass customisation in manufacturing (MacDuffie, 1995), through the concept of the Transnational in international business (Bartlett and Ghoshal, 1989), to the idea of the ambidextrous organisation as one that overcomes revolutionary changes in its industry (Tushman and O'Reilly, 1996). However, despite these and other influential studies, there is little rigorous systematic evidence documenting the success of such ambidextrous organisations, and very little detailed investigation of the systems that leaders develop in organisations to achieve ambidexterity (Adler, Goldoftas and Levine, 1999).

The purpose of this study is to empirically investigate the predictors and consequences of organisational ambidexterity, defined as the capacity to achieve alignment and adaptability at the same time (Tushman and O'Reilly, 1996). Alignment refers to the coherence among all the activities of the organisation so that they are working together toward the same goals. Adaptability refers to the capacity of the organisation to reconfigure itself quickly to changing demands in the task environment. Alignment and adaptability can be thought of as organisational capacities (or capabilities) that are themselves composed of bundles of underlying resources and capabilities. By their nature, such organisational capabilities are

complex, causally ambiguous, and widely dispersed (Amit and Schoemaker, 1993; Barney, 1991; Prahalad and Hamel, 1990).

How does an organisation develop the capacity for alignment and adaptability? In this study we build on the organisation context literature, and in particular Ghoshal and Bartlett's (1994) framework for organisational effectiveness, to suggest that alignment and adaptability emerge when leaders develop a supportive organisational context, which is comprised of a set of organisational attributes. Through a combination of formal and informal processes, the organisational context fosters certain individual- and group-level behaviours that taken together improve organisational effectiveness (Ghoshal and Bartlett, 1994). According to this perspective, superior organisational performance is not achieved primarily through charismatic leadership, nor through the formal organisation structure, nor even through a "strong culture." Rather it is achieved through the actions and initiatives of senior managers and a carefully selected set of organisational systems that together build a supportive organisational context, which in turn leads to the development of these meta-capabilities of alignment and adaptability.

In the body of the paper we develop this argument in greater detail, and from this we hypothesise the antecedents and consequences of organisational ambidexterity. The hypotheses are then tested on an extensive body of data covering 4234 individuals in 41 business units across ten multinational firms. In the last sections of the paper we describe the findings from our empirical analysis and discuss their implications for organisational theory and research.

THEORETICAL BACKGROUND

The concept of ambidexterity in the organisational literature refers broadly to the organisation's ability to do two different things at the same time - such as manufacturing efficiency *and* flexibility (Adler et al, 1999; Carlsson, 1989), differentiation *and* low-cost strategic positioning (Porter, 1980; 1996), or global integration *and* national responsiveness (Bartlett and Ghoshal, 1989). In this paper we adopt the more specific definition put forward by

Tushman and O'Reilly (1996) and Duncan (1976), namely that the ambidextrous organisation is one that achieves alignment in its current operations while also adapting effectively to changing environmental demands (cf. Romanelli and Tushman, 1994; Tushman and Anderson, 1986). In other words, ambidexterity refers to the configuration of the entire organisation vis-à-vis its task environment - it is aligned in order to respond efficiently to the demands of its existing customers, but adaptive in order to meet emerging and future demands as they arise. Or stated slightly differently, ambidexterity is the capacity that allows the organisation to balance the conflicting demands for exploitation and exploration (March, 1991; March and Simon, 1958).

It is important to note that, while there is no lack of research concerned with reconciling internal tensions (e.g., efficiency vs. flexibility, low cost vs. differentiation) within organisations, there are no prior studies explicitly focussed on the *measurement* of ambidexterity at the organisation level. For this reason, we spend a considerable amount of time in this paper conceptualising and operationalising the ambidexterity construct. Second, there has been some discussion as to whether internal tensions, such as between alignment and adaptability, can ever be effectively reconciled. Porter (1996), for example, argues that there are insurmountable trade-offs between low cost and differentiated positions, so that organisations have to make explicit choices. And the earlier research on manufacturing viewed the trade-off between efficiency and flexibility as inherent to the manufacturing process (Carlsson, 1989; Ghemawat and Costa, 1993; Hart, 1942; Klein, 1984). However, the more usual approach today is to argue that leaders can indeed develop management systems to effectively reconcile competing demands. This has been suggested in the manufacturing literature (de Meyer et al, 1989; McDuffie et al, 1996), in R&D (Eisenhardt and Tabrizi, 1995; Wheelwright and Clark, 1992) and in international business (Bartlett and Ghoshal, 1989). Thus our first premise here is that organisations can potentially achieve both alignment and adaptability at the same time (i.e., it is possible for an organisation to be ambidextrous).

Ambidexterity in Practice

How does ambidexterity manifest itself in organisations? One way of answering this question is to think of the two generic options leaders face if they want an organisation to be aligned and adaptive at the same time (Hedlund and Riddestrale, 1997). One option is to separate out the two activities, so that, e.g., business unit X is responsible for maximising the value from an existing product line, while business unit Y is charged with developing an entirely new product line to meet emerging customer needs. This approach ensures that both activities are given their due attention, but it has a number of drawbacks, including duplication of effort, lack of integration across the two activities, and a loss of morale in those businesses that are being managed for exploitation (i.e., as "cash cows"). The second generic option is to run the activities in parallel, so that, e.g., business unit Z is responsible for maximising the value from its existing product line *and* investigating new business opportunities in related areas. This approach ensures greater integration between the two activities, but it involves a high level of ambiguity in role definition, and typically it results in alignment-oriented activities driving out adaptation-oriented activities (Drucker, 1974; Galbraith, 1982; March, 1991).

These two approaches are often used in combination in large organisations. But our expectation is that the more sustainable model is the latter one, in which essentially every individual has to be aligned and adaptive - that is, they have to be able to deliver value to existing customers in their existing functional area, but at the same time they have to be on the lookout for changes in the task environment, and be prepared to act accordingly. This is a more sustainable model because it facilitates the adaptation of the *entire* organisation, not just the separate unit that is responsible for new business development. Of course this is a more difficult model to work with (as we discuss below), but it is more likely to create a truly ambidextrous capability than an approach which involves separating out the two capabilities of alignment and adaptability.

The implication of the above is that *ambidexterity manifests itself in the specific actions of individuals throughout the organisation*. In their day-to-day work, individuals often face choices as to how they should spend their time - should they continue to focus on an existing customer account to meet quota, or should they nurture a new customer who has a slightly different need? In organisations that are aligned *or* adaptive, these individuals can be given clear instructions, and they can be incentivised accordingly. But in an ambidextrous organisation, it is up to those individuals to use their own judgement as to how they divide their time between alignment-oriented and adaptation-oriented activities.

Research by Adler et al (1999) examined this issue in some depth, and identified four specific mechanisms that organisations could use to reconcile the inherent tension between efficiency and flexibility in manufacturing. These were, (a) meta-routines for systematising the creative process, (b) job enrichment schemes that provided workers with the skills to become more innovative in their everyday tasks, (c) switching, which refers to individuals moving between different tasks even in the course of a single day's work, and (d) partitioning, which refers to the creation of two activities being done in parallel with different teams. While the latter two mechanisms have elements of separation in them, the point is that they all require an individual- or team-level orientation towards dual capacities, rather than a higher-level separation of those capacities. And more important, the locus of the decision to implement each capacity is made by the individuals. It is likely impossible for leaders to create ambidexterity through control and coercion. While they can facilitate the development of these capacities, it is individual employees that implement the capacities in practice.

Organisation Context and Ambidexterity

This discussion begs the next question: How does an organisation become ambidextrous? As already noted, ambidexterity cannot be mandated from above, but at the same time it does not emerge purely through chance or good luck. The existing literature offers some

suggestions. Adler et al (1999: 48) pointed to the importance of worker training and trust (in relationships with management) as key facilitators. Tushman and O'Reilly (1996) identified a decentralised structure, a common culture and vision, and supportive leaders and flexible managers as the key sources of ambidexterity. And Bartlett and Ghoshal (1989) focussed on building a shared vision, recruitment and selection, training, and career path management of executives as ways of stimulating a company to be global integrated and locally responsive at the same time.

These elements are all clearly part of the story, but as Adler et al (1999) observed, studies to date ". . . have not generated an overarching theory" explaining ambidexterity. Our framework builds on previous research to systematically identify characteristics of an organisation context that foster individual implementation of the capacities for alignment and adaptability. Organisation context has important similarities to the related concepts of *organisation culture* and *structural context*. Structural context refers to the establishment of administrative mechanisms that foster certain behaviours in their employees, but its emphasis is on specific systems and processes such as incentive or career management systems, rather than on intangible qualities such as discipline and stretch (Bower, 1970; Bower and Doz, 1979; Burgelman, 1983a, 1983b). Organisation culture, like organisation context, is concerned with the intangible qualities of the organisation, but it differs in its emphasis because it is more concerned with understanding the underlying belief systems and values of individuals in the organisation rather than the formal systems and processes leaders put into place (e.g., Denison, 1990; Ouchi, 1981; Pettigrew, 1979; Schein, 1985). As described by Denison (1990:2), organisation culture refers to "the underlying values, beliefs, and principles that serve as a foundation for an organisation's management system *as well as the set of management practices and behaviours that exemplify and reinforce those basic principles.*" Thus, organisation context reflects a combination of the structure and culture of the organisation.

There are a number of antecedent bodies of literature that address the concept of organisation context. One is the idea that the organisation is a vehicle for promoting and sustaining voluntary cooperation among individuals. This can be traced back to Barnard (1938) and was expanded upon in Scott's (1992) discussion of "natural systems," and Adler and Borys' (1996) concept of enabling bureaucracy. Underlying these and other related theories are a number of common themes - a belief in individual motivation to work, structure as a means of guiding rather than constraining action, cooperation as something that is undertaken willingly rather than through coercion, and strategy as something that emerges through collective action rather than through top-down planning.

A second body of theory that speaks to the mechanisms underlying ambidexterity is the emerging literature on self-organisation (Anderson, 1999; Brown and Eisenhardt, 1997; Kaufmann, 1995; Mathews et al, 1999; Morel and Ramanujam, 1999; Waldrop, 1992). While the term "self-organisation" has a very precise meaning in complexity theory, in organisation studies it refers to the capacity of a social system to generate organised patterns of behaviour through the sometimes random behaviours of individuals. In particular, self-organisation is seen as taking place "at the edge of chaos" – in a state of interaction that is somewhere between well-defined order and complete chaos. While the implications of self-organising for the field of management have yet to be fully explicated, a number of important ideas are suggested - a basic set of rules provides the framing for action, self-organisation emerges through high states of energy exchange with the environment, and self-organisation as an enabler of continuous change because the system is in a state of dynamic equilibrium (Brown and Eisenhardt, 1997; Mathews et al, 1999; Nicholls-Nixon, 2000; Prigogine et al, 1972).

Finally, the concept of organisation context was addressed by Ghoshal and Bartlett (1994), as a way of making sense of the observation that some organisations foster a higher level of energy and initiative among their employees than others. In their words,

Our concept of context ... is framed not in familiar process terms such as definition and impetus, nor does it focus primarily on the traditional management tools of formal structure and systems. Instead it highlights the way in which the four behaviour-framing attributes of discipline, stretch, trust and support were created and reinforced by a variety of micro- and macro-level actions taken by managers at all levels of the organisation (1994: 95).

The four attributes -- discipline, stretch, support and trust (see table 1) -- are conceptualised by Ghoshal and Bartlett (1994) as interdependent elements. The organisation, they argue, needs to foster discipline and stretch to encourage individuals to push for ambitious goals, but it also needs support and trust to ensure that this happens within a cooperative environment. Organisation context, in other words, can be conceptualised in terms of “the yin and yang of continuous self-renewal” Ghoshal and Bartlett, 1997: 151) - a pair of hard elements (discipline and stretch) and a pair of soft elements (support and trust). Too much emphasis on discipline and stretch creates burnout and disillusionment among employees, but too much emphasis on support and trust creates a “country club” atmosphere in which no work gets done.

Insert Table 1 about here

To summarise, the argument is that the four behaviour-framing attributes of discipline, stretch, support, and trust will create the organisation context in which ambidexterity emerges. The creation of a supportive organisational context is *not* about leaders mandating specific behaviours in employees - it is about creating an environment in which employees take the initiative to balance the capacities of alignment and adaptability themselves.

HYPOTHESES

The development of specific research hypotheses follows directly from the above discussion. We begin with the consequences of ambidexterity, proposing that ambidexterity results in high performance for an organisation, or organisational unit. Alignment is geared towards improving performance in the short-term. Adaptability is geared towards improving performance in the long-term. Thus if the organisation focuses on one of these at the expense of

the other, problems will arise. March (1991: 71) made a similar argument in terms of the need for both exploitation and exploration-oriented activities:

Adaptive systems that engage in exploration to the exclusion of exploitation are likely to find that they suffer the costs of experimentation without gaining many of the benefits. Conversely, systems that engage in exploitation to the exclusion of exploration are likely to find themselves trapped in suboptimal stable equilibria. As a result, maintaining an appropriate balance between exploration and exploitation is a primary factor in system survival and prosperity.

Ambidexterity should, using this logic, be a key driver of organisation performance over the long term. The only countervailing factor is likely to be the costs of implementing a system that achieves ambidexterity. At this stage we do not have sufficient insight into the magnitude of such costs, but from interviews conducted with some of the companies involved in this study we would expect the benefits of ambidexterity to far outweigh the costs. Indeed, there is even a case to be made that developing ambidexterity through a supportive organisational context is *less expensive* than more traditional forms of organisation because the costs of controlling and supervising employees are much reduced. Thus, our first hypothesis:

Hypothesis 1. The higher the level of ambidexterity in the organisation, the better the performance.

In terms of antecedents, ambidexterity is an organisational capacity that emerges through the development a supportive context, characterised by the four attributes of discipline, stretch, support and trust. Further, we argue that these four attributes are interdependent and non-substitutable. For a truly effective organisational context to emerge, all four must be present. For example, stretch alone does not result in ambidexterity, because stretch must be balanced by discipline, support and trust in order to be both aligned and adaptive. Thus, rather than specifying four separate hypotheses, we propose:

Hypothesis 2. The more that an organisational context is characterised by an interaction of stretch, discipline, support, and trust, the higher the level of ambidexterity.

RESEARCH METHODS

Testing the hypotheses creates a significant methodological challenge, because ambidexterity and organisation context are both business unit-level constructs, yet they are manifested in the actions and attitudes of individuals. Previous studies in this genre have typically either adopted a single-case study methodology, or they have relied on single informants to answer questions on behalf of the entire organisation, but both approaches have obvious limitations. Our approach, in contrast, was to sample a large number of individuals in each business unit of ten organisations and then aggregate their responses to create unit-level measures. This procedure was undertaken in 41 business units, each of which had distinct organisational contexts. This sample was sufficient to allow statistical analysis at the unit level.

Procedure and Sample

The data collected for this study were part of a large investigation undertaken jointly between a team of academics and consultants, and with support from Booz, Allen & Hamilton and the World Economic Forum. A multi-method approach was adopted, consisting of (1) interviews with top executives in ten multinational firms, (2) interviews in between 2 and 8 business units in each firm, (3) a survey of a stratified random sample of 50-500 employees at four hierarchical levels in each business unit, (4) identifying and understanding the key organisational systems through qualitative analysis of interview notes and quantitative analysis of survey data, and (5) feedback sessions in each firm. In this paper we report on the quantitative data and we draw on the interview material to substantiate and verify our findings. The total number of survey respondents was 4234 individuals across 41 business units in the ten multinational firms. Table 2 provides a breakdown of the sample.

Insert Table 2 about here

Precautions to avoid same source bias. The data were collected using a comprehensive survey and all items were Likert-style questions. A stratified random sample of respondents across four levels in the organisation provided ratings of organisation context, ambidexterity, and performance. To mitigate the problem of same source bias, we used different levels of respondents for the independent variables (organisation context) and the dependent variables (ambidexterity and performance). That is, for the independent variables we aggregated only those respondents who identified themselves as line management and non-management. For the dependent variables we aggregated only those respondents who identified themselves as senior and middle management, because our pilot studies indicated these respondents were the most well informed about unit level outcomes.

We also conducted a separate validity check for performance. We first aggregated all individual responses regarding subjective performance up to the level of the firm. We then obtained financial performance indicators for each firm in comparison to its industry group.¹ The correlation between subjective performance and peer group financial performance was strong and positive ($r=0.75$, $p < .05$), lending external validity for the subjective performance measure.

Measures

All constructs were measured with multi-item scales. Survey items were developed by an expert panel of academics, and subsequently pre-tested on a small sample of managers to ensure that the meaning was clear.

Performance. The dependent variable was measured with four items that required the respondents to indicate the degree to which they agree with the following: (a) this organisation is achieving its full potential, (b) people at my level are satisfied with the current level of

¹ To be specific, we calculated measures of return on assets, return on equity, and shareholder return over a five-year period for each company, and then divided these performance measures by the equivalent figures for a group of peer companies. These relative measures of financial performance were highly correlated with subjective performance ($r=.75$, $p < .0\%$).

corporate performance, (c) this organisation does a good job of satisfying our customers, (d) this organisation gives me the opportunity and encouragement to do the best work I am capable of.

Alpha = .80.

Alignment. The first organisational capacity was measured by asking respondents to indicate the degree to which they agree with the following: (a) the management systems in this organisation work coherently to support the overall objectives of this organisation, (b) the management systems in this organisation cause us to waste resources on unproductive activities (reversed), (c) people in this organisation often end up working at cross-purposes because our management systems give them conflicting objectives (reversed). Alpha = .73.

Adaptability. The second organisational capacity was measured by asking respondents to indicate the degree to which they agree with the following: (a) the management systems in this organisation encourage people to challenge outmoded traditions/practises/sacred cows, (b) the management systems in this organisation are flexible enough to allow us to respond quickly to changes in our markets, (c) the management systems in this organisation evolve rapidly in response to shifts in our business priorities. Alpha = .80.

Organisation context. We measured organisation context by developing multi-item scales to represent the dimension of discipline, stretch, support and trust identified by Ghoshal and Bartlett (1994). However, factor analysis revealed that it was not possible to identify four distinct constructs using these items. Instead, two factors were identified. One of these factors represents a combination of the items developed for discipline and stretch, and so we refer to this as "Performance Management Context." The other factor represents a combination of the items developed for support and trust, so we refer to this factor as "Social Context" to capture the content of the items in this construct (See table 3).

Insert table 3 about here

Performance Management Context (Discipline and Stretch). Respondents were asked to indicate the extent to which people at their level: (a) set challenging / aggressive goals, (b) issue creative challenges to their people, instead of narrowly defining tasks, (c) are more focussed on getting their job done well than on getting promoted, (d) make a point of stretching their people, (e) are rewarded or punished based on rigorous measurement of business performance against goals, (f) hold people accountable for their performance, (d) use their appraisal feedback to improve their performance. Alpha = .89.

Social context (Support and Trust). Respondents were asked to indicate the extent to which people at their level: (a) devote considerable effort to developing their subordinates, (b) give everyone sufficient authority to do their jobs well, (c) push decisions down to the lowest appropriate level, (d) give ready access to information that others need, (e) work hard to develop the capabilities needed to execute our overall strategy/vision, (f) base decisions on facts and analysis, not politics, (g) treat failure (in a good effort) as a learning opportunity, not something to be ashamed of, (h) are willing and able to take prudent risks, (i) set realistic goals. Alpha = 0.93.

As a final step in constructing the measures, we created an interaction term using the multiplicative interaction of the Performance Management Context variable and the Social Context variable, reflecting our argument that these should be considered holistically and are non-substitutable.

RESULTS

Operationalising Ambidexterity

A key challenge was to operationalise ambidexterity in such a way that it captured the essence of the earlier discussion. One obvious and straightforward approach would be to measure ambidexterity as simply the product of alignment and adaptability. However we elected not to do this for two reasons. First, this approach assumes that alignment and adaptability are

both equally important elements of ambidexterity, which is by no means a given. Second, it collapses a two-dimensional construct into a one-dimensional one, so that a business unit scoring 5 on alignment and 2 on adaptability would end up having the same level of ambidexterity as a business unit with exactly the reverse scores. To the extent that we see alignment and adaptability as distinct elements, it would be extremely premature to simply reduce them down into a single construct. Instead, our approach was to start with a graphical representation of the relationship between alignment and adaptability, and then we used cluster analysis to develop categories of companies with similar levels of alignment and adaptability.

Figure 1 provides a graphical representation of the relationship between alignment and adaptability. It highlights a number of important features. There is a strong correlation between the two constructs ($r = .50, p < .01$). The majority of business units cluster towards the middle (which is not surprising given that we are aggregating the responses of a large number of people in each business unit). We see a small number of business units that rate very high on both alignment and adaptability - the truly ambidextrous businesses. However there are no business units that rate low on both dimensions. Instead, we see a group of business units low on alignment and average on adaptability, and another group low on adaptability and average on alignment.

This graph suggests the possibility of identifying some meaningful clusters, so we undertook a cluster analysis to facilitate the specification of groups. Using the K-means algorithm (Hartigan, 1975; Hartigan and Wong, 1979) we experimented with 3-group and 4-group models. The 3-group model indicated three clusters along the diagonal, i.e., low-low, medium-medium, and high-high, which is essentially the same as arguing for a single continuous variable that is the product of alignment and adaptability. The 4-group model, however, provided a much better fit with the pattern described above. Table 4 shows the alignment and adaptability scores for the four cluster centres. It allowed us to identify four

groups. Group 1 was 7 "Aligned" business units, with higher ratings on alignment than adaptability. Group 2 was 11 "Adaptive" business units, with higher ratings on adaptability than alignment. Group 3 was 18 "Moderately Ambidextrous" business units with average ratings on both dimensions. Group 4 was 5 "Highly Ambidextrous" business units with high ratings on both dimensions.

Insert Figure 1 and Table 4 about here

It is important *not* to over-interpret the meaning of membership of these groups, because there will always be business units on the margin of one group that could easily become members of other groups. This becomes an important issue in the case of Group 1 (Aligned), which is dominated by business units from a single corporation, and which also ends up being the lowest-performing group. Accordingly, we conducted some sensitivity analysis, which established that changes to the membership of this group did not affect the results in a significant way. This analysis is reported below.

Ambidexterity and Performance

Hypothesis 1 proposed a positive relationship between ambidexterity and performance. Table 5 displays the results of an ANOVA test, in which the mean performance level for each group is indicated. The ANOVA F-test is highly significant ($F= 18.11, p<.001$) and indicates that we can reject the null hypothesis that all four groups have the same performance level. Group 4 (highly ambidextrous) is the highest performing, with an average rating of 4.60 on a 7-point scale. Group 3 (moderately ambidextrous) is next with a rating of 4.10, followed by Group 2 (adaptive) at 3.74 and Group 1 (aligned) at 3.21. Using the post-hoc S-N-K procedure, we established that the differences between each and every group are significant.

Insert Tables 5 and 6 about here

We performed two additional analyses to ensure that this finding was robust. As observed earlier, both ambidexterity and performance were measured by aggregating the responses of the more senior respondents in each business unit (i.e., front line and senior managers, rather than clerical and blue-collar employees). This was appropriate, given that they were likely to have a broader perspective on issues of alignment, adaptability and performance than the lower-level employees. However, this also created a risk of same-source bias in the analysis, so we re-analysed the data using the more senior respondents' ratings of performance, and the more junior respondents' ratings of alignment and adaptability. This analysis produced similar results, with mean performance levels of 3.41 for group 1 (aligned), 3.88 for group 2 (adaptive), 4.11 for group 3 (moderately ambidextrous) and 4.13 for group 4 (highly ambidextrous). The ANOVA F-test is significant ($F=5.57, p < .01$). When comparing these results to the previous set, it can be seen that the ranking of the four groups on performance is identical. However, post-hoc analysis revealed that the differences between the top two groups were no longer statistically significant.

The second additional analysis was motivated by the observation that most of the business units in group 1 (aligned) were from the same company. Accordingly, we identified the next 4 business units that were closest to group 1 on the dimensions of alignment and adaptability, and added them to group 1 (one of these came from group 2, three came from group 3). We then re-analysed the data using this new grouping. Again, this produced similar results as before, with mean performance levels of 3.42 for group 1 (aligned), 3.80 for group 2 (adaptive), 4.14 for group 3 (moderately ambidextrous), and 4.60 for group 4 (highly ambidextrous). The ANOVA F-test was highly significant ($F=13.59, p < .001$). Post-hoc analysis revealed again that all four groups were different from one another.

These results provide strong support for hypothesis 1. Both ambidextrous groups (group 3 and group 4) outperform those that are aligned only or adaptive only, suggesting that the

ability to be ambidextrous is an important predictor of performance. Further, the results suggest that of those business units that emphasise one dimension over the other, the adaptive group (group 2) tend to perform better than the aligned group (group 1). Again, this is an interesting finding because it hints at the higher order importance of adaptability as an important capability.

Qualitative insights. We also analysed the research interviews to generate some additional insights into the nature of ambidexterity and its relationship to performance. To focus this analysis, we concentrated on those business units with the highest and lowest levels of ambidexterity, i.e., groups 4 and 1. Beginning with the five business units in group 4 (highly ambidextrous), a number of points emerged.

Three of this group were business units in *company 7* (French, automotive engineering). Respondents were very clear on the systems for alignment - clear strategic objectives, a strategic planning and budgeting process and increasing use of bonuses and stock option plans. The communication of the message was described as “doggedly consistent,” and the recent flattening of the organisation was “one of the best things they have done.” One manager commented that his business unit “. . . pretty good at constantly observing and correcting the strategy.” Another said that “we are not good at anticipating change” though he also acknowledged that “in the past 20 years the change has been tremendous.” The business units operated with an informal style of management where “expressing alternative views is encouraged,” which appeared to facilitate adaptation, and in addition managers were very self-critical, looking for ways improve. Change initiatives originated at both the top and also from below. Finally, there was a high degree of agreement about the level of change achieved in the last decade, and that the change had a self-reinforcing effect. As one manager commented, “People are deeply proud of what they have done. . . which creates a virtuous circle of pride and achievement.”

One business unit in the top-performing group was responsible for consulting services in *company 5* (US, software). Here the emphasis was on adaptability - the unit's “remarkable

ability to turn on a dime.” This was achieved, according to respondents, through “hiring very smart people,” setting aggressive but not unrealistic targets, and avoiding too much formalisation. As one manager commented, “Moving at this high rate of speed makes it impossible to maintain formal processes. Instead a lot of people are making unilateral decisions.” Alignment, in turn, was achieved through clear objectives, goal setting programs, and incentive systems. There were several executive forums in which senior managers came together to ensure their strategy was consistent. “Employees in all lines of business have a clear idea of the company's objectives,” observed one manager.

Finally, one business unit in this group was responsible for the North American operations in *company 4* (US, oil & gas). This unit employed a clearly articulated loose-tight model. Certain things were very tightly controlled at the centre - broad goals, evaluation of capital expenditure, risk assessment, the use of performance-based pay, and people management systems. But beyond that, individuals had considerable freedom, which according to one respondent was “a huge incentive.” Managers encouraged “ideas to bubble up” from below, and supported the evolution of the business towards new opportunities. So while the terminology was different, this business unit clearly fostered alignment of effort through its “tight” systems, while at the same time giving individuals the “goals, the freedom and the financial wherewithal” to adapt to whatever market opportunities arose.

These brief descriptions suggest two important insights. First, there does not seem to be a trade-off between alignment and adaptability. Successful companies, like these ones, are able to *align themselves around adaptability* (O'Toole and Pasternack, 2000). Importantly, the systems that they use to do this are often quite simple - indeed, they often involve less formality, rather than more. Second, there are different paths to becoming ambidextrous. The business units in *company 7* had gradually built adaptability skills on top of their traditional model of alignment, whereas the business unit in *company 4* focussed on adaptability and created

alignment around it, and the business unit in company 5 deliberately created a blend of the two. So there is evidence of equifinality in the structures and systems that result in ambidexterity (Gresov and Drazin, 1997).

We also analysed the interview transcripts from the group 1 business units that were the lowest performing. A common theme that emerged from analysing these interview transcripts was that the business units were suffering from inertia. The business unit in company 6 was part of a family-owned company that had not embraced professional management systems such as options schemes. And the business units in company 9 had clearly failed to adapt quickly to the changing market conditions, and to some extent were living off their successes of ten years earlier.

Ambidexterity and Organisation Context

Hypothesis 2 argued for a positive relationship between the dimensions of organisation context and ambidexterity. To test this hypothesis, we utilized the interaction term representing the multiplicative interaction between the two aspects of organisational context identified in our factor analysis, i.e., Performance Management Context x Social Context. Table 5 displays the results of the ANOVA analysis to discern whether there are significant differences in organisation context across the four groups. This table includes both the individual constructs (Performance Management Context, Social Context) as well as the interaction between them. In each case the ANOVA F-test was significant, which indicates that at least two groups are not the same. Post-hoc analysis then revealed that in all cases the group 1 mean was significantly lower than groups 2, 3 and 4. In other words, the combination of discipline, stretch, support, and trust is significantly lower in those business units that are low on adaptability. This suggests that without a supportive organisational context, business units tend to be less adaptable, and hence less ambidextrous - a finding that is consistent with the theory developed earlier, because alignment can potentially be achieved through an induced process, whereas adaptability is likely

to rely to a much greater extent on autonomous behaviours (Burgelman, 1983b). It is also worth noting that Performance Management Context is particularly low among group 1 business units, suggesting that the absence of these elements in particular detracts from an ideal balance of alignment and adaptability.

As before, we recognised the possibility that the differences between group 1 and the other three groups was a single-company effect, so we again created an enlarged group 1 with business units from five different companies, and re-ran the analysis. This analysis gave us almost identical results, with all the ANOVA models significant [F values of 3.67 (Performance Management Context), 3.53 (Social Context), 3.92 (Interaction term)].

Qualitative insights. Some additional insights into the hypothesised relationships can be gained through analysis of the interview data. As above, the focus in this analysis was on those business units with the highest and lowest levels of ambidexterity. In the three business units from *company 7*, there was evidence of a context rich in support and trust for many years, which over the last five years had been complemented with a greater focus on discipline and stretch. Until 1990, employees had viewed the company as a comfortable and secure place to work, with an informal atmosphere. Over the last decade, a number of changes were brought about, primarily through top-down driven initiatives around cost-reduction and quality, and through greater focus around key strategic objectives and personal commitment to those objectives. One respondent commented that his business unit was run as a “commando-type organisation - appraisal and evaluation interviews are run in a pyramidal form and compensation is (now) geared towards short-term objectives.” Most of these changes were instituted through a new executive team that gave people more structure, and which led to a focus on new products and new opportunities as a means of delivering on the more ambitious goals. The net result, somewhat paradoxically, was that the imposition of greater discipline, and more top-down

direction, generated greater adaptability, whereas before it had been evolving in a relatively aimless fashion.

The consulting services business unit (*company 5*) had a very different organisation context. It was competitive and aggressive, with a relative emphasis on stretch and discipline. One respondent, for example, compared the business to “the engine of a Ferrari, which revs at very high RPMs, but can burn out at any minute.” There was *some* evidence of support and trust, such as the leadership forum for top management and the development of a balanced scorecard system, but overall the qualitative evidence suggested a lack of balance in the organisation context. This was not generally perceived to be a problem - respondents commented that the continuing high performance of the company (and the impact on individual wealth) helped, and that high turnover was an accepted by-product of the system. But it remains to be seen if a downturn in the economy will cause this “Ferrari engine” to burn out. And importantly, there was also evidence in this business unit of strong top-down leadership. Several instances were mentioned of new ideas being developed in the lower reaches of the business unit, but they only moved forward once senior executives had bought in. As one manager commented, “Top down management is often seen as stagnant and outdated, but we have found that it is necessary to achieve agility and globalisation.” So while a strong organisational context was important in generating individual initiative, it was not enough without significant top-down involvement.

Finally, in the North American oil and gas business (*company 4*), the organisation context was clearly very balanced, and worked in a more autonomous or bottom-up manner than in companies 7 or 5. Their "loose-tight" model ensured that stretch and discipline was built into performance targets. Trust and support emerged in a more subtle way. For example, trust emerged through tangible examples of individuals *not* being punished for well-intentioned business failures. Support manifested itself in the use of IT systems to increase knowledge of

what was happening in other parts of the business, and various forums and councils for cooperating and sharing best practices, but for the most part it emerged spontaneously, through the enlightened self-interest of individuals who knew they could not get things done on their own.

In the lower-performing business units, in contrast, there was evidence that their organisation contexts were weak or incomplete. For example in *company 6* there was evidence of inconsistent messages from top management (making it hard to create trust), and a sense that the business lacked the ambition or focus needed to generate stretch. As one manager said, “There is no overarching vision; each division devises its own vision and objectives.” In several of the business units in *company 9* there was evidence of a lack of follow through when using management systems (making it hard to create discipline). For example, there had been a number of new initiatives, which according to one manager “had lost accountability and steam” within less than a year. Support systems, in terms of providing training, feedback sessions, and information across the functions, could be identified in both companies, but were insufficient on their own to develop an effective organisational context.

Two key insights are suggested by these brief descriptions. First, there are again a number of different models in evidence. While the quantitative data suggested very similar scores for stretch, discipline, support and trust in most of the 41 business units, the qualitative differences in contexts were very strong. Thus, as with ambidexterity, the principle of equifinality applies, and depending on the administrative heritage of the business, and the values of its leaders, equally valid but different organisational contexts can be created. The second point is the surprisingly important role played by senior executives in making the context effective. One implicit proposition, on entering this research project, was to argue that as key leaders in organisations, senior executives play a critical role -- they put in place systems that allow the supportive context to emerge -- that in turn shapes individual behaviours (Burgelman,

1983b; Ghoshal and Bartlett, 1994). Certainly there is some evidence for this model (e.g., company 4), but there is also strong evidence in companies 5 and 7 that senior executives can play a more interventionist role - by recognising and promoting new ideas, and building energy for those ideas through out the business. Without this form of intervention, there is a risk that new ideas fail to get the resources they need, and strategic coherence is compromised.

DISCUSSION

In this study we adopted a multi-method approach to understanding the concept of ambidexterity in organisations, in order to investigate several specific hypotheses, while also generating new insights into the mechanisms and processes at work in the sample companies. We found strong evidence that ambidexterity -- the simultaneous achievement of alignment and adaptability -- is related to organisation performance. We found some evidence that a supportive context is associated with ambidexterity, though to be more accurate the evidence suggests that context is correlated with adaptability, while alignment appears to be generated through a more top-down process. Finally, we also have evidence that while alignment and adaptability are difficult to achieve in equal measure, they are by no means mutually exclusive. Many business units generated moderate levels of both capacities and a few reached high levels on both.

In terms of new insights, we found systematic evidence that successful business units tend to align around adaptation – that is, they create systems for alignment that are built on the premise that the organisation has to continuously change. And they do this through a combination of bottom-up and top-down methods. Business units in company 4 used a highly-devolved model in which individuals were given very high degrees of freedom while staying “tight” on certain key parameters. Business units in companies 5 and 7, in contrast, operated with surprisingly centralised structures in which key resource allocation decisions were made at a high level. This is an important and somewhat surprising finding. One recent school of thought has indicated that the flexibility and adaptability that large organisations crave is best achieved

by importing market-like systems for resource allocation inside their boundaries (Hamel, 1999). Here we see evidence that relatively more hierarchical organisations can still achieve adaptability, though presumably only as long as the individuals running them remain aware of and open to the changes that are underway in their industries. For example, Intel uses the expression “constructive confrontation” to refer to the process of ensuring that major technological changes, or “strategic inflection points,” are brought to the attention of top management (Burgelman and Grove, 1996). The risk of this approach, of course, is that the dominant logic of the top management team may ultimately become so strong that it prohibits the team from being aware of certain features of a dynamic environment, in which case perhaps a more decentralised or market-like resource allocation system would be superior. But on the evidence presented here, the more top-down approach is no less valid than the more bottom-up one.

This study raises important issues for both practice and theory. With regard to management practice, the implication is that ambidexterity is an important and desirable capability that organisations need to develop, and that it can be shaped at least in part through attention to organisation context. However, it is difficult to be too prescriptive in terms of the elements of context, because while the Ghoshal and Bartlett (1994) framing suggested a common language around discipline, stretch, support and trust, the reality in the companies in our sample was that each used its own rather idiosyncratic implementation strategy.

In terms of theory, currently we do not have an entirely satisfactory framing of organisation context. Ghoshal and Bartlett’s (1994) approach has strong face validity, but is also limited by the fact that the four elements of context are interdependent. There are various bodies of theory – complexity theory foremost among them – that have the potential to shed light on organisation context, but they are not particularly helpful in identifying the unique relevant attributes of context. This remains a problem area that future research needs to address,

using our findings regarding the key distinction between Performance Management Context (Discipline and Stretch) on the one hand, and Social Context (Support and Trust) on the other.

In terms of the methods used in this research, it is worth discussing the pros and cons of using a random sample of individual respondents in multiple business units. While our approach has advantages over either focusing on a single company or using single-respondents in multiple business units, the consequence of aggregating a large number of respondents in each business unit was a limited variance in our key constructs. Future research should explore additional means of capturing alignment and adaptability, perhaps through archival means, through broad-scale interview methodology, or by surveying customers and/or stakeholders.

We view the concept of ambidexterity as highly promising for understanding the tensions, balances, and equilibrium that leaders must manage in complex organisational environments. Encouraging a supportive organisational context that generates individual capacities for alignment and adaptability may be the key competitive advantage for leaders in the twenty-first century. Future research aimed at further delineation of the underlying features of organisational context that are most critical in developing ambidexterity will go a long way to contributing to organisation performance in the era of dynamic economic environments.

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FIGURE 1
Plot of Alignment vs. Adaptability for the 41 Business Units

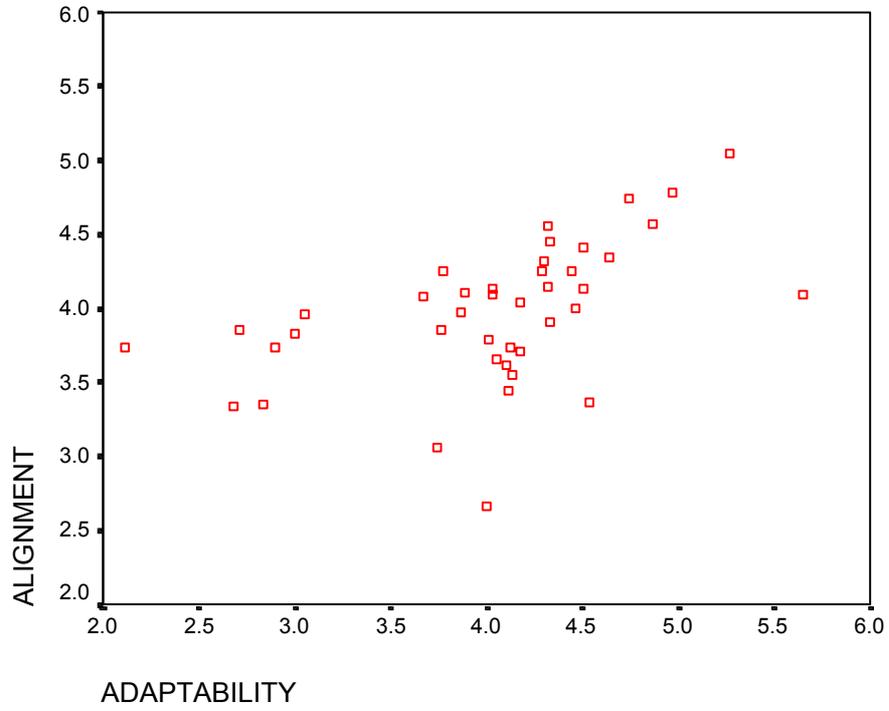


TABLE 1
Definition of Elements of Organisation Context

| | |
|------------|---|
| Discipline | Discipline is an attribute of an organisation's context that induces its members to voluntarily strive for meeting all expectations generated by their explicit or implicit commitments. Establishment of clear standards of performance and behaviour, a system of open, candid and fast-cycle feedback, and consistency in the application of sanctions contribute to the establishment of discipline. |
| Stretch | Stretch is an attribute of an organisation's context that induces its members to voluntarily strive for more, rather than less, ambitious objectives. Established of a shared ambition, the development a collective identity, and the ability to give personal meaning to the way in which individuals contribute to the overall purpose of the organisation contribute to the establishment of stretch. |
| Support | Support is an attribute of an organisation's context that induces its members to lend assistance and countenance to others. Mechanisms that allow actors to access the resources available to other actors, freedom of initiative at lower levels and personal orientation of senior functionaries that gives priority to providing guidance and help over exercising authority contribute to the establishment of stretch. |
| Trust | Trust is an attribute of an organisation's context that induces its members to rely on the commitments of each other. Fairness and equity in the organisation's decision processes, involvement of individuals in decisions and activities affecting them, and staffing positions with people who possess and are seen to possess the required capabilities contribute to the establishment of trust. |

Source: Ghoshal and Bartlett (1994: 96-104)

TABLE 2
Characteristics of the Sample Firms

| Firm | Industry | Country | Number of respondents |
|-------|-------------------------|-------------|-----------------------|
| 1 | Electronic Equipment | Japan | 279 |
| 2 | Heavy Engineering | USA | 299 |
| 3 | Banking | Canada | 40 |
| 4 | Oil and Gas | USA | 169 |
| 5 | Software | USA | 463 |
| 6 | Industrial Products | India | 157 |
| 7 | Automotive Engineering | France | 189 |
| 8 | Food Products | Canada | 306 |
| 9 | Industrial Conglomerate | South Korea | 2061 |
| 10 | Defence | France | 62 |
| Total | | | 4234 |

TABLE 3
Factor Analysis for Items Measuring Organisation Context

| Hypothesised construct | | Factor 1 | Factor 2 |
|------------------------|--|------------|------------|
| STRETCH | ...set challenging / aggressive goals | .76 | .20 |
| | ...issue creative challenges to their people, instead of narrowly defining tasks | .75 | .26 |
| | ...are more focussed on getting their job done well than on getting promoted | .59 | .36 |
| | ...make a point of stretching their people | .65 | .39 |
| | ...reward and promote those who constantly innovate and try new things | .28 | .47 |
| DISCIPLINE | ...are rewarded or punished based on rigorous measurement of performance against goals | .84 | .06 |
| | ...hold people accountable for their performance | .83 | .24 |
| | ...use their appraisal feedback to improve their performance | .66 | .36 |
| | ...make an effort to measure things that are most important to the success of our business | .51 | .38 |
| SUPPORT | ...devote considerable effort to developing their subordinates | .19 | .69 |
| | ...give everyone sufficient authority to do their jobs well | .29 | .87 |
| | ...push decisions down to the lowest appropriate level | .17 | .86 |
| | ...quickly replicate best practices across organisational boundaries | .53 | .51 |
| | ...give ready access to information that others need | .41 | .72 |
| TRUST | ...work hard to develop the capabilities needed to execute our overall strategy/vision | .58 | .63 |
| | ...base decisions on facts and analysis, not politics | .19 | .76 |
| | ...set realistic goals | .08 | .57 |
| | ...treat failure (in a good effort) as a learning opportunity not something to be ashamed of | .46 | .68 |
| | ...are willing and able to take prudent risks | .36 | .66 |

Factor 1 labelled “Performance Management,” Factor 2 labelled “Social Context.” Factor analysis was performed using Varimax rotation, two factors were created with Eigen values greater than 1. Only those items in bold were used to create the constructs.

TABLE 4
Composition of Groups Using Cluster Analysis

| Group | 1 Aligned | 2 Adaptive | 3 Moderately ambidextrous | 4 Highly ambidextrous |
|---|---|--|--|---|
| Cluster centres: Alignment | 3.69 | 3.49 | 4.19 | 4.65 |
| Adaptability | 2.75 | 4.07 | 4.22 | 5.10 |
| Number of business units in group | 7 | 11 | 18 | 5 |
| Business unit names (with company numbers in parentheses) | Furniture products (6) Semiconductors (9) Memory, DRAM (9) Memory, SRAM (9) Memory prod'tion(9) Systems (9) Support (9) | National major customer ops (1) Direct banking (3) Energy (4) Consulting vertical services (5) Worldwide marketing (5) Consulting major accounts (5) Home and office (6) Storage solutions (6) Food group (8) Ice cream (8) | Office documents (1) BCP (2) WLED (2) Mortgages (3) Vertical services, sales (5) Appliances (6) Security equipment (6) Engineering (7) Fabrication (7) Design (7) European market (7) Food services (8) Technical manufacturing (8) Finance (8) Information services (8) Consumer demand chain (8) DRP (10) Commercial (10) | North America (4) Consulting vertical product industries (5) Commercial France (7) Utility vehicles (7) Commercial Europe (7) |

TABLE 5
Differences in Performance and Organisation Context Across Groups

| Dependent variable: | Group 1 Aligned | Group 2 Adaptive | Group 3 Moderately Ambidextrous | Group 4 Highly Ambidextrous | ANOVA F (sig) | Pairs significantly different (SNK) |
|---|-----------------|------------------|---------------------------------|-----------------------------|---------------|--|
| Performance | 3.21 | 3.74 | 4.10 | 4.60 | 18.11 (.000) | 1,2 1,3 1,4 2,3 2,4 3,4 |
| Performance Management Context | 3.90 | 4.57 | 4.52 | 4.52 | 4.16 (.004) | 1,2 1,3 1,4 |
| Social Context | 4.36 | 4.77 | 4.81 | 5.00 | 4.14 (.01) | 1,2 1,3 1,4 |
| Organisation context (Performance Management Context x Social Context) | 16.91 | 21.85 | 21.90 | 22.62 | 5.41 (.003) | 1,2 1,3 1,4 |

TABLE 6
Correlation Matrix: Business Unit Level of Analysis (n=41)

| | (1) | (2) | (3) | (4) | (5) |
|---|--------|--------|-------|-------|-------|
| Performance Management Context (line) (1) | 1.00 | | | | |
| Social Context (line) (2) | .68** | 1.00 | | | |
| Organisation Context (line) (3) | .94*** | .88*** | 1.00 | | |
| Alignment (mgmt) (4) | .09 | .47** | .27 | 1.00 | |
| Adaptability (mgmt) (5) | .44** | .52** | .51** | .54** | 1.00 |
| Performance (mgmt) (6) | .27* | .45** | .37* | .54* | .78** |

(line) - rated only by line staff and non-managers

(mgmt) - rated only by senior- and lower-level managers

* p <.05 ** p <.01 *** p <.001