

The Role of IT in supporting Business Development Processes

by P.J. Boxer

Abstract

We are used to using IT to change the efficiency and effectiveness of business processes. But automation, rationalisation and re-engineering only goes so far. What happens when we are asked to go beyond the limits of existing business practices, and create new ways of adding value?

IT is becoming a key enabling technology in the creation of competitive advantage as it enables the organisation itself to become something over which we can exercise design control. But when IT becomes more than just a business tool in the engineering of business processes, and becomes a design medium, it has to be considered as integral to the creation of competitive advantage. This creates new challenges for the IT manager in enabling systems and information environments to be defined as part of the strategy process itself. How do we make this connection in practice? Do we need new ways of exercising design control over the business?

This paper will consider the implications these challenges have for the logic of the business processes, for the design methodologies we use in support of business development processes, and for the ways in which IT needs to be understood as an integral part of being strategic.

Introduction

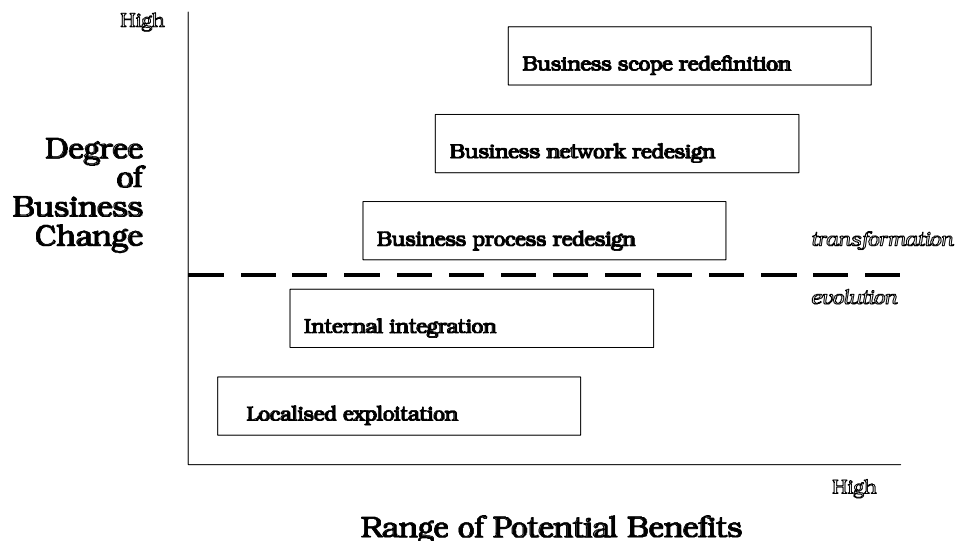
How closely do your Information Systems Department and Personnel Department work together? Is the payroll system the closest they get? It is not unusual to find that Personnel is about jobs, people, pay and rations; and that IS is about computing centres, standards for personal computing and "applications". Such a functional approach is effective in enabling the business to develop the efficiency and effectiveness of each business function. It is also the basis on which many Facilities Management contracts are undertaken. But it is not good at developing the business as a whole.

The approach to IT which emphasises "workgroup computing" and "client server architectures" looks at the business in a different way however. A business is understood in terms of the processes of interaction which take place between people

inside and outside the organisation; and IT is one part of the business context in which these processes take place. This context has a structure of its own defined by people, jobs and systems with all their supporting assets and infrastructure. A Business Development Process has to address the relationship between this structure-as-context and the processes which it facilitates. Such a Development Process enables business processes to be rethought in relation to this context. But how much of this context is taken into consideration?

The ceiling on Business Development Processes

Whilst the power of the computer enables information-based tasks to be carried out more productively, it is the communication technologies which enable business processes to be rethought. Networks link organisations together and improve internal linkages within organisations. Combined with well organised information, such networking means that business processes can be rationalised, reconfigured and even eliminated. Venkatraman (1991)¹ discusses a five level model which relates the potential benefits available from IS/IT investments to the degree of business and organisational change needed to obtain them:



The lower two levels correspond to the 'functional' approach to improving specific aspects of the business' operations. The characteristics of these two approaches are that the organisation of the business is not changed. The remaining three however include more and more of the structure-as-context, as progressive changes are made to the internal organisation of the business, to the way the business relates to other businesses and partners, and finally to the very definition of the business itself. Thus, working with these higher levels means changes in how the business is organised, in how it positions itself in relation to its customers and suppliers, and ultimately in the nature of how it competes.

The level of context included when change is considered sets a ceiling on what kinds of alternatives can be considered in any Development Process. If all levels are considered, then the basis of the business' competitive advantage becomes an issue too.

¹Venkatraman, N. (1991) 'IT induced business reconfiguration' in The Corporation of the 1990s OUP.

Questions about IS/IT strategy become questions of business strategy, and new approaches to the strategy process itself become possible.

This paper considers the implications of "raising the ceiling" for the logic of the business processes, and the nature of the design methodologies needed to support of business development processes in which IT is understood as an integral part of being strategic.

IT and Strategy

The usual way of describing competitive advantage is in terms of position along a value chain. It is possible to describe a value chain in terms of a flow from raw materials through various stages of manufacture, assembly and distribution all the way to the final consumer. More often than not, a position is a node in a whole network of value chains in which the particular position is a channel between multiple upstreams and downstreams. The different value chains constitute different design solutions to end-users' problems, and the position/node represents the exercising of *design control* over a solution to some particular aspect of a set of end-users' needs.

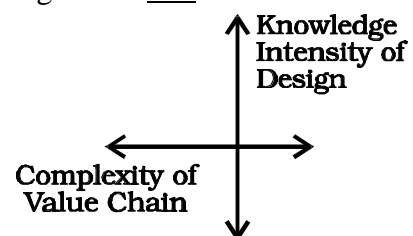
In his book on Charting the Corporate Mind: from dilemma to strategy², Charles Hamden-Turner speaks about how value is created, and about two logics of value creation:

"Values are less 'added' to products than *reconciled into* products-plus-services. This is because many values resist and oppose each other, unless carefully reconciled into one overall design.

Hence there are really two forms of 'choosing'. We can choose *between* values or we can *reconcile* values into 'choice combinations'. In practice we do both, offering the consumer a *choice between combinations*.

More potential value is created when a product and/or service combines many values which are also sources of satisfaction to the consumer."

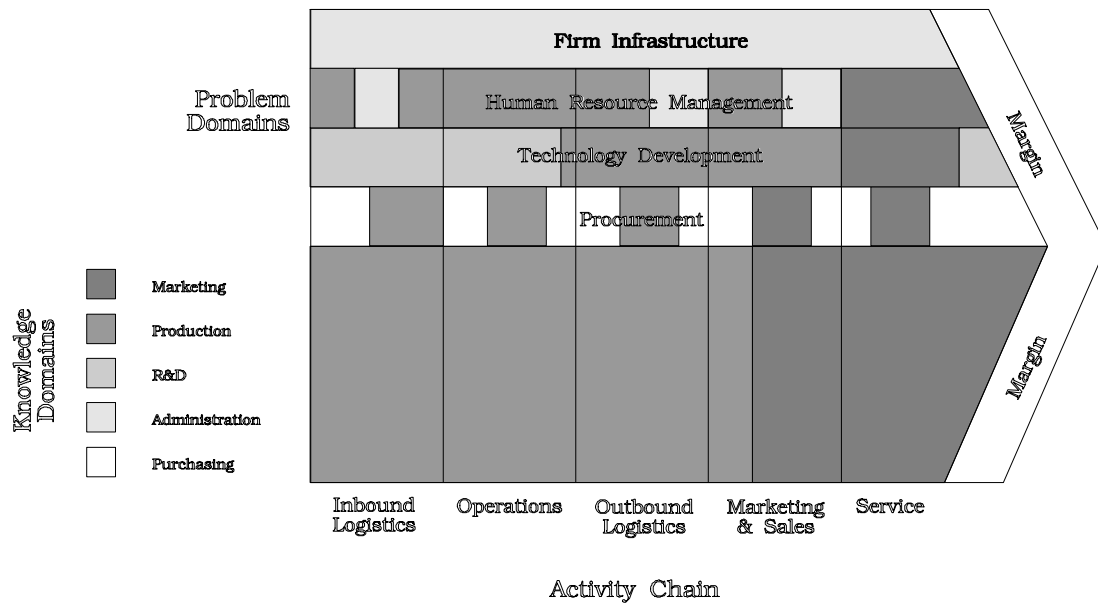
Thus, once the "position" is put in the context of whole networks of value chains, competitive advantage can be understood not just in terms of position along a value chain. It can also be understood in terms of the ability to exercise *design control* over solutions to aspects of end-users' needs - an ability to create value for the customer by reconciling conflicting values into a whole. This gives us two axes in relation to which we can describe competitive advantage. A horizontal axis defining the value chain in terms of its complexity - an *enabling axis* in the sense that it is the particular form of complexity of the value chain which enables it to meet the end-user's needs; and a vertical axis defining the *knowledge intensity* of the design approaches implicit in the formation of the value chain - a *limiting axis* in the sense that the forms of knowledge which can be brought to bear on the design problems limit the scope and nature of the value chain.



²Blackwell 1990

The strength of any given position can be understood in terms of 5 factors: the strength of the boundaries upstream and downstream of that position, the rivalry between competitors in the same position and the ease with which new competitors can take the same position, and extent to which there are alternative ways of addressing customers' needs which can make the position redundant. It is this last factor which raises the question of the vertical (limiting) axis.

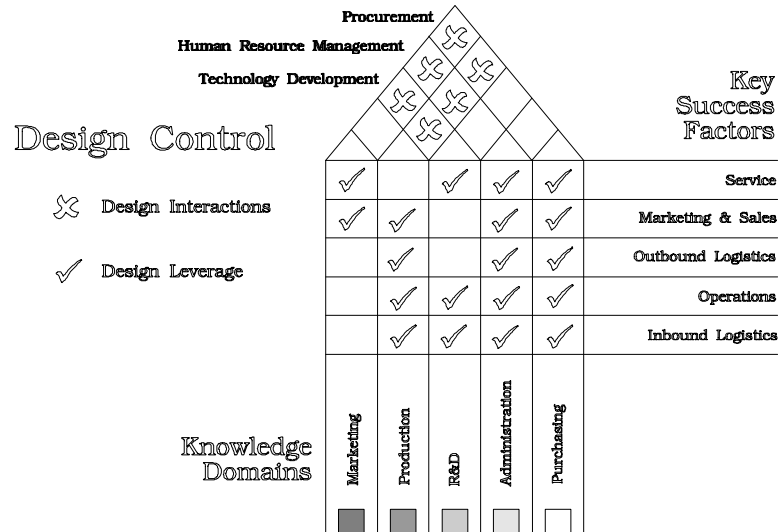
The nature of the business activities supporting this classic description of such a position (taken from Porter's book on Competitive Advantage³) can be described as follows:



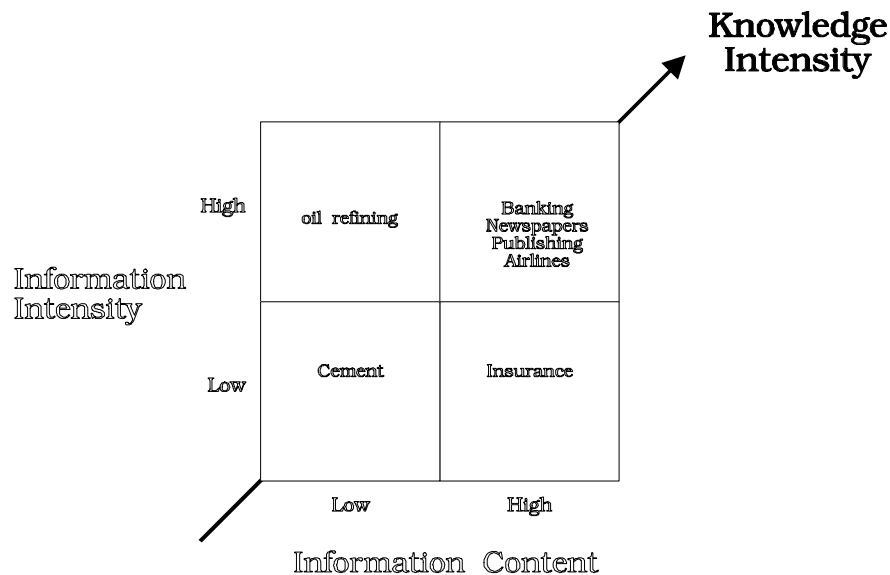
The position is itself seen as an activity chain which can be described in terms of a series of linked activities. These activities are under the design control of a number of functional areas of knowledge such as marketing, production, R&D etc. - shown here as *knowledge domains*. These knowledge domains not only determine how these activities are run, but also constitute sets of related activities addressing particular kinds of problems facing the business as a whole: problems such as Human Resource Management and Technology Development - shown as *problem domains*.

These knowledge domains define how *design control* is exercised over those aspects of the ultimate end-users' needs which are addressed by this position. The more knowledge domains there are implicated in a particular problem domain, the more *knowledge intense* that problem domain becomes. The knowledge intensity of the competitive position is based on the particular way the problem domains associated with the position as a whole is addressed.

³Porter M.E. Competitive Advantage: Creating and Sustaining Superior Performance. New York Free Press 1985.



What has all this got to do with IT? Knowledge domains can be described in terms of the number of different items of information which have to be processed within them - their information content, and the frequency with which these items of information are changing - the information intensity. For example:



Thus, as the vertical axis of the knowledge intensity of design assumes increasing importance in the quest for competitive advantage, so too does the knowledge intensity of the business. Which is where IT comes in. IT is a key enabling technology for knowledge domains in the exercise of design control.

IT as a key enabling technology

One way of understanding the role of IT in businesses is in terms of three *orders* of use. "Orders" because each order builds on and subsumes the previous one as the role of IT in the business is extended:

1. first order automation, in which business processes are 'wired into' the technology (e.g. invoicing).
2. *second order* co-ordination, in which the relationships between processes are programmed by the technology (e.g. purchasing); and
3. *third order* learning, where the technology supports processes between people (e.g. messaging).

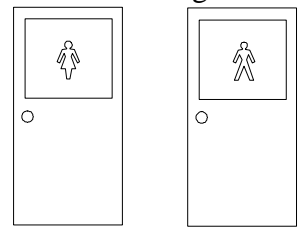
In each case design control is being exercised over some aspect of the business, but only in the third order use does it become dynamic. Understanding the nature of this 3rd order use will cast light on the use of IT as an enabling technology for exercising design control over the organisation of the business.

The following diagram shows a relation between the word "tree" and a picture of a tree representing the experience of a tree *itself*. First order uses of IT relate to the processes in the business in very much the same way as the word does to the experience: the business is the model, and the objective is to replace processes in the business by processes in the computer. This tends to create a division between IT people and 'business people' as the one seeks to model the activities of the other. By showing up the inefficiencies and inconsistencies of current business processes, this approach makes it possible to take costs and people out of a business and make it more efficient.

tree



The next diagram shows the doors to two identical rooms with identical fittings. The only difference between the doors is the icons (they could be words) on the doors - "Men" and "Women". We begin to see here that the way in which the experience of what lies behind the doors may not reflect some meaning taken to be 'intrinsic' to the word; but rather that the meaning is the consequence of a social agreement to operate 'under' what the words/icons make different. This brings us to a second order use of IT in which the model used by the managers managing the business has to define the business instead of vice versa. Instead of systems analysts, we now need business analysts who can enter into the world of the manager to understand what is needed.



Working with managers in this way involves getting managers to describe their work in terms of their goals, key tasks, key interactions with other managers, and critical success factors. From this dialogue a number of things can be elicited:

- the dimensions on which information is organised. From these can be derived the definitions of data, data sources, and the logical relationships between the data.

- the priorities and performance indicators used by the manager to tell 'what is going on'. These can be mapped back into the data to define the ways in which the data needs to be structured to turn it into information.
- the timeframes of activity the manager is working in and the different levels of work implied by these and their associated information needs.

CASE technologies can be used to formalise the definition of the data dictionaries and information structures elicited in this way; and from there they can be mapped onto (for example) desktop systems and client server architectures. The key difference however for a 2nd order process lies in the way it is based on managers' models of the business. Two difficulties can arise at this point:

- the results of the process take too long to be implemented and get cast in stone. In effect they are treated as if they were the result of a 1st order process by the IT department.
- the demands of meeting the lower level (and therefore more frequent) requirements crowd out the higher level requirements. As a result the strategic opportunities are missed for re-defining business scope and relationships

This points towards two key problems which have to be faced in moving to a 3rd order approach.

Firstly, the tendency for the IT world to become divorced from the business world so that there are two parallel structures with their own processes. In effect, the Business Development process can be faced with two parallel worlds, each with its own distinct architecture and culture: a world of data and a world of business processes. (Object-oriented techniques were designed to overcome this by ensuring that both architectures existed in relation to the same world - one in which 'objects' were defined by reference to the manager's reality.) This multiplies the complexity which has to be managed when any change is considered, and can make a 3rd order process impossible other than by adopting a 'green field' approach and starting all over again from a different place. Needless to say, this can be a very expensive option if it involves throwing away significant investment in existing systems.

Secondly, the different levels of use of IT - integration, process redesign, redesigning business relationships and redefining business scope - impact on different levels of structure in the business itself - structures defined by people, jobs and assets. These are corresponding levels which reflect the strategy of the business:

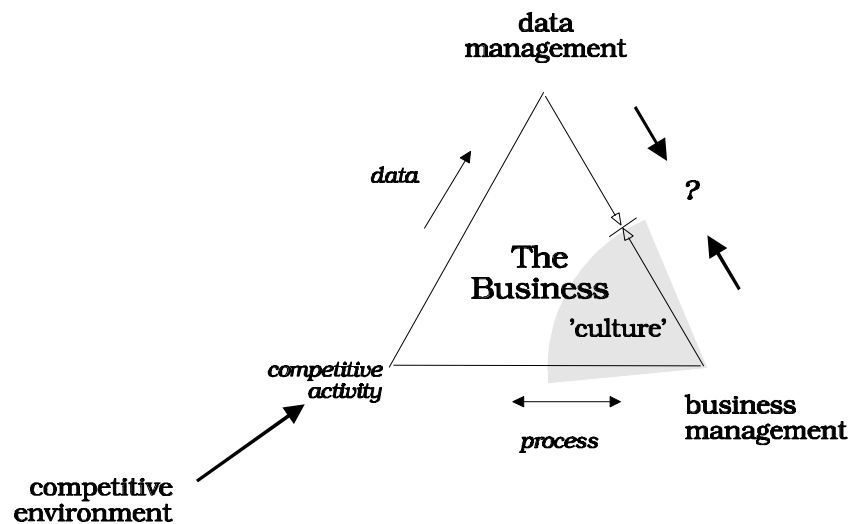
- the business structure of people assets and activities
- the business organisation - the way the people, assets and activities are used
- the market organisation - the current role of the business in a network of supply-demand relationships
- the demand organisation - the matrix of factors determining what is ultimately constitutive of sustainable competitive advantage.

Exercising design control over the business involves addressing the relationships between all four levels. This means that managers have to question their own models of the business. Without a critical process for doing this, and explicit support for doing so, this is unlikely to happen. As a result the learning opportunities offered by 3rd order uses of IT are lost.

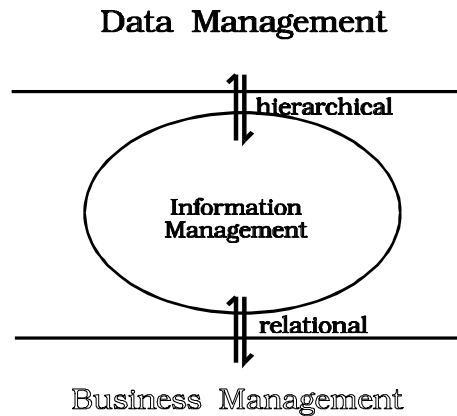
A 3rd order approach therefore requires a different kind of alliance between the use of IT and Business Development Processes. This means being able to conceive of uses of IT which go beyond the limits of existing definitions of the business. What kinds of processes are needed to achieve this?

Going beyond the limits

How are we to think of this relation between IT and the business? In the diagram below, the business encounters its competitive environment in *competitive activities*. These activities generate two kinds of consequence. On the one hand they generate *data* which then become subject to Data Management - with all its supporting technologies. On the other hand they generate *processes* (and are themselves the result of processes) which are subject to Business Management. The way in which this splitting of activity into data and processes comes together in business management processes reflects the particular way-things-are-done in the business - its culture. Thus there are questions not only about how data- and business-management processes encounter each other, but also how this encounter interacts with the culture.



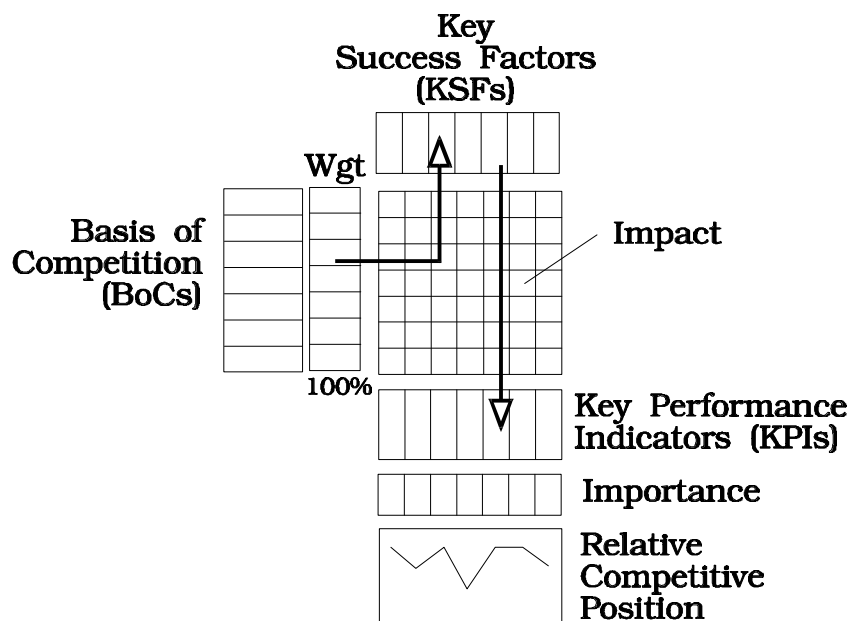
If we look at this encounter more closely, we can see it in terms of an interaction in which the two processes combine as information management. On the side of data management this interaction will tend to be more hierarchical, because of the ways in which the data itself is ultimately structured; and on the side of business management it will be relational, reflecting the nature of the business processes between people.



Another way of understanding the 1st, 2nd and 3rd order approaches to the use of IT, therefore, is that in 1st order approaches it is the logic of data management which dominates information management, whereas in 2nd order approaches it is the logic of the business management which dominates. In 3rd order, however, the two interact in relation to something else - the pursuit of competitive advantage. It is achieving this balance between Data Management and Business Management in relation to a third question which is so difficult. How is this balance to be brought about?

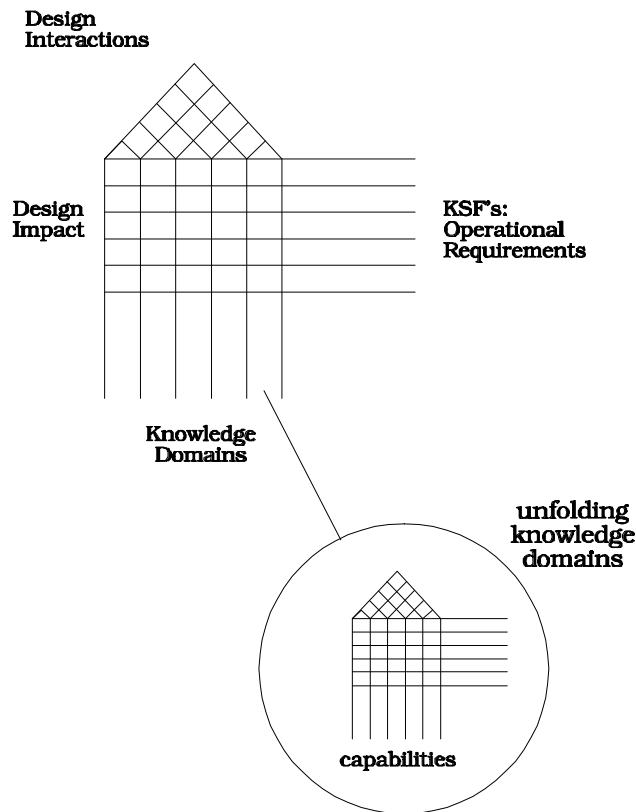
Achieving a balance

We can describe the way the business encounters its market environment in terms of Bases of Competition (the basis on which clients choose) which translate into Key Success Factors (what forms of 'performance' are required to be competitively successful) - which can themselves be defined in terms of 'measurables'. This 'icon' represents a basic pattern of thinking in which what the customer wants (BoCs) are translated into Key Success Factors which can be used ultimately to define the relative competitive position of the business on each of the KSFs:



Such a process is concerned with understanding the logic of what the customer wants from the business - the demand logic.






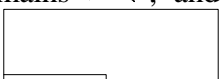

In order to translate this demand logic into a design logic for the business, we need to define the particular ways the business has of configuring knowledge domains in relation to each other and in relation to their underlying capabilities in order to be able to produce the product/service defined by the demand logic in terms of KSFs . The knowledge domains are chosen because of their *design impact* on the position desired, and the knowledge intensity of the business's competitive position arises because of their *design interactions*.



This second process gives us an understanding of the design problem being faced by the business, but it rests on assumptions about the forms of practice implied by these knowledge domains - about how the business actually works.

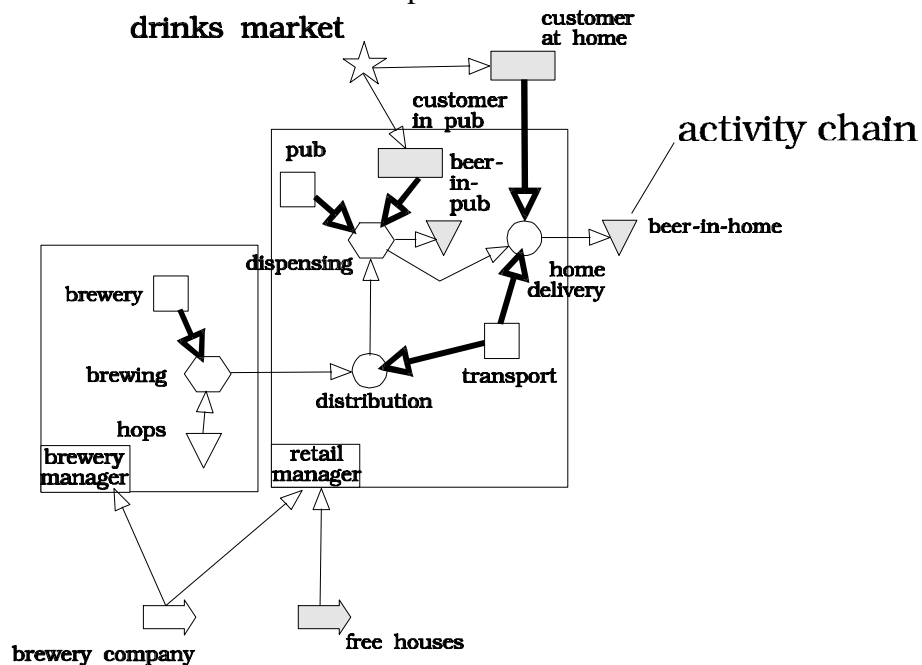
The two 'icons' represent processes in which we can formalise the BoCs/KSFs associated with a particular demand logic which we have chosen to adopt, and "translate" it into a definition of the knowledge domains which are critical to delivering on the KSF 'measurables' - the design logic. In effect we have defined a demand logic and design logic for the business. We now need to translate this design logic into interactions between processes of data and business management in a way which allows us to address the interactions and tensions between them.

Analysing Business Processes

We can approach this by asking what is the structure of activities involved which reflect a particular design logic. We can construct a high-level definition of the activities . We could begin to elaborate a map by adding in the different capabilities - people and/or assets - which are used in those activities ; the intermediate and final products and services ; and the customer situations which condition the use of those products and services . We could then identify in more detail which of the customer situations 'showed' the needs arising from particular problem domains ; and which capabilities were under the span-of-control of which jobs  falling within which business propositions .

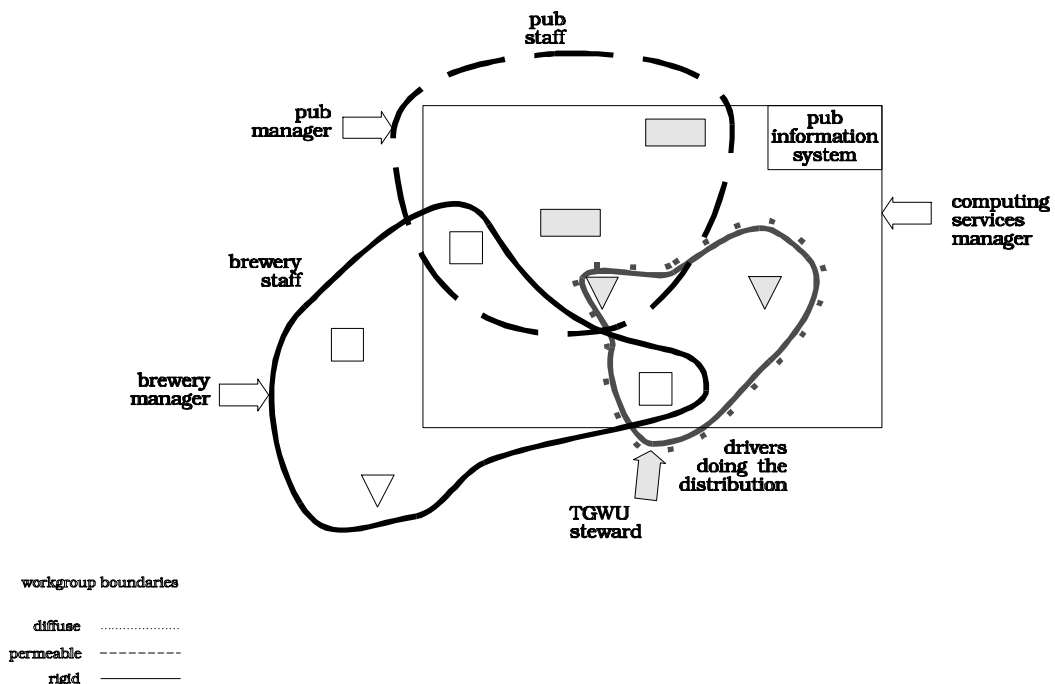
The process of identifying and joining this lot up enables a group of managers to develop a shared sense of the logic of the structure of activities defining how the business works. In effect we have a form of business process analysis linked to our design logic, and which begins to describe the specific nature of the knowledge intensity of the business. In the example below, based on a brewing business, these symbols joined up would look something like this:

This is a definition of the relationships between the Business Processes which



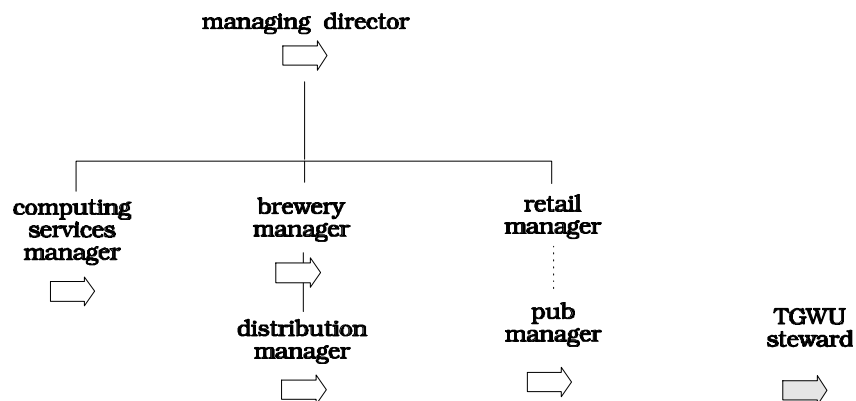
have to be managed by the business. But there is also a Data Management task. In working as a business, all these activities have to be made to work *in relation to each other*. Now we are looking at one or more knowledge domains, depending on how these coordinating processes are organised. If we approach this in terms of wishing to understand the coordinating effects of information management, then what are the workgroup practices which will make this possible? Taking each product/service,

capability, and customer situation, we can describe the information management processes which hold them in relation to each other. In this analysis, the 'objects' will have data and processes associated with them; and the processes of coordination will be a combination of systems (the square enclosure) and interactions between people (the other groupings). These information management processes span the complexity of the business, and the people and/or systems identified are those under whose span-of-control the product/services, capabilities and customer situations operate. The result of this would look something like:



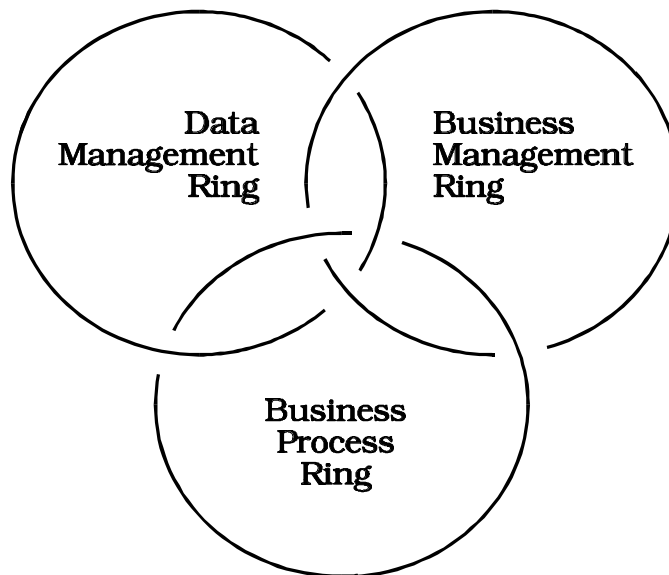
What this process is doing is giving us firstly a way of thinking through the logic of the Business Processes which constitute the value chains, and how they relate to the prime positions associated with those value chains; secondly, a way of thinking about the nature of the Data Management processes and systems - the knowledge domains needed to maintain the design integrity of those prime positions. There is then a third way of looking at what is going on in terms of the Business Management - the formal organisation which overlays on both of these other analyses:

Taken together, these three analyses enable us to think through how each form



of management affects the other. By working these three analyses in parallel, we are in effect defining the specific ways in which the balance is being held. Approached like

this, the Business as a whole is being approached as if it was a **knot** . This knot is made up of three rings. Breaking any one of these rings means that the other two come apart:



Thus the approach described above brings all three rings into a relation with each other. Harnessed by an effective critical process within the business, this provides the supporting descriptive methodology which makes a 3rd order process possible.

Frame-based approaches

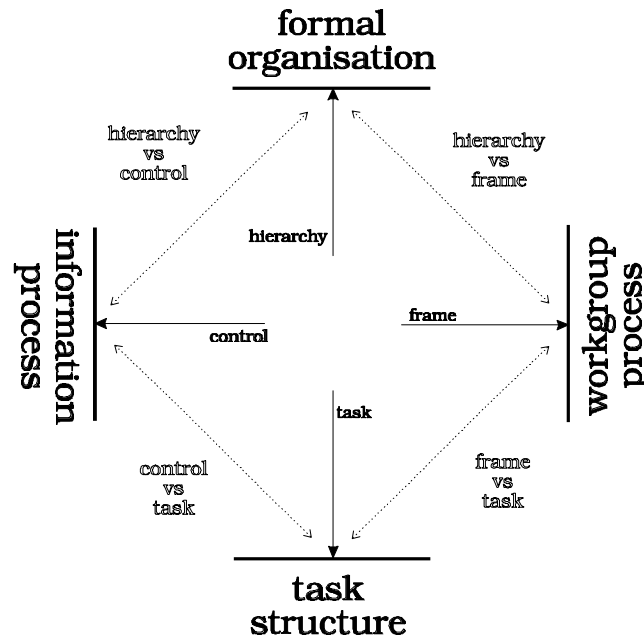
The two axes of value chain complexity and knowledge intensity correspond to two different ways of understanding competitive advantage itself:

- **positional** advantage, based on the sustainability of a given position on a value chain; and
- **relational** advantage, based on the ability to create positional advantage through an capability to exercise design control

The difference between these two approaches can be understood in terms of the relationship between the forms of analysis above. The analysis of the data management process has been split into two:

- the workgroup processes taking place between people in holding the integrity of (framing) the task processes; and
- the information management processes holding the integrity of the data

The result is a four-way balance of hierarchy, task, frame and control:



The difference between the two approaches can now be seen as

- in positional strategies, the vertical axis is dominates the horizontal; and
- in relational strategies, the horizontal axis dominates the vertical.

These two approaches to competitive advantage are reflected in different approaches to leadership and organisation. In his paper on "Great Strategy or Great Strategy Implementation", William Egelhoff⁴ contrasts the managerial requirements associated with these two approaches to strategy:

	Competing through Superior Strategy	Competing through Superior Implementation
Leadership Style	Leader is the great strategist	Leader is the great organiser and motivator
Management Focus	Management focus is external	Management focus is internal
Basis for Excellence	Competitive advantage is based on the actions of the few	Competitive advantage is based on the actions of the many
Careers	Company experience is less important than industry experience	Need long careers and intensive training within the company

Egelhoff points out that competing through superior strategy works only over a limited period of time in an industry's life. Unless a business can drive out all competitors while it possesses the superior strategy and raise entry barriers sufficiently to keep them out, it must at some point change its competitive style to one of stressing superior strategy implementation. Thus it is important to recognise that both modes of competing - creating a unique and superior business strategy and excelling at strategy implementation - constitutes strategic behaviour. It is not that one is strategic while the other is tactical and operational.

⁴Sloan Management Review Winter 1993

If we look at the organisational implications of these two approaches to strategy⁵, then we find that whereas the Superior Strategy approach must rely on hierarchical structures to carry the strategy into practice, the Implementation approach focuses on the quality of the workgroup practices themselves:

	Hierarchy-based	Frame-based
Channels of Communication	Highly structured controlled information flow	Open, free flow of information
Authority for decisions	Based on formal line management position	Based on expertise of individual in addressing problem
Work emphasis	On formal, laid-down procedures	On getting things done, unconstrained by formality
Participation	Superiors make decisions with minimum consultation and minimum involvement of subordinates	Participation and group consensus frequently used

Conclusion

The difference between hierarchy-based and frame-based approaches is the same difference which emerged at the beginning of this paper when considering the implications of "raising the ceiling" on the way the logic of business processes are examined. Thus the role of IT in supporting Business Development Processes is intimately bound up with the assumptions underlying leadership, organisation and the nature of competitive advantage itself. Perhaps it is not so much that IT needs to be understood as an integral part of being strategic as the other way around: being strategic needs to be understood as an integral part of IT. The paper suggests that this can be achieved by using approaches which emphasise the dual nature of Information Management, and linking this to the design and demand logics of the business.

⁵"Juggling Entrepreneurial Style and Organisational Structure - How to get your act together. D.P. Slevin and Jeffrey G. Covin. Sloan Management Review 43 Winter 1990