

E-BUSINESS GOVERNANCE: A CO-EVOLUTIONARY APPROACH TO E-BUSINESS STRATEGY FORMULATION

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Abstract: e-Business evolution is generally presented as a highly dynamic process where organisations focus on business transformation and the creation of the agile extended enterprise. What is not well understood however is how organisations can plan for this process and whether standard business strategy formulation approaches can apply in such a dynamic environment. The research presented in this paper resulted from a longitudinal analysis of e-business governance and implementation involving eleven international organisations over a four-year period using multiple interviews and extensive secondary data collection. Three separate research models were used to analyse different stages of e-business growth and the results of this multi-stage analysis consolidated into a staged model of e-business governance. This model identifies three different orientations of the business during the transformation process as Integration, Differentiation and Virtualisation and associated with these three different strategic formulation approaches which will align with e-business governance. These together provide for a co-evolutionary approach to e-governance.

1. THE CO-EVOLUTIONARY APPROACH TO STRATEGY

There are many existing theoretical approaches to strategy - designed strategy, emergent strategy, strategy as revolution, etc and yet few examples of organisations applying these well defined models to secure competitive advantage in an e-business environment of constant change. It may be argued that these frameworks are inappropriate and redundant in the post-net

era. Beinhocker (1999) suggests that what is needed is a model of a world where innovation, change and uncertainty are the natural state of competitive engagement. Strategy may be associated with many contradictions and dilemmas as evidenced by the Red Queen effect (Kauffman, 1995). The Red Queen in *Through the Looking Glass* remarks "It takes all the running you can do to keep in the same place". In a system of co-evolution, when the predator learns to run faster, the prey starts to climb trees and then the predator develops alternative means of pursuit. Long term sustainable advantage is not possible without continual adaptation. A study of the performance of more than 400 organisations over thirty years reveals that companies find it difficult to maintain higher performance levels than their competitors for more than about five years at a time (Beinhocker, 1999). In this new sophisticated global e-marketplace advantage tends to be even more fleeting. (Burn and Hackney, 2000).

In a system of co-evolution, adaptation can be seen as the attempt to optimise systems riddled with conflicting constraints. It is therefore critical to reconcile opposing issues of tension, dilemmas or polarities. Traditional strategic approaches are incomplete since they over emphasise executives' abilities to forecast and predict in a highly competitive, high-velocity market and under emphasise the challenge of actually creating effective strategies. Given uncertain environments, strategies must also be robust and allow for the organisation to pursue a package of potentially conflicting issues at the same time (Hackney and Burn, 2001).

This process of evolutionary search is continuous but needs to be supported by a portfolio of strategic approaches, which reflect the orientation of the business at its stage of e-business development. Successful adaptation also implies co-evolution between the organisation and the strategy model. Not only must strategy models be adapted to fit the unique characteristics of an organisation but also organisations need to evolve to benefit from the lessons incorporated into the strategic model and so both the organisation and model continually change and learn.

This view is supported by Eisenhardt and Galunic (2000) who point out that the new roles of collaboration in e-Business are actually counter-intuitive and that collaboration does not naturally lead to synergy. Where synergies are achieved the managers have mastered the corporate strategic process of coevolving. These managers routinely change the web of collaborative links - everything from information exchanges to shared assets to multi-business strategies - among businesses. The result is a shifting web of relationships that exploits fresh opportunities for synergies and drops deteriorating ones, as shown in Table 1.

	Traditional Collaboration	Coevolution
Form of collaboration	Frozen links among static businesses	Shifting webs among evolving businesses
Objectives	Efficiency and economies of scale	Growth, agility, and economies of scope
Internal dynamics	Collaborate	Collaborate and compete
Focus	Content of collaboration	Content and number of collaborative links
Corporate role	Drive Collaboration	Set Collaborative Content
Business role	Execute collaboration	Drive/execute collaboration
Incentive	Varied	Self-interest, based on individual business unit performance
Business metrics	Performance against budget, preceding year, or sister-business performance	Performance against competitors in growth, share and profits

Table 1. Traditional Collaboration Versus Coevolution (after Eisenhardt and Galunic, 2000)

To be successful in this new climate, however, organisations have to learn new approaches to planning for collaborative systems and to manage e-business enabled cycles of innovation (Wheeler, 2002; Zahra and George, 2002). Few studies have explored the dynamics of e-business strategy and scant information is available on how to implement new paradigms successfully and how to ensure more effective e-business governance as a result (Damanpour, 2001; Kallio et al, 2002).

This paper reports on the findings from multiple case studies of e-business projects in ERP enabled organisations. Each organisation was investigated in a three-stage study over four years, using three theoretical models of e-business implementations to evaluate facilitators and inhibitors of success. The key findings from each case study were captured into a staged model for e-business governance and related to a dynamic strategic planning model that can be applied across all stages of growth of the extended enterprise.

2. STRATEGIC PLANNING FOR E-BUSINESS

Fahey et al (2001) state

“e-business embodies the most pervasive, disruptive, and disconcerting form of change: it leaves no aspect of managing organisations untouched, it challenges long-accepted business models, and organisation leaders have little to draw on from their past experience to manage its effects. In particular, its capacity to transform business processes is no longer in

dispute. - - -Senior executives - thus confront a central challenge: How should they endeavour to capture, analyse, and project the transformational impact of e-business on their organisation's most critical or core processes?" (p.890).

Existing strategy models are unequal to this task (Riggins, 1999; Pant and Ravichandran, 2001; Colman et al, 2001; Floris et al, 2001). Planning for such systems has to encompass capabilities for managing, measuring and evaluating organisational capabilities to create value across the network of alliances and hence requires evolutionary approaches which can be tailored to organisational needs at different stages of e-business growth (Wheeler, 2002; Ash and Burn, 2003). This whole process is referred to as e-Business governance. This includes an examination of assets, resources and competencies to align e-business strategies with corporate strategy and relate the outcomes to corporate productivity (Chang et al, 2003; Kallio et al, 2002).

In order to study this environment in detail the authors embarked on a longitudinal study of organisations implementing large-scale e-business applications based around Internet enabled ERP systems over a four-year period. The eleven organisations were visited three times during this period and a minimum of three interviewees participated on each visit. The structured interviews were focused on three separate models of e-business change to investigate different aspects of e-business governance and the results from these investigations brought together into a model for e-business governance. The use of three research models was specifically intended to give breadth to the study and allow the incorporation of a variety of strategic views, which informed the planning process.

3. THEORETICAL FRAMEWORK

Figure 1 illustrates e-business implementations from the perspective of three strategic theories: Virtual Organising, e-Business Change, and Benefits of B2B.

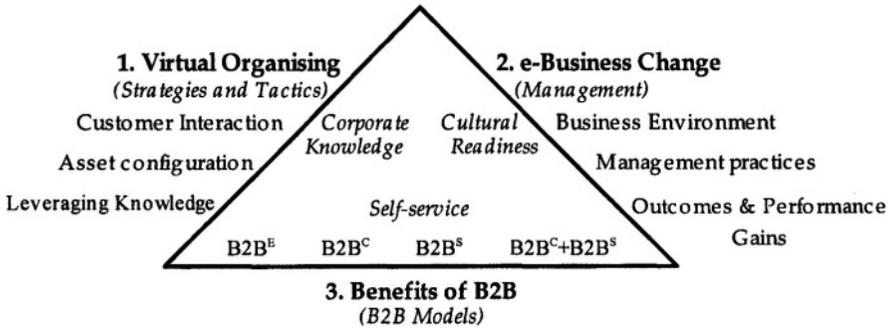


Figure 1. Three views of e-business Implementations

1. Virtual Organising strategies provides a model of e-business evolution. Progress is along the three dimensions of customer interaction, asset configuration, and leveraging knowledge (Venkatraman and Henderson, 1998).
2. e-Business Change (eBC) is illustrated by a model in which progress is across eleven interrelated components based on research in the areas of organisational change, strategic management innovation, and information systems evaluation" (Guha et al, 1997).
3. Strategies for e-business relates to a model in which e-business activity is correlated against e-business benefits within a set of B2B models (Carlson, 1995). Benefits of B2B are illustrated by a two dimensional model where value returns are directly proportional to the level of integration of e-business activity.

Each model reflects a different strategic focus: organisational strategy, change management, strategies and e-business strategies. The final conceptual framework is described in terms of a dynamic strategy formulation model for e-business innovation. The approach is a co-evolutionary process between alliances where there is a continual review of alignment of the e-business transformation against business orientation. This is quite distinct from the 'one size fits all' approach of centralised planning and allows strategy to evolve with changing market conditions.

4. METHODOLOGY

The study was carried out over a four year period and followed a structured case study approach. This involved multiple interviews in eleven international organisations which were developing extended e-business applications based around their e-ERP systems as shown in Table 2. The research

questions in association with the three models identified from the literature on the topic were used to develop a composite case-based method. These questions set the main research objectives to test three practitioner “theories-in-use” namely, benefits of e-business implementations derived from virtual organising through e-business change management.

The research questions are presented in order of increasing theoretical complexity as:

- Q.1: What factors facilitate and inhibit success of e-business transformation?
 Q.2: How do organisations maximise benefits from e-business implementations?
 Q.3: Is there a pattern of effective strategies for e-business governance?

Data was gathered from three sources; primary, secondary and tertiary:

- i. Primary data – from semi-structured interviews conducted November 1999, June 2000, and June 2001. Three separate interviewees were identified within each organisation and revisited across the study.
- ii. Secondary data – from company documents collected or sent via e-mails.
- iii. Tertiary data – from case research papers written by third party specialists.
- iv.

Table 2: Target Organisations with Stages of data collection,

#	Case	Industry	Interviewed			Business Model:		
			1 st Nov-99	2 nd Jul-00	3 rd Jun-01	B2B ^S	B2B ^C	B2B ^E
1	UBS	Banking	•	•	•			•
2	Biotech	Bio-technology	•	•	•	•		
3	UNICEF	Charity	•	•	•		B2C	
4a	Dell*	Computing	•	•			•]	
4b	LSI*	Electronics	-	•	•	[•		
5	Employ-Nation/I	Employment	•	•	•			•
6	Halliburton	Engineering	•	•	•			•
7	Burtelsmann	Media	•		•	•		
8	Statoil	Oil & Gas	•	•	•	•		
9	Novartis	Pharmaceutical	•		•			•
10a	Siemens**	Science/electric	Phone & •	•		[•	•]	
10b	(FSC)	technology.	emails (•)	(•)			(•)	
11	The Wine Society	Wine Retailing	•	•	•		B2C	

11 cases, across 11 industries, from Australia, Europe, Scandinavia, UK, USA (ordered by industry type)

* Dell and LSI represent a B2B twin case - supplier and customer

**** Siemens represents the parent company of Fujitsu Siemens Computers (FSC) division.**

Semi-structured interviews were used to collect the primary research data about the eleven case organisations. It should be noted that no formal coding techniques were used but “pattern matching” applied as a data analysis technique. Consistent with a hypothetico-deductive logic approach, the researchers searched for patterns in the empirical research which were consistent with the patterns suggested by the three theoretical propositions underpinned by the three research models (Sarker and Lee, 2003, Segev and Gebauer, 2001).

Much has been written about the case-study based approach to research. Depending on the type of research to be performed they may be classified as exploratory, descriptive, or explanatory and further, theoretical, evaluative, or associational (Yin, 1994). A combination of case study types can be incorporated into an overarching framework for theory validation and ultimately creation of new theory. Case-based strategies in research are widely used in case study methodology as well as in a number of qualitative methodologies, including grounded theory development, phenomenological research method, and psychotherapy process research (Edwards, 1998).

Lee (1987) identifies four corresponding problems with case study research as a lack of controllability, deductibility, replication, and generalisability. The latter two limitations stem largely from the lack of power to randomise. However, these problems are not insurmountable and can be overcome by quality of design. Drawing from Carroll et al. (1998) a range of research methods are designed into a composite structured method (case-based) to overcome these limitations.

5. THREE PHASES OF THE RESEARCH METHOD

Figure 3 diagrams the three types of case-based research methods: exploratory, descriptive, and explanatory. Importantly, it shows the interrelationships between them:

- Exploratory Phase 1 – pilot study. Carroll et al. (1998, p.66) provide “structured-case studies” for use in the pilot study to build initial conceptual foundations, with the focus on rigour and relevance. The elements of the structured-case studies method are embedded within a research cycle with multiple inputs for two iterations.
- Descriptive Phase 2 – main study uses three views of multiple case studies. Eisenhardt (1989, p.533) provides eight research activities as the “basics” of case work for theory testing of the three research models, using multiple case studies.

- Explanatory Phase 3 – holistic study. Klein and Myers (1998) offer the key principles for interpretive field research in the “Hermeneutic circle” as the interdependent meaning of the parts to understand the whole they form.

This triangulation of methods was applied across three views of e-business. A pilot case study of nine Australian organisations helped ground the theory of the study. This was followed by a three-stage study of eleven international cases within a diverse industry context. . Finally, synthesis of the findings of three research models of the main phase of this longitudinal multi-case study, was carried out between September 1999 and June 2001. A final conceptual framework was developed in terms of e-business transformation (eBT).

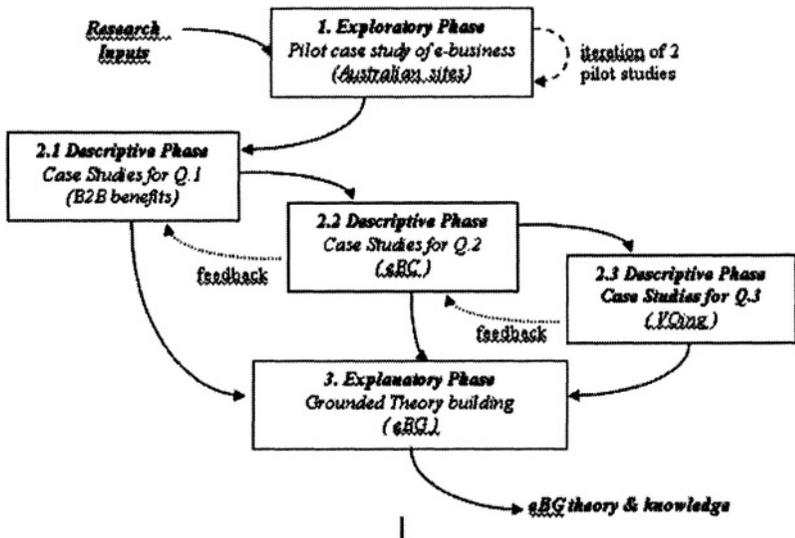


Figure 2: Composite Case-based Research Method

At each stage of the study the data collected from each set of interviews was analysed against the particular research model applied in that stage of the study. These results were used both to verify and extend the theoretical models used as a basis for the study. The full set of case material collected was used to verify all the strategic characteristics of e-business transformation and to develop a comprehensive e-business governance model.

6. E-BUSINESS GOVERNANCE MODEL

Once the three stages of the study were complete the findings were pulled together to identify whether different models of implementation reflected different stages of growth in e-business development. This supported a stage growth model with three identifiable strategic orientations governing e-business implementation

Stage 1 - Integration of technologies is critical for cost reductions and operating efficiencies along the supply chain (Coltman et al, 2001);

Stage 2 - Differentiation of products and services is critical for e-business market positioning through effective resourcing across multiple supply chains (Oliver et al, 2003; Chang et al, 2003);

Stage 3 - Demonstration of value propositions within an inter-organisational network to design and leverage multiple interdependent communities to create superior economic value across the virtual supply chain (Venkatraman and Henderson, 1998).

Table 3 represents a map of the issues distilled from the findings of this longitudinal three-stage study.

Table 3: Stages of e-Business Governance

	Stages of e-Business Governance		
	(1999 -)	(2000 -)	(2001 -)
Business Dimensions	Stage 1: Integration	Stage 2: Differentiation	Stage 3: Virtualisation and Realisation of Value
Technology (virtual infrastructure)	* <u>ICT</u> ERP with e-Sales & e-Procurement applications.	<u>Differential Resourcing</u> ASP vs cost of ownership on the outsourcing spectrum	<u>Innovative Technologies</u> ERP and non-ERP networks for e-marketplaces
Products & Services (virtual experience)	<u>e-Malls</u> e-Mall integration and information exchange	* <u>e-Branding</u> Customisation vs standardisation, Brand identity & integrity	<u>e-Communities</u> Foster customer, supplier, and employee expertise. Emerging collaborative online communities
Business Models (virtual B2B interactions)	<u>e-Commerce Integration</u> B2B Integration of e-Sales & e-Procurement systems B2B ^C + B2B ^S	<u>e-Positioning</u> B2B positioning within a range open to private e-marketplaces	* <u>e-Enterprise</u> One2Many vs One2One Distinct focus of One2One partnerships

Examples	Remote experience of e-catalogues. More tasks, "group ware" skills for online communication.	Assemble and coordinate assets through effective use of online services	Business network to design and leverage interdependent e-communities. Dependent on relationships
Dynamic planning focus across stages of organisational transformation			
Strategic focus	Self-service	Empowerment	Relationship building
Planning focus	Internal SCM	External SCM	Community Networks of SCM
Outcomes and Performance Gains	Improved operating efficiency (ROI)	Effective resourcing (QWL)	Virtual and economic value added (EVA)

* The diagonal cells(shaded) represent the critical stages of eBG and the arrows represent real organisational transformation with e-business

Table 3: Stages of e-Business Governance

These findings closely align with the strategic grid framework proposed by Riggins (1999) which identifies three different ways of generating value through electronic commerce as efficiency, effectiveness and strategic benefits. Whereas the EC value grid related to online storefronts only, this study shows that the model is similarly applicable to e-procurement and the extended value chain.

The results of the analysis can be mapped along the e-business stages of growth as: integration of e-business technologies for e-malls and B2B commerce, differentiation of products and services for e-business positioning, and virtualisation and the realisation of value propositions of the e-partnerships. The three shaded cells in the eBG model indicate the 'critical' elements that require a cultural shift for a real organisational transformation and represent distinct shifts in the orientation of the business. The other elements contribute to the organisation's competitive advantage.

7. CASE ANALYSIS FOR E-BUSINESS GOVERNANCE MODEL

STAGE 1: INTEGRATION

Technologies: e-ERP

The findings show that ‘back-end’ to ‘front-end’ enterprise application integration is essential to achieve savings and cost reduction. Integration of the system architecture is made possible through a variety of ‘back-end’, ‘sell-side’ and ‘buy-side’ systems; all 11 cases demonstrated this and the planning focus was directed towards internal efficiencies driven top-down. This represents the first ‘cultural’ shift where integration across different functions and processes promotes a mono-culture within the organisation.

Products and services: e-Malls

A number of cases developed their e-business systems to create integrated online sales systems offering a variety of products and services for example, Fujitsu Siemens Computers achieved integration of three groups’ online sales systems. Again the focus was on efficiency and integration.

Business Models: e-Commerce B2B Integration

The integration of e-business models, **B2B^C** with **B2B^S** is essential to maximise efficiency gains from supporting technology infrastructure, so that people can get the job done efficiently. This extends the efficiency focus across the organisational supply chain and a typical example of this was Dell.

STAGE 2: DIFFERENTIATION

Technologies: Differential Outsourcing

The cases demonstrated a range of outsourcing options from total outsourcing (UNICEF) to partial (Fujitsu). This is the result of the organisation attempting to differentiate itself in the marketplace by focusing only on core business. While this shifts the strategic focus to an external supplier and may create additional strategic issues, it does not generally lead to extensive organisational culture change. It may well, however, create the need for extensive relationship management and failure to do this well as with UNICEF

can result in a significant gap between strategic expectations and fulfillment (Levina and Ross,2003).

Products and services: e-Branding

It is at this stage that significant cultural change is experienced when organisations differentiate between brand identity and brand integrity, where ‘e-branding’ becomes a critical issue [30]. This requires all members of the organisation to look ‘outside the box’ and differentiate between corporate customers and end consumers. Bertlesmann, UNICEF, Wine Society, Dell and Fujitsu all experienced this shift as employees became empowered in their roles and participated meaningfully in the strategic process. .

Business Models: e-Positioning

At this stage the organisation repositions itself in the marketplace through e-services to the wider community. Biotech, Fujitsu, Dell and were all examples of successful differentiators through e-business. The tendency of these pioneers was to start with development of public relationship building and then shift to private relationship building between suppliers and buyers. This occurred very much at grass roots level throughout the organisation with all members embracing a ‘community culture’.

STAGE 3: DEMONSTRATION OF VALUE PROPOSITIONS

Technologies: Innovative Technologies

The cases gave mixed evidence about the need to embrace advanced technologies but where this occurred it typically added value to the user communities. Halliburton’s HR Intranet ERP system demonstrated a B2E value proposition. Their technology innovation was bottom-up driven and from both sides of B2E and B2G of the value chain. This bottom-up approach then provided a model for collaborative implementation of the system across the company’s global e-ERP infrastructure.

Products and Services: e-Communities

A number of cases were actively exploiting e-communities through a collaborative planning approach. Statoil and UBS used Intranet employee self-service applications to develop a practice of industry-based e-communities. Dell has competence centres where customers can validate system design and configuration without disrupting their live computing network. The fo-

cus is very much on extending communities and bringing partners into the planning process.

Business Models: e-Enterprise Model

The final stage of the model is where federated planning applies and when the organisation undergoes a further cultural shift to manage multiple relationships across a global network. A pilot approach demonstrating a value proposition is shown in the One2One relationship formed by Dell and LSI. In the short term, it may be better to adopt e-commerce implementations (e-sales and e-procurement) with new customers and suppliers. This has the capability of persuading existing customers and suppliers that are more resistant to e-business change of the win-win value propositions.

Strategy Formulation model

The changing focus across the stages of the Strategic Formulation model is classified in Table 4, and each stage viewed as interdependent and supportive of each other. This is especially so in the area of *outcomes and performances objectives* where *efficiency* through employee self-service and *effectiveness* through empowerment in customer care is used to support *value adding* activities for sustained competitive advantage. Value includes complementary benefits realised for all network partners across the virtual supply chain. The interplay between strategy, e-business, change management and evaluation is crucial to the creation of dynamic capabilities and will enable organisations to gain sustainable competitive advantage (Zahra and George, 2002).

Table 4: Stages of e-Business Strategy Formulation Model

	Stage 1	Stage 2	Stage 3
Strategic focus	Self-service	Empowerment	Relationship building
Planning focus	Top-down Training Internal Organisation	Bottom-up Self-learning External Value chain community	Federated planning Value enhancement Collaboration chains Virtual networks
Outcomes and Performance Gains	Improved operating efficiency (ROI)	Effective resourcing (QWL)	Virtual and economic value added (EVA)

*Key: Return on investment (ROI), Quality of working life (QWL)
Economic value added (EVA)*

At stage one of the extended enterprise, the focus is very much internal with top-down planning and an emphasis on training employees to become

proficient in self-service to improve operating efficiencies and increase returns on investment. The first shift comes when the enterprise extends its relationships across the full supply chain for products or services. At this stage, the focus is on empowerment and self-learning through bottom up planning within the organisation. There is also a realignment of business objectives to include external alliances across the supply chain. Finally, the focus will be directed towards re-engineering the supply chain through collaborative planning to gain value enhancement throughout the networked community. This occurs with a shift of business model towards the e-enterprise.

By taking a more holistic approach, executives can turn these stages of a company's transformation into the drivers of e-business excellence. So the central task for senior managers lies in understanding what drives operational excellence in the e-business realm, and then committing the necessary resources (structures, training, planning responsibilities) to the development of the drivers. To this end managers should assess the company's operations by looking at both the traditional and e-business measures.

The complete model for e-business strategy formulation (Table 4) can act as a comprehensive tool, for assisting managers in diagnosing the key facilitators and inhibitors of successful stages of e-business development. It is not seen as a prognostic tool. The case analyses confirmed that the more successful projects were found to have facilitators in all components of the eBG framework.

Some key enablers found through this study are highlighted below:

- Organisations attempting to change performance radically seem to require some "sense of urgency" in their business situation, which translates in turn into a compelling vision that is espoused throughout the organisation.
- An important ingredient in the right cultural mix for successful eBG is leadership from the top and initiatives from employees, together with an atmosphere of open communication, participation and committed cross-functional interactions.
- An organisation's "vision" for change must be embraced throughout all levels of the organisation, especially by those functional and middle-level managers affected by the eBG. To achieve this requires continuous articulation and communication of the value of reporting results and how each individual is contributing and accountable to the overall company's change effort. At this individual level, concern should be placed on how the e-business system will improve employee satisfaction and the quality of work life.

- Measurement is a means to success. A well-defined transparent management approach should include a documented methodology of change, use objective and quantified metrics showing the value of change, continuously communicate process metrics to senior management, and possess a well-documented rollout of the new e-business design.

8. CONCLUSIONS

This study of e-business governance was based around a triangulation of three independent research models: strategies for virtual organising, e-business change strategies and strategic benefits from B2B interaction. Each model exhibits attributes that have varying influences at different stages of e-business planning and implementation. The current findings are based on eleven case organisations which were investigated over a three year period, through semi-structured interviews.

The results from this study are drawn together into a staged model of e-business transformation and governance and a dynamic strategic formulation model for progress through a cycle of innovation. The model offers a foundational perspective of strategies, planning tactics and performance objectives for e-business implementations. This can be viewed as a co-evolutionary approach to governance in which improvement is measured along the three dimensions of integration, differentiation and virtualisation. Successful transition across each dimension will require an organisation to orient itself through three 'cultural shifts' towards the development of networks of innovation.

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