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**CONTEXTUAL DETERMINANTS OF  
ORGANIZATIONAL AMBIDEXTERITY**

**CEO PUBLICATION  
T 01-5 (395)**

**CRISTINA B. GIBSON**  
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**January 2001**

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**Paper submitted to Organization and Management Theory Division**

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## CONTEXTUAL DETERMINANTS OF ORGANIZATIONAL AMBIDEXTERITY

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. Building on the self-organization literature we hypothesize that ambidexterity is an organizational capacity that arises through the development of four complementary systems - guiding vision, empowered decision making, accountability and knowledge transfer. We further hypothesize that ambidexterity is associated with superior organizational performance, and that ambidexterity mediates the relationship between the four systems and performance. Finally we argue that two cultural contingencies, power distance and future time orientation, will affect the relative importance of the four systems in creating ambidexterity. Using data from 4234 individuals in 41 business units we find full or partial support for all hypotheses.

A re-occurring 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 organisations use 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 towards 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 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 build the capacity for alignment and adaptability? We argue that two theoretical concepts speak to this question: *self organization* (Kaufmann, 1995) and *enabling bureaucracy* (Adler and Borys, 1996). Essentially, we propose that alignment and adaptability emerge from a supportive organisational context, which is in turn comprised of a

set of organisational sub-systems. Through a combination of formal and informal elements, this organisational context fosters certain individual- and group-level behaviours that taken together result in the capabilities of alignment and adaptability (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 achieved through the development of a carefully-selected set of organisational sub-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 hypothesize the antecedents and consequences of organizational ambidexterity. We also develop hypotheses regarding the applicability of relationships with ambidexterity across cultural contexts. The hypotheses are then tested on data collected from 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 research.

## BACKGROUND

### The existing literature

The issue of how organisations balance alignment and adaptability has been addressed in several different literatures. In manufacturing and operations the focus is on the trade off between efficiency and flexibility (Adler et al, 1999; Carlsson, 1989; Hart, 1942; Klein, 1984; MacDuffie et al, 1996). The technology literature looks at how organizations adapt to radical changes in technology (Abernathy and Clark, 1985; Christensen, 1997; Tushman and Anderson, 1986; Utterback, 1994). In the field of strategy there is a long-standing discussion around the extent to which a firm can be differentiated and low-cost at the same time (Porter, 1980; 1996). The international business literature has looked at the competing pressures for global integration and national responsiveness, and the structures that can deliver both at the same time (Bartlett and Ghoshal, 1989; Prahalad and Doz, 1987). And in organization theory there are a number of long-standing theories that address the need for alignment and adaptability, notably March's (1991) distinction between exploration and exploitation

oriented activities, Argyris and Schon's (1978) models of single loop and double loop learning, and Burns and Stalker's (1961) distinction between organic and mechanistic structures.

It is beyond the scope of this paper to comprehensively review each of these perspectives; however, it is useful to note several key differences among them, as well as the broad themes that cut across the literatures.

First, it is important to distinguish between two levels of analysis. The *higher* level of analysis is the organization as a whole. Alignment here refers to the fit between the organization and its current set of customer and market demands. Adaptability refers to the organization's capacity for changing to meet future customer and market demands. Ambidexterity is about balancing the two (March, 1991; Tushman and O'Reilly, 1996). The *lower* level of analysis is the individual activity within the organization. Here it is recognized that even within the existing portfolio of activities there are complex trade-offs to be made between different customer segments, different product lines, and different priorities. Within manufacturing, for example, it is important to have an efficient production process (i.e. alignment) but it is also useful to build in sufficient flexibility that it can cope with multiple products (i.e. adaptability). In R&D it is necessary to blend flexibility and efficiency with relatively more flexibility in the early stages and relatively more efficiency in the later stages (Spender and Kessler, 1995). Similar observations can be made in all other parts of the value chain (Porter, 1996).

Our focus in this paper is on the higher level of analysis, that is the ability of the organization as a whole to adapt to tomorrow's environmental demands while still responding effectively to today's. But while the distinction between these two is important at a conceptual level, our sense is that the managerial challenge at both levels of analysis is remarkably similar, namely to induce individual employees to sense and respond to multiple demands on their time in an effective way. This coincides with Hedlund & Ridderstrale's (1997) notion that exploitation- and exploration-focused activity can be identified at the individual, group, unit, and organisational level.

Second, there is a disagreement as to whether organizations simply face a trade-off between two different environmental demands, or whether managers can (should) actively manage

that trade-off. Earlier research in 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). More recent studies challenged this assumption and suggested that low-cost production and product variety could coexist (de Meyer et al, 1989; Kekre and Srinivasan, 1990; McDuffie et al, 1996). Similarly recent studies in R&D management (Eisenhardt and Tabrizi, 1995; Takeuchi and Nonaka, 1986; Wheelright and Clark, 1992) and in international business (Bartlett and Ghoshal, 1989; Prahalad and Doz, 1987) have also argued for the development of internal systems and processes for reconciling conflicting environmental demands. By contrast, Porter (1996) has steadfastly argued that tradeoffs always exist on the margin. Indeed, he has gone further in stating that strategy is about making explicit choices when faced with tradeoffs rather than attempt to reconcile them.

Our approach in this paper is clearly to argue that ambidexterity is an advantage that stems from the organizational capacity to, on the one hand respond and adapt to environmental demands and on the other hand, remain internally aligned.

## THEORETICAL DEVELOPMENT

Ambidexterity is a complex capacity lacking a rich tradition of empirical research, and therefore as of yet, there is no one unifying theory explaining how ambidexterity emerges. There are a number of consistent themes in the literature around the creation of a shared vision, participation and commitment from employees, rewards and recognition, training, and the development of parallel organization structures (Adler et al, 1999; Christensen, 1997; Ghoshal and Bartlett, 1990; Spender and Kessler, 1989; Tushman and O'Reilly, 1997), but these are typically investigated isolation and their effects are induced from empirical evidence. Indeed as stated by Adler et al (1999: 48), prior studies in this genre are "rich in insights but have not generated an overarching theory".

A related concern is that the existing research gives little consideration to the context-specificity of findings. Thus the extent to which the results are specific to a particular country, company, industry or culture has yet to be determined. This is of course the case in many bodies of literature, but the problem is particularly salient here because we are interested in systems for motivating people and shaping their behaviour, which are highly

sensitive to context. For example, performance-based pay is widely seen as effective in individualistic countries like the U.S. but is more questionable in collectivist Asian countries. With the single exception of Adler et al (1999) which examines the American and Japanese influences on NUMMI's development, the body of literature exploring ambidexterity does not consider the contextual contingencies.

Given these concerns, we attempt to provide a stronger theoretical grounding for the research on ambidexterity. In particular, we identify two particularly pertinent domains of theory and use these to develop hypotheses around the antecedents and consequences of ambidexterity. We also give careful consideration to the cultural sensitivity of our hypotheses, and argue that depending on the cultural context, the key antecedents of ambidexterity will vary.

#### Organizations as enabling bureaucracies and natural systems

The first body of theory is concerned broadly with the concept of the organization as a vehicle for promoting and sustaining voluntary cooperation among individuals. Scott (1982) refers to this as a "natural system." This idea is also consistent with Barnard's (1938) theory of organization, the socio-technical systems movement, and Adler and Borys' (1996) concept of enabling bureaucracy. While these are far from identical theories, they share 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.

How does this set of ideas help us to understand ambidexterity? Ghoshal and Bartlett (1994) offered one interesting approach. They studied a corporate turnaround which was achieved not by changes to formal structures and systems but through the development of a supportive *organizational context* which inspired individuals to achieve new heights. Context, according to this model, was made up of the four behaviour framing attributes of trust, stretch, discipline and support. And context, in turn, led to such individual-level behaviours as initiative, cooperation and learning.

This perspective can be readily applied to the phenomenon of ambidexterity. For example, Adler et al (1999) demonstrated how the NUMMI automobile plant was able to achieve



efficiency and flexibility simultaneously through micro-level changes in the work system which led to much greater levels of individual initiative and cooperation. So while ambidexterity is an organization-level construct, we suggest that it emerges through the actions of individual employees who alone can judge how best to apportion their time or how to react to a new challenge.

Another important point drawn from Ghoshal and Bartlett's work (1994) pertains to the manner in which their four key elements work in concert to achieve a supportive context. For example, trust and support provide individuals with the self-belief they need to take initiative, but stretch and discipline are also needed to ensure that initiative is directed to worthwhile ends. Too little stretch and discipline results in chaos; too little trust and support results in unmotivated and tired individuals. They argue that all four of their elements are needed to ensure the appropriate organizational context emerges.

### Self Organization

The second body of theory that speaks to the mechanisms underlying ambidexterity is the emerging literature on self organization. With its roots in complexity theory, self-organization has a precise meaning, specifically the process by which a system, under its own dynamics, spontaneously becomes increasingly more organized (Anderson, 1999; Kaufmann, 1993; Morel and Ramanujam, 1999; Waldrop, 1992). However, most organization theorists recognize that natural science concepts can best be applied to social science settings through metaphor. As a result, self organization is seen more broadly as referring to the capacity of a social system to generate organized patterns of behaviour through the apparently random behaviours of individuals. In particular, self-organization 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. Again, the edge of chaos (or "self organized criticality" in technical terms) has a particular connotation in the natural sciences, but in the field of organization studies it is interpreted as an organizational state that is highly flexible and adaptive to change while still held together by certain structural principles (Earley and Gibson, 2000; Mathews et al, 1999). Kaufmann (1995) refers to the edge of chaos as "a natural state between order and chaos, a grand compromise between structure and surprise". Brown and Eisenhardt (1999: 29) use the example of improvisation as an edge-of-chaos process that,

"is challenging to achieve because it is so easy to err on either side - to slip into too much structure or too little. In complexity theory terms, improvisation is a dissipative equilibrium, an unstable edge between two attractors (i.e. structure and chaos) that tend to pull the system away from the edge of chaos... and yet staying on that edge is essential because that is where systems self-organize to create the most vibrant, adaptive and complex behaviours".

One can readily see why the self-organization metaphor is so alluring. It is based in an exciting and newly-emerging field of science, and it has obvious application to the phenomena that we study in organizations. There are also clear parallels with the natural systems approach introduced above, in that under certain conditions meaningful cooperative activity can emerge through the entrepreneurial actions of individuals. Again, we can draw out a number of key themes from this literature.

First, self-organization does not, despite its name, emerge in the complete absence of structure. Within a self-organizing system, there are typically a basic set of rules that provide the framing for action. Within this framework, individuals are free to act as they see fit (Brown and Eisenhardt, 1999; Mathews et al, 1999). Second, self-organization emerges through high states of energy exchange with the environment (Prigogine et al, 1972). What this means, in our terms, is that for self-organization to transpire individuals have to engage in dense interactions with customers, suppliers and other actors outside the boundaries of the organization. Such interactions are central to the processes of experimentation and learning through which self-organization occurs (Nicholls-Nixon, 2000; Tenkasi, Mohrman and Mohrman, 1998; Weick, 1993). Third, self-organization leads to continuous change, because the system is in a state of dynamic equilibrium with its environment (Brown and Eisenhardt, 1997; Nicholls-Nixon, 2000). This is very different to organizations with traditional structures which typically conform to a the life-cycle or punctuated equilibrium models of change (Gersick, 1991; Greiner, 1972; Whetten, 1987).

Finally, self-organization involves collective cognition, that is the acquisition, storage, transmission, manipulation, and use of information among collectives (Gibson, 2000; Hutchins, 1991; Wegner, 1987). The idea here is that self-organization cannot occur unless individuals freely exchange and process information about their own actions with one another. Through a variety of formal and informal mechanisms, individuals exchange knowledge and bring problem-relevant information to light (Sniezek & Henry, 1990) and thereby influence the individual-level cognitive processes of each member (Larson &

Christensen, 1993). Subsequently, this impacts the organization's actions on a larger scale as the newly processed information proliferates through out the structures.

This is by no means an exhaustive list of the characteristics of enabling bureaucracies or self-organizing systems, but these key arguments serve as a basic theoretical foundation for our examination of ambidexterity. Essentially we are arguing that ambidexterity results from an enabling bureaucracy and impacts performance through principals of self-organization. Drawing on this theory, we next develop a grounded set of hypotheses.

## HYPOTHESIS DEVELOPMENT

### Antecedents to Ambidexterity

Our first hypothesis is concerned with the specific attributes of the organization that contribute to the emergence of ambidexterity. Our underlying argument, as stated earlier, is that ambidexterity emerges through the creation of a supportive organizational context (Ghoshal and Bartlett, 1994) which in turn is shaped by the specific sub-systems that are put in place by top management. The term sub-systems is used to refer broadly to control systems, human resource systems, and systems for making decisions and sharing information. While such sub-systems are often focused on alignment *or* adaptability, our belief is that they can also be used to support ambidexterity. For example, individuals can be incentivized to align their actions to short-term goals or their incentives can be directed towards long-term growth or new market development (i.e. adaptability). However it is also possible to create an incentive system that rewards individuals for both alignment and adaptability.

The enabling bureaucracy perspective and the theory of self-organization provide us with considerable insight into the sub-systems that are likely to create ambidexterity. Based on these perspectives and the evidence established in the emerging literature on the trade-off between alignment and adaptability, our focus is on four sub-systems - guiding vision, accountability, empowered decision making, and knowledge transfer. Below we provide a brief explanation of what each of these represents and why they are important for the development of ambidexterity.

Guiding vision. For individuals to make good judgements as to how they direct their energy, there has to be a clear guiding vision as to the mission of the organisation. Indeed, several decades of research have demonstrated the important impact of goal setting on individual performance enhancement, and contributions of direction setting to overall organizational effectiveness (see Locke and Latham, 1990 for a review). In terms of the theory of self-organization, this guiding vision represents the structured part of the "edge of chaos" within which individuals are free to act as they see fit. Nicholls-Nixon (2000) uses the related concept of identity as a key component of self-organization. Guiding vision also parallels Ghoshal and Bartlett's (1994) concept of "stretch." Such a vision serves two purposes – it provides a sense of direction that sets boundaries around the organisation's portfolio of activities, and it helps to establish "line of sight" which allows individuals "see," and thereby personally identify with, the mission of the organization. This is a response that financial incentives alone are not likely to achieve.

Empowered decision making. Empowerment refers to a reporting systems that allows individuals to make decisions without seeking permission from a higher authority (Kirkman and Rosen, 1997). Both the enabling bureaucracy and self-organization perspectives are built on the idea that to balance forces within the organization, individuals must be empowered to make decisions quickly and without deference to authority. If individuals are not suitably empowered, the organization can ossify and move towards stability (Brown and Eisenhardt, 1999; Stacey, 1993). But equally, empowerment can be taken too far and move the organization towards chaos. Hence the importance of such checks as accountability, training and trust (Adler et al, 1999).

Accountability. When individuals are accountable, they feel a sense of ownership that for the success or failure of activities they are involved in. Systems of accountability involve measurement, tracking, review, and assessment. A long history of research has demonstrated the importance of such systems in directing and maintaining behavior (Devanna et al. 1984; Weldon & Gargano, 1988). Accountability is very close to Ghoshal and Bartlett's (1994) concept of discipline. The underlying principle here is that accountability balances guiding vision and empowered decision making, and thus allows the organization to remain on the "edge of chaos". Too little accountability can result in free-riding and shirking. But too much can drive out initiative and creativity (Brown and Eisenhardt, 1999).

Knowledge transfer. Systems of knowledge transfer enable the exchange of information between individuals inside the organization (Leonard-Barton, 1995; Sujan et al. 1988). For self-organization to be effective, it is necessary that individuals acting in an empowered way are knowledgeable about what one another is doing, otherwise their actions will be at cross purposes. For example, Brown and Eisenhardt (1997) note the importance of extensive communication within and across groups, Nonaka (1988: 71) argues that "the essence of self-organization is the creation of information," and Nicholls-Nixon (2000) suggests that information flows is one of the key attributes of a self-organizing system.

While the relative importance of any given sub-system may vary across different contexts, they seldom exist in isolation. We argue therefore, that the four systems can be viewed as a bundle of systems that complement and support one another. As such, we propose:

Hypothesis 1. The more effective the organizational sub-systems for establishing guiding vision, accountability, empowered decision making, and knowledge transfer, the higher the level of ambidexterity.

In any given case, it is likely that one or other of these systems will be more important in generating ambidexterity, but all four should be significant. And this will be particularly the case as we start to think about different cultural contexts (see H4 below).

### Consequences of Ambidexterity

In terms of consequences, we argue that ambidexterity should have a significant and positive relationship with organizational performance. The logic here is straightforward. Alignment is geared towards improving performance in the short-term. Adaptability is geared towards improving performance in the long-term. Thus if the organization 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 than 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 organization 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 self-organization is *cheaper* than more traditional forms of organization because the costs of controlling and supervising employees are much reduced. Thus, our second hypothesis:

Hypothesis 2: The higher the level of ambidexterity in the organisation, the better the performance.

Next we develop the hypothesis that ambidexterity *mediates* the relationship between the sub-systems and subsequent organisational performance. Mediating effects are like on/off switches. When the mediator is present (e.g., when the "ambidexterity light" is on), the relationship between a set of predictors (the sub-systems) and performance occurs. When the mediator is not present, the relationship does not occur, or is much weaker, which is often referred to as "partial mediation."

The reason for hypothesising a mediating effect is that ambidexterity is seen as a meta-capability that is developed gradually over time through the interaction of the various sub-systems and through the creation of a supportive organizational context by top management. As both Ghoshal and Bartlett (1994) and Adler et al (1999) show, the development of this sort capability takes many years. Stated slightly differently, it would be wrong to suggest that a company could simply institute the four sub-systems and expect them to deliver a superior performance. Rather, the logic is that the four sub-systems coevolve with the organizational capability we are calling ambidexterity, and it is this bundle that leads to superior performance.

Thus our third hypothesis is:

Hypothesis 3: Ambidexterity mediates the relationship between organisational sub-systems and performance.

Cultural Contingencies

Finally, we speculate that particular sub-systems that are most robust in predicting ambidexterity will differ depending on the cultural context in question. It is now well recognized that concepts such as empowerment and accountability are culturally sensitive, so that what works in one setting may be entirely inappropriate in another (see Earley and Gibson, In Press, for a review). It therefore seems likely that the organisational systems identified above will not all be equally applicable in all cultures, thus we propose the following hypothesis:

Hypothesis 4. The organisational sub-systems most strongly associated with ambidexterity will vary across cultural contexts.

Specifically, we focus on two key cultural characteristics. First, power distance is likely to impact which systems will result in ambidexterity. Power distance represents the degree to which members of a culture accept and expect that power in society is distributed unequally (Hofstede, 1980; House et al. 1999). Cultures low in power distance will try to minimize inequalities, favor less autocratic leadership, and favor less centralization of authority (Gibson, Conger and Cooper, 2000). Research suggests that the U.S., Australia, Canada, Denmark, Austria and France are low in power distance (Hofstede, 1980). On the other hand, cultures high in power distance will be characterized by greater acceptance of inequalities, more autocratic leadership, and greater centralization of authority. Research suggests that most Asian countries, the Philippines, Panama, Guatemala, and Puerto Rico are high in power distance (Hofstede, 1980). In these high power distance cultures, leaders are often viewed as effective even if they are highly directive (Kanungo, 1980, 1982).

Cultural values, in turn, shape perceptions, cognitions, and preferences in teams (Gibson, 2000; Gibson & Zellmer-Bruhn, 2000). There is some empirical evidence to support this. Hofstede (1991) found that in high power distance cultures managers were more often satisfied with a directive leadership style from their supervisors whereas managers in low power distance cultures preferred a participative supervisor. Smith, Peterson, & Misumi (1994) have shown that managers in high power distance countries employ a greater use of rules and procedures than managers in low power distance cultures. Finally, although House et al. (1999) found that several aspects of leadership were universally endorsed (i.e., charismatic and value-based leadership behaviors), they also obtained preliminary evidence

that power distance is negatively related to participative leadership endorsement. The authors concluded that "societal cultural variables have non-trivial influences on culturally endorsed leadership theories and explain, in part, why there is variance across cultures with respect to what is expected of leaders" (1999: 218).

In perhaps the most comprehensive investigation of a cultural contingency model of team effectiveness, Gibson & Zellmer-Bruhn (2000) explored a sample of 52 teams across four countries that varied based on several cultural values, including power distance. Using rich qualitative analyses of team members' language about teamwork, referred to as teamwork schema, they demonstrated that power distance impacted the meaning members ascribe to teamwork and to their expectations of team leadership. Stated another way, the meaning team members ascribed to teamwork in high power distance cultures included prescriptions for status relationships and in turn shaped members' expectations regarding hierarchical relationships in teams. Based on these studies and frameworks, we propose the following sub-hypothesis.

H4a: Power distance tips the scale toward accountability, as opposed to empowered decision making, as the key driver of ambidexterity (i.e., in high power distance cultures, accountability is a stronger predictor of ambidexterity than empowered decision-making; the reverse is true in low power distance cultures).

In addition to differences in power distance, different cultural contexts are likely to have very different time perspectives – also referred to as time orientation (Kluckhohn & Strodtbeck, 1961: 13; Hofstede, 1993; 1997). The key distinction in the cross-cultural literature has been between *future* as opposed to *present* time perspective (Hall, 1983; Jones, 1988; Levine, West, & Reis, 1980; Mosakowski & Earley, 2000; Zellmer-Bruhn, Gibson & Aldag, 2000; Waller, Gibson & Carpenter, 2000).

Future time perspective (FTP) is an overall attitude toward time that focuses on the future (Nuttin, 1985). FTP involves a belief that behaviors performed in the present increase the probability that a desired future goal will be attained and FTP societies tend to value goals whose attainment can only occur in the future (Jones, 1988: 23). FTP has U.S. and Western European roots, particularly in the Puritan/Protestant concept of eschewing hedonism in this life in order to attain future rewards. Most Anglo cultures, including the North American culture, tend to be FTP cultures (Erez & Earley, 1993; Jones, 1988; Levine, West & Reis,



1980; Spadone, 1992).

Conversely, cultures that do not emphasize future time perspective (e.g., PTP) support the idea that behaviors taken today have no more effect on the probability of attaining a future goal than do future behaviors that could be taken as the goal nears. According to Jones (1988: 25): “If putting off today does not materially alter the probability of successful goal attainment, there is little reinforcement for anticipatory goal behavior.” Similarly, while FTP-oriented societies tend to value future goals more than other goals, PTP-oriented societies often have a generally-held value that enjoying today is more important than worrying about enjoying tomorrow. As such, these societies tend to focus on the immediate social environment, and emphasize expressive behaviors rather than instrumental ones (Jones, 1988). Examples of PTP cultures include African-Americans (Jones, 1988); Brazilians (Levine, West & Reis, 1980); Latin Americans (Epstein, 1977); and Asians Thai (Spadone, 1992).

Time perspective both focuses individual attention on the present or the future and potentially influence individuals’ attitudes and behaviors. Based on this existing research, it seems reasonable to believe that differences in time perspective may lead to the criticality of different sub-systems in the organisation in the promotion of ambidexterity. FTP-oriented individuals may tend to focus most on processes that lead to the attainment of future goals, while PTP-oriented individuals may focus on activities for knowledge creation that lead to more proximal goals. The adherence to and valuing of deadlines, milestones, and time-oriented devices such as Gantt charts, which plot project progress against projected time frames and milestones, could differ drastically between PTP- and FTP-oriented individuals (Waller et al. 2000). Based on these theories and preliminary evidence, we proposed the following sub-hypothesis:

H4b: Future time perspective tips the scale toward vision, as opposed to knowledge transfer, as a key driver of ambidexterity (i.e., in future time oriented cultures, vision is a stronger predictor of ambidexterity than knowledge transfer; the reverse is true in non-future oriented cultures).

## RESEARCH METHODS

Procedure and sample. This research study was part of a large investigation undertaken jointly between a team of academics and consultants, and with support from the World Economic Forum. The research team employed a multi-method approach, consisting of (1) interviews with top executives in ten multinational firms, (2) interviews throughout 2 to 4 business units in each firm, (3) a survey of a stratified random sample of approximately 200-500 employees at four hierarchical levels in the two business units (and sometimes others as well), (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. Total number of survey respondents was 4234 individuals across 41 business units in ten multinational firms. Table 1 provides a breakdown of the sample.

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Insert Table 1 about here  
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Level of analysis. By collecting data from 4234 individuals in 41 business units we were in a position to test our hypotheses at both levels of analysis. Working at the individual level of analysis allows us to work with a large sample size but with the problem of same-source bias. Working at the business unit level of analysis eliminates the same-source bias problem (see below) but reduces our degrees of freedom for statistical analysis. Rather than choose between these two different approaches we opted to present both sets of analysis. In the discussion section we provide an evaluation of their relative merits.

Precautions to avoid same source bias. The data were collected through a single survey and all items were Likert-style questions. Respondents provided ratings of the organization sub-systems, ambidexterity, and performance. To mitigate problems of same source bias, we used different groups of respondents for the independent variables (the systems) and the dependent variables (ambidexterity and performance). 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.

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.

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.

Construct measures. All constructs were measured with multi-item scales. Where possible the wording of these items was taken from existing scales in the literature. The appendix provides wording of individual items and a measure of the reliability of the scales (in all cases Cronbach's Alpha was greater than 0.70). To test hypotheses 4a and 4b, we split the sample around the median of the power distance and time orientation scales.

## RESULTS

**Hypothesis 1** focused on the relationship between the four sub-systems and ambidexterity. The individual level results (table 4) show that of the three sub-systems (guiding vision, accountability and knowledge management) are significant predictors of ambidexterity. The business unit level results (table 5) are less clear cut. Each sub-system is a significant predictor of ambidexterity on its own, but when all four sub-systems are entered into a single regression equation the model as a whole is significant but none of the beta coefficients is. This is explained by the fact that the four sub-system variables are all highly correlated with one another, such that the unique contribution from each one (as measured by the Beta coefficient) is relatively small.

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Insert Table 1, 2, 3, 4 about here  
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Taken together, these results provide support for hypothesis 1. As argued in the theory development, the four sub-systems should be seen as a bundle of complementary systems, and this is borne out in the empirical analysis. The only question mark is over empowered decision making, which at the individual level of analysis has a relatively weak association with ambidexterity.

**Hypothesis 2** proposed a positive relationship between ambidexterity and performance. As shown in the correlation matrices, there is strong support for this relationship. At the

individual level we see a correlation of 0.697. At the business unit level we see a correlation of 0.688 when different raters are used for the two constructs, and 0.775 when the two constructs are both rated by senior and middle managers (see tables 2 and 3). All of these correlations are significant at  $p < .001$ .

To test **hypothesis 3** regarding the mediating effect of ambidexterity, we used hierarchical mediated regression analysis. This analysis involves running two models, each of which has two hierarchical steps. The outcome of interest is subjective performance. In the first equation, we entered ambidexterity, followed by the four predictor systems (vision, accountability, empowered decision making, and knowledge transfer) in the second step. Here, we would expect that ambidexterity would account for a significant portion of the variance, but the systems would not. In the second equation, we reversed the order. We entered the predictor systems in the first step, followed by ambidexterity in the second step. Here we would expect that the systems may account for a significant portion of the variance, but ambidexterity will also account for significant variance.

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Insert Table 6, 7 about here  
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In the case of full mediation, the first equation will demonstrate that after controlling for ambidexterity, there is no significant relationship between the systems and subjective performance. Even if statistical significance is reached, partial mediation is demonstrated when the predictor systems explain less variance in the first equation than in the second equation.

Our results **indicate partial mediation**. Focusing on the business unit level analysis (table 7), in the first equation, after controlling for ambidexterity, the systems account for very little variance. Ambidexterity accounts for 60% of the variance, and in the second step, the systems add only another 4% of the variance explained (totalling 64% of variance explained). In the second equation, the systems account for 27% of the variance, and in the second step, ambidexterity adds another 37% of variance explained (for a total of 64% variance explained). The individual level analysis (table 6) indicates a similar story. In the first equation ambidexterity (along with firm dummy variables) accounts for 53% of the variance, with the systems then adding a further 4% of explained variance. In the second equation the systems on their own account for 42% of the variance in performance, which increases to

57% once ambidexterity is added. This suggests that ambidexterity is very important to the underlying relationships with performance.

**Hypothesis 4** proposed that the predictors of ambidexterity would differ based on the cultural context. Results presented in Table 4 provide some support for this hypothesis. Specifically, sub-hypothesis 4a pertained to the difference in predictors of ambidexterity in high power distance versus low power distance cultures. To test this hypothesis, we contrasted the predictive strength of accountability as compared to the predictive strength of empowered decision making in each culture, using a median split to create sub-groups with high versus low power distance. As predicted, in high power distance cultures, accountability was a stronger predictor than empowered decision making. Also as predicted, in low power distance cultures, empowered decision making was a stronger predictor than accountability.

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Insert Table 8, 9 about here  
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Sub-hypothesis 4b pertained to the difference in predictors of ambidexterity in future time perspective cultures versus other cultures. To test this hypothesis, we contrasted the predictive strength of vision as compared to the predictive strength of knowledge transfer in each culture, using a median split to create sub groups with future versus non-future time perspective. As predicted, in future oriented cultures, vision was a stronger predictor than knowledge transfer. Also as predicted, in non-future oriented cultures, knowledge transfer was a stronger predictor than vision.

## DISCUSSION

Our results have implications for theory, research and practice in two domains: (1) predictors and consequences of ambidexterity and (2) cultural contingencies.

First, our findings suggest that although alignment and adaptability are difficult to achieve in equal measure, they are not mutually exclusive. Our findings provide strong evidence that ambidexterity -- that is, the simultaneous achievement of alignment and adaptability -- is significantly related to subjective performance. Furthermore, ambidexterity partially mediates the relationship between organisational sub-systems and subjective performance.

This suggests that organisational systems, in and of themselves cannot be the sole focus of attempts to improve organizational performance. Instead, it is necessary to give consideration to the development of ambidexterity as an organizational capability, which is in part achieved through the use of the four sub-systems identified here.

With regard to theory, the results suggest that the lens of complexity theory, and self organization in particular, has a great deal of potential for helping us to model organizational ambidexterity. Previously discussions of self organization and "the edge of chaos" have focused on such outcomes as innovation (Brown and Eisenhardt, 1997) and growth (Nicholls-Nixon, 2000). By focusing in this study on ambidexterity and organization performance, we have shown that self-organization has broader implications than previously recognized.

In terms of cultural contingencies, our results provide some preliminary evidence that different systems predict ambidexterity in different cultural contexts (see Figure 1 for a summary). This suggests that firms should adapt their strategies for developing ambidexterity to the cultural context in which the firm is embedded, with particular attention to power distance and time perspective.

However, it may be that it is impossible to entirely modify the focus of the firm to fit the culture. In such situations, we would advocate an awareness of the balance, and the establishment of an equilibrium. For example, Brown and Eisenhardt (1998) conceptualize the treatment of time in organisations as "balancing on the edge of time" - rooted in the present, yet aware of past and future. Their research indicates a tendency to slip off the edge toward the past or future, driving managers to focus too much on either. If there is too much attention paid to the past, strategies and organisations become locked into dated competitive models. Air France and Renault are organisations potentially suffering from this. The "Gallic inertia" has consistently caused these organisations to lag in adopting innovations such as hub-and-spoke connections and baggage automation in the airline industry, and just-in-time production in the auto industry (World Economic Forum Brochure, 2000). However, if managers forget the past, then they fail to take advantage of experience restarting and thus are slow to change. In contrast, if too much attention is directed toward the future, organisations get too far ahead (Earley and Gibson, 2000). The key to renewal, then may be balance, with special sensitivity to context and cultural contingencies.

## REFERENCES

- Abernathy, W. and K.Clark. 1985. Innovation: Mapping the winds of creative destruction. Research Policy. 14: 3-22.
- Adler, P.S. and B. Borys. 1996. Two types of bureaucracy: Enabling and Coercive. Administrative Science Quarterly. 41: 61-89.
- Adler, P., B. Goldoftas and D.Levine. 1999. Flexibility versus efficiency? A case study of model changeovers in the Toyota Production system. Organization Science. 10(1): 43-68.
- Amit, R. and P. Schoemaker. 1993. Strategic assets and organizational rent. Strategic Management Journal. 14: 33-46.
- Anderson, P. 1999. Complexity theory and organization science. Organization Science. 10(3): 216-232.
- Argyris, C. and D. Schon.1978. Organizational Learning. Reading, Mass: Addison-Wesley.
- Barnard, C. 1938 / 1968. The functions of the executive. Cambridge Mass: Harvard University Press.
- Bartlett, C.A. & S. Ghoshal (1989). Managing across borders: The Transnational Solution. Boston: Harvard Business School Press.
- Brown, S.L. and K. Eisenhardt. 1997. The art of continuous change: Linking complexity theory and time-paced evolution in relentlessly shifting organizations. Administrative Science Quarterly. 42(1): 1-34.
- Brown, S.L., & Eisenhardt, K.M. (1998). Competing on the edge: Strategy as structured chaos. Boston, MA: Harvard Business School Press.
- Burns, T. and G.M. Stalker. 1961. The Management of Innovation. London: Tavistock.
- Carlsson, B. 1961 Flexibility and the theory of the firm. International Journal of Industrial Organization. 7: 179-203.
- De Meyer, A., J. Nakane, J. Miller and K. Ferdows. 1989. Flexibility: The next competitive battle. The manufacturing futures survey. Strategic Management Journal. 10: 135-144.
- Duncan, R.B. 1976. The ambidextrous organization: designing dual structures for innovation. In R.H.Kilmann, L.r. Pondy and D.Slevin (eds) The management of organization. 1: 167-188. New York: North-Holland.
- Earley, P.C., & Gibson, C.B. (2000). New perspectives on multinational teams. Lawrence Earlbaum and Associates.
- Eisenhardt, K.M., & Tabrizi, B.N. (1995). Accelerating adaptive processes: Product Innovation in the Global Computer Industry. Administrative Science Quarterly, 40(1): 84-110.
- Gersick, C. 1991. Revolutionary change theories: A multilevel exploration of the punctuated equilibrium paradigm. Academy of Management Review. 32: 274-309.
- Ghemawat, P. and J. Costa. 1993. The organizational tension between static and dynamic efficiency. Strategic Management Journal. 14: 59-73.
- Ghoshal, S. & C.A. Bartlett. 1994. Linking organizational context and managerial action: The dimensions of quality of management. Strategic Management Journal. 15: 91-112.
- Gibson, C.B. (2000). From knowledge accumulation to transformation: Phases and cycles of collective cognition in workgroups. In press, Journal of Organisational Behavior.
- Gibson, C.B. & Zellmer-Bruhn, M. (2000). Intercultural Analysis of the Meaning of Teamwork: Evidence From Six Multinational Corporations. Working paper, University of Southern California.
- Greiner, L.1972. Revolution as organizations grow. Harvard Business Review. 76: 55-67.

- Hall, E.T. 1983. The dance of life: The other dimension of time. Garden City, NY: Anchor Press.
- Hedlund, G. and J. Ridderstrale. 1997. Toward a theory of the self-renewing MNC. In B. Toyne and D. Nigh (eds) International Business: An Emerging Vision. University of South Carolina Press. Pages 329-353.
- Hofstede, G. 1980. Culture's consequences: International differences in work-related values. Beverly Hills: Sage.
- Hofstede, G. 1991. Cultures and organisations: Software of the mind. London: MacGraw-Hill.
- House, R.J., Hanges, P.J., Ruiz-Quintanilla, S.A., Dorfman, P.W., Javidan, M., Dickson, M., and Gupta, V. 1999. Cultural influences on leadership in organizations: Project Globe. In W.H. Mobley, M.J. Gessner, and V. Arnold (Eds.) Advances in Global Leadership, Vol. 1 (pp. 171-234). Stamford, CT: JAI Press, Inc.
- Hutchins, E. 1991. The social organisation of distributed cognition. In L.B. Resnick, J.M. Levine, & S.D. Teasley (Eds.), Perspectives on socially shared cognition: 283-307. Washington, DC: American Psychological Association.
- Jones, J.M. 1988. Cultural differences in temporal perspectives. In J.E. McGrath (Ed.) The social psychology of time: New perspectives. Beverly Hills, CA: Sage.
- Kanungo, R.M. 1980. Biculturalism and management. Toronto: Butterworths.
- Kanungo, R.N. 1982. Work alienation and the quality of work life: A cross-cultural perspective. Indian Psychologist, 1: 61-69.
- Kaufmann, S.A. 1995. At home in the universe. London, UK: Penguin.
- Klein, B.H. 1984. Prices, Wages and Business Cycles: A dynamic theory. Pergamon, New York.
- Kluckhohn, Florence and Strodtbeck, Frederick. 1961. Variations in Value Orientation. Westport: Greenwood Press.
- Larson, J.R., & Christensen, C. 1993. Groups as problem-solving units: Toward a new meaning of social cognition. British Journal of Social Psychology, 32: 5-30.
- Levine, R.V., West, L.J. & Reis, H.T. 1980. Perceptions of time and punctuality in the United States and Brazil. Journal of Personality and Social Psychology, 38(4): 541-550.
- MacDuffie, J.P. 1995. Human resource bundles and manufacturing performance: Organisational logic and flexible production systems in the world auto industry. Industrial and Labor Relations Review, 48(2): 197-221.
- March, J.G. 1991. Exploration and exploitation in organisational learning. Organisation Science. 2(1): 71-86.
- Mathews, K.M., M.C. White and R.G. Long. 1999. Why study complexity sciences in the social sciences? Human Relations. 52(4): 439-462.
- Morel, B. and R. Ramanujam. 1999. Through the looking glass of complexity: The dynamics of organizations as adaptive and evolving systems. Organization Science. 10(3): 278-293.
- Mosakowski, E., & Earley, P. C. (in press). A selective review of time assumptions in strategy research. Academy of Management Review.
- Nicholls-Nixon, C. 2000. Self organization and the sustainability of rapid growth: An agenda for future research. Richard Ivey School of Business working paper.
- Nonaka, I. 1988. Creating organizational order out of chaos: Self renewal in Japanese firms. California Management Review. Spring: 57-73.
- Nuttin, J. 1985. Future time perspective and motivation. Hillsdale, N.J.: Lawrence Erlbaum Associates.
- Porter, M.E. 1980. Competitive strategy. New York: The Free Press.



- Porter, M.E. 1996. What is strategy? Harvard Business Review.
- Prahalad, C.K. and Y.L. Doz. 1987. The Multinational Mission. New York: The Free Press.
- Prigogine, I., G. Nicholis and A. Baloyantz. 1972. Thermodynamics of Evolution: Part I. Physics Today. 25(11): 38-44.
- Scott, W.R. 1992. Organizations: Rational, natural and open systems. 3<sup>rd</sup> Edition. Englewood Cliffs, NJ: Prentice Hall.
- Smith, P.B., Peterson, M.F., & Misumi, J. 1994. Event management and work team effectiveness in Japan, Britain, and the USA. Journal of Occupational and Organisational Psychology, 67: 33-43.
- Snizek, J.A., & Henry, R.A. . 1990. Revision, weighting, and commitment in consensus group judgment. Organisational behavior and human decision processes, 45: 66-84.
- Spender, J-C. and E.H.Kessler. 1995. Managing the uncertainties of innovation: Extending Thompson (1967). Human Relations. 48(1): 35-57.
- Stacey, R. 1993. Strategy as order emerging from chaos. Long Range Planning. 26(1): 10-17.
- Tenkasi, R., Mohrman, S.A., & Mohrman, A.M. Jr. 1998. Accelerated learning during transition. In S.A. Mohrman, J.R. Galbraith, E.E. Lawler III, & Associates (Eds.), Tomorrow's organisation: Crafting winning capabilities in a dynamic world: 330-361. San Francisco: Jossey-Bass.
- Tushman, M. and P. Anderson. 1986. Technological discontinuities and organization environments. Administrative Science Quarterly. 31: 439-465.
- Tushman, M.L., & O'Reilly, C.A. 1996. Ambidextrous organisations: Managing evolutionary and revolutionary change. California Management Review, 38(4): 8-30.
- Utterback, J. 1994. Mastering the Dynamics of Innovation. Boston: Harvard Business School Press.
- Waldrop, M. 1992. Complexity: The Emerging Science at the Edge of Order and Chaos. London, UK: Viking.
- Waller, M.J. & Gibson, C.B., & Carpenter, M. 2000. Time's arrow: the impact of differences in time perspective on knowledge management speed in multicultural teams. Working paper, University of Illinois.
- Weick, K.E. 1993. Organisational redesign as improvisation. In G.P. Huber & W.H. Glick (Eds). Organisational change and redesign: Ideas and insights for improving performance: 346-382. New York: Oxford Press.
- Wegner, D.M. 1987. Transactive memory: A contemporary analysis of the group mind. In B. Mullen & G.R. Goethals (Eds.) Theories of group behavior: 185-208. New York: Springer-Verlag.
- Wheelwright, S. and K. Clark. 1992. Revolutionizing Product Development. New York: The Free Press.
- Whetten, D. 1987. Organizational growth and decline processes. Annual Review of Sociology. 13: 335-358.
- World Economic Forum/Booz-Allen & Hamilton. 2000. Creating the capacity for organisational renewal. Report presented at the World Economic Forum, Davos, Switzerland, January, 2000.
- Zellmer-Bruhn, M., Gibson, C. B., & Aldag, R. 2000. Times flies like an arrow: Tracing antecedents and consequences of temporal elements of organisational culture. In C. L. Cooper, S. Cartwright, P. C. Earley (Eds.), Handbook of organisational culture. Sussex, England: John Wiley & Sons.

**FIGURE 1**  
Cultural Contingencies

	Strongest Predictor of Ambidexterity
High Power Distance (e.g., BU's in France/Asia)	ACCOUNTABILITY
Low Power Distance (e.g., BU's in USA/Canada)	EMPOWERED DECISION MAKING

	Strongest Predictor of Ambidexterity
Future Time Perspective (eg., France, USA, Canada)	VISION
Non-future Time Perspective (e.g., Asia)	KNOWLEDGE TRANSFER

TABLE 1  
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 2**  
Correlation Matrix: Individual Level of Analysis (n=4234)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Vision (1)	1.000							
Empowerment (2)	.591	1.000						
Accountability (3)	.756	.645	1.000					
Know. Transfer (4)	.675	.733	.674	1.000				
Ambidexterity (5)	.403	.408	.441	.421	1.000			
Performance (6)	.434	.429	.487	.448	.697	1.000		
Power Dist. (7)	.239	.218	.243	.218	.218	.324	1.000	
Future Persp. (8)	.263	.263	.312	.263	.302	.238	.256	1.000

All correlations significant at the p<.001 level.

**TABLE 3**  
Correlation Matrix: Business Unit Level of Analysis (n=41)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Guiding Vision (line) (1)	1.000							
Empowerment (line) (2)	.511**	1.000						
Accountability (line) (3)	.707***	.606***	1.000					
Know. Trans. (line) (4)	.661***	.735***	.810***	1.000				
Ambidexterity (line) (5)	.512**	.695***	.676**	.692**	1.000			
Ambidexterity (mgmt) (6)	.388*	.467**	.353*	.444**	.631**	1.000		
Performance (mgmt) (7)	.319*	.514**	.371*	.430**	.688***	.775***	1.000	
Power Dist. (all) (8)	.144	.392*	.105	.208	.288	.570***	.505**	1.000
Future Persp. (all) (9)	.316*	.547***	.482**	.519**	.522**	.559***	.500**	.379*

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

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

(all) - rated by all respondents

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

**TABLE 4**  
**Predictors of Ambidexterity: Individual Level of Analysis (n=4234)**

	Model
Firm 1 dummy	-.091**
Firm 2 dummy	-.02
Firm 3 dummy	-.039*
Firm 4 dummy	.060*
Firm 5 dummy	.002
Firm 6 dummy	-.071***
Firm 7 dummy	.026
Firm 8 dummy	-.411***
Firm 9 dummy	-.020
Guiding vision	.082***
Accountability	.133***
Empowerment	.031
Knowledge Management	.188***
R-Squared	.372
R-Squared (adjusted)	.370
F (Anova)	176.63***

**TABLE 5**  
**Predictors of Ambidexterity: Business Unit Level of Analysis (n=41)**

	All variables	Each variable separately			
		Guiding vision	Accountability	Empowerment	Knowledge Management
Guiding vision	.193	.388*			
Accountability	-.124		.353*		
Empowerment	.297			.467**	
Knowledge Management	.199				.444**
R-Squared	.258	.151	.125	.218	.197
R-Squared (adjusted)	.176	.129	.102	.198	.177
F (Anova)	3.129*	6.92*	5.56*	10.85**	9.59**

**TABLE 6**  
**Predictors of Subjective Performance: Individual Level of Analysis (n=4234)**

Model 1	Step 1	Step 2
	Without systems	With systems
Firm 1 dummy	.045***	.048***
Firm 2 dummy	.123***	.111***
Firm 3 dummy	.046***	.033**
Firm 4 dummy	.085***	.094***
Firm 5 dummy	.154***	.154***
Firm 6 dummy	.000	-.005
Firm 7 dummy	.115***	.107***
Firm 8 dummy	.090***	.073***
Firm 9 dummy	.058***	.068***
Ambidexterity	.597***	.487***
Guiding vision		.049**
Accountability		.124***
Empowerment		.013
Knowledge Management		.083***
R-Squared	.525	.569
R-Squared (adjusted)	.524	.567
Change in R-Squared		.04***
F (Anova)	424.13***	361.24***

Model 2	Step 1	Step 2
	Without ambidexterity	With ambidexterity
Firm 1 dummy	.101***	.048***
Firm 2 dummy	.200***	.111***
Firm 3 dummy	.051***	.033***
Firm 4 dummy	.200***	.094***
Firm 5 dummy	.272***	.154***
Firm 6 dummy	.042**	-.005
Firm 7 dummy	.202***	.107***
Firm 8 dummy	.170***	.073***
Firm 9 dummy	.111***	.068***
Guiding vision	.088***	.049**
Accountability	.190***	.124***
Empowerment	.027	.013
Knowledge Management	.174***	.083***
Ambidexterity		.487***
R-Squared	.419	.569
R-Squared (adjusted)	.417	.567
Change in R-Squared		.15***
F (Anova)	212.84***	361.25***

TABLE 7

Predictors of subjective performance: Business Unit Level of Analysis (n=41)

Model 1	Step 1	Step 2
	Without systems	With systems
Ambidexterity	.775***	.703***
Guiding vision		-.105
Accountability		.124
Empowerment		.219
Knowledge Management		-.075
R-Squared	.600	.638
R-Squared (adjusted)	.590	.586
Change in R-Squared		.037
F (Anova)	58.62**	12.32***

Model 2	Step 1	Step 2
	Without ambidexterity	With ambidexterity
Guiding vision	.031	-.105
Accountability	.037	.124
Empowerment	.428*	.219
Knowledge Management	.065	-.075
Ambidexterity		.703***
R-Squared	.271	.638
R-Squared (adjusted)	.190	.586
Change in R-Squared		.366***
F (Anova)	3.35**	12.32***

**TABLE 8**  
**Predictors of Ambidexterity by Cultural Group: Individual Level Analysis (n=4234)**

	Model 1	Model 2	Model 3	Model 4
	Hi Power Distance	Low Power Distance	Future Time Perspective	Past Time Perspective
Firm 1 dummy	.087***	.126***	.106***	.132***
Firm 2 dummy	.157***	.193***	.204***	.199***
Firm 3 dummy	.022	.055**	.045**	.029
Firm 4 dummy	.198***	.224***	.232***	.237***
Firm 5 dummy	.226***	.218***	.252***	.290***
Firm 6 dummy	.091***	.047**	.109***	.095***
Firm 7 dummy	.213***	.145***	.271***	.194***
Firm 8 dummy	.177***	.221***	.246***	.179***
Firm 9 dummy	.078***	.061***	.106***	.064***
Guiding vision			.267***	.138***
Accountability	.265***	.145***		
Empowerment	.127***	.217***		
Knowledge Transfer			.176***	.206***
R-Squared	.289	.348	.336	.350
R-Squared (adjusted)	.284	.345	.332	.346
F (Anova)	61.31***	107.43***	88.37***	95.72***
Df	1673	2222	1935	1967

**TABLE 9**  
**Predictors of Ambidexterity by Cultural Group: Business Unit Level analysis (n=41)**

	Model 1	Model 2	Model 3	Model 4
	Hi Power Distance	Low Power Distance	Future Time Perspective	Non-Future Time Perspective
Guiding vision			.24	.35
Accountability	.305	.05		
Empowerment	-.246	.70**		
Knowledge Transfer			-.09	.58**
R-Squared	.080	.55	.04	.713
R-Squared (adjusted)	.042	.50	.06	.677
F (Anova)	.66	11.99***	.35	19.89***
Df	17	22	21	18



## APPENDIX 1. Construct Measures

**Vision.** Indicate the degree to which people: (a) know and understand the vision/strategy for the business, (b) understand what they must do personally to execute the vision/strategy, (c) set goals that are consistent with the vision and values of the organisation. Alpha = .90

**Empowered Decision Making Systems.** Indicate the degree to which people: (a) take too long to make decisions (reversed), (b) give everyone sufficient authority to do their jobs well, (c) push decisions down to the lowest appropriate level, (d) act more like coaches and teachers than authoritarian bosses. Alpha = .83

**Accountability.** Indicate the degree to which people: (a) make an effort to measure things that are most important to the success of our business, (b) have a good sense of how the organisation is doing relative to our goals at any point in time, (c) are rewarded or punished based on rigorous measurement of business performance against goals, (d) use the business goals and performance measures to run their businesses, (e) encourage and reward behaviour that supports the overall business goals. Alpha = .74

**Knowledge Transfer.** Indicate the degree to which people: (a) spend a significant amount of time communicating the big picture vision/mission/ strategy/purpose, (b) give ready access to information that others need, (c) who have the most relevant information have the greatest impact on decisions, (d) have access to the information they need to make good decisions, (e) quickly replicate best practises across organisational boundaries, (f) treat failure (in a good effort) as a learning opportunity not something to be ashamed of. Alpha = .71

**Ambidexterity.** The multiplicative interaction between: (1) Alignment and (2) Adaptability. Alignment was measured by the following items: Indicate the degree to which you 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 was measured by the following items: Indicate the degree to which you agree with the following: (a) the management systems in this organisation encourage people to challenge outmoded tradition/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.

**Subjective Performance.** Indicate the degree to which you agree with the following: (a) this organisation is achieving its full potential, (b) people at my level are satisfied with the current level of 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.

**Power distance.** Indicate the degree to which you agree with the following: (a) a hierarchy is the best form of organisation, (b) the highest ranking manager in a team should take the lead. Alpha = .65.

**Time perspective.** Indicate the degree to which you agree with the following: (a) I focus on goals in the future as opposed to goals for the present, (b) I tend to think a lot about the future consequences of my actions and decisions. Alpha = .60.