Challenging the paradigm of the process enterprise: a case-study analysis of BPR implementation

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Abstract

The dangers of functional organisation structures are well documented and have led to the advocation, particularly by exponents of BPR, of the process enterprise paradigm. This paper reports the results of case-study research that was conducted in order to explore the operational changes resulting from re-engineering companies along process, rather than functional lines. Increased market responsiveness, improved collaboration between functions and alignment of organisational objectives were some of the perceived benefits of the new process structures; but some disadvantages were also identified. Duplication of functional expertise and increased operational complexity resulted in an escalation of costs, the emergence of horizontal silos, inconsistency in the execution of functional decisions between processes, and general erosion of the efficiency of the operations network. These preliminary findings point to some possible contingencies of organisational design, suggesting that process structures may be conducive to the realisation of differentiation strategies, whilst functional structures may offer benefits to cost leaders. It is further proposed that matrix structures may be appropriate for companies adopting mixed strategies; however, it is envisaged that a more flexible approach to organisational design, based on a network rather than a matrix paradigm, could stimulate new developments in the future quest for strategic and structural alignment. © 2002 Elsevier Science Ltd. All rights reserved.

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1. Introduction

BPR is a radical form of organisational re-structuring based on process, rather than functional lines. It aims to improve the interface between the diverse organisational activities which support the provision of products and services to the customer, with a view to improve business performance and market responsiveness. Exponents such as Hammer [1], Hammer and Champy [2] and Davenport [3] emphasise the importance of adopting revolutionary new approaches to organisational design, maintaining that the small, incremental improvements, characteristic of Kaizen [4] and the 5-S approach [5,6], are often inadequate to sustain the dramatic performance improvements which are required to compete effectively in aggressive markets.

The advocates of BPR have consistently promoted the concept of the process enterprise, although it is often unclear as to whether process structures should replace functional hierarchies or be overlaid onto them in a matrix structure. This paper presents the findings of case-study research into the perceived benefits and costs of process structures, compared to the traditional functional hierarchies. The research is based on two case studies of large UK organisations which adopted process-based organisation structures during the 1990s, and reflects on the perceived impact, both positive and negative, of this structural change on the companies’ operations.
2. BPR and the process enterprise

Ishikawa [7] was one of the first quality management exponents to highlight the dominance of vertical, functional structures and the lack of horizontal integration, with his well-known textile analogy in which the “warp” of an organisation structure is seen to be more robust than the “weft”, resulting in defective fabric. Harrington [8] contends that the internal focus of functions and departments, and the failure to manage the interfaces between them is a central contributor to what he sees as the declining competitiveness of US industries. He regards process improvement as the route to improved business performance and claims that “The truth in process improvement is: if you bisect any process into its individual activities and then optimise the individual activities, the process as a whole will not operate as effectively as it could” [8, p. 24]. The dysfunctional effects emanating from poor organisational integration were also exposed in Hammer’s seminal paper (1990) in which he argued that conventional structures:

... are breeding grounds for tunnel vision, as people tend to substitute the narrow goals of their particular department for the larger goals of the process as a whole. When work is handed off from person to person and unit to unit, delays and errors are inevitable. Accountability blurs, and critical issues fall between the cracks. Moreover, no one sees enough of the big picture to be able to respond quickly to new situations. Managers desperately try ... to piece together the fragmented pieces of business process. (p. 108)

Furthermore, poor intra-organisational handovers typically reduce customer responsiveness and service quality; as Bounds et al. [9] argue, “managers must realise that work that flows up and down the chains of the hierarchy does not create value for the customer” (p. 303).

In response to the problems created by strong vertical structures, the paradigm of the process enterprise has become a critical element in the BPR toolkit for driving radical change: “a process enterprise is the organisational form for a world in constant change” [10, p. 118]. Indeed an empirical survey of management perceptions of BPR implementation by Lu and Yeh [11] suggests that managers believe that the more dynamic the business environment, the more desirable a process enterprise is likely to be. Hall et al. [12] and Grover et al. [13] also conclude from their empirical studies that a formal BPR organisation structure, with broad, end-to-end processes, is a necessary condition for successful BPR implementation and any real impact on bottom-line performance.

At this point it is perhaps worth making the distinction between business process re-engineering and other related approaches. First, business process redesign [14] focuses on redesigning processes which may straddle departments and functions but which do not necessarily result in the radical re-design of an entire organisation; and second, the more recent concept of business network re-design, BNR [15,16], which takes BPR beyond organisational boundaries to consider re-design of entire operations networks. In this paper, the focus is on business process re-engineering, implying radical organisational re-structuring; specifically, the implications of re-structuring along process lines will be explored from an operations perspective.

While advocating the process enterprise, there is a noticeable absence in the BPR literature of a single, shared definition of the term “process” [17]. Davenport and Short [14] define processes as “a set of logically related tasks performed to achieve a defined business outcome” (p. 12), whilst Hickman’s [18] definition emphasises the inter-dependence of these activities: “a logical series of dependent activities which use the resources of the organisation to create, or result in, an observable or measurable outcome, such as a product or service”. Childe et al. [19] define a process more simply as “a series of continuous activities or operations which are performed upon a commodity”, where a commodity might be conceptual or material.

Despite these definitional ambiguities, the paradigm of a process enterprise dominates BPR methodologies and practice guidelines: an organisation structured on the basis of key processes which cut across the traditional functions, and which are usually differentiated in terms of product markets, production volumes or customer types [9]. At its most radical, BPR implementation would involve eliminating the traditional functions and adopting a “pure”, exclusively process-based structure. Indeed, the advocates of BPR, particularly Hammer, are notorious for prescribing radical change and the dismantling or “obliteration” [1] of old, out-dated structures to meet the dynamic demands of business environments in the new millennium.

However, in his more recent works Hammer does not confine his critique of conventional structures to the traditional functional hierarchies: “The power in most companies still resides in vertical units—sometimes focused on regions, sometimes on products, sometimes on functions—and those fiefdoms still jealously guard their turf, their people, and their resources” [10, p. 108]. Furthermore, Hammer and Stanton explicitly state that implementing BPR does not necessarily entail dismantling the vertical structures: fundamental change “doesn’t mean, though, that existing vertical units such as functional, regional, or product groups are simply disbanded—in even the most process-focused businesses, vertical units continue to play essential roles” (p. 111). Womack and Jones [16] also see the value of functions, whilst at the same time promoting the need for effective management of value streams that cross functional and company boundaries: “In the so-called learning organisation, functions are where learning is collected, systematised, and deployed. Functions, therefore, need a secure place in any organisation” (p. 94).

This recognition of function-based value points to the adoption of matrix structures rather than “pure” process structures, and, indeed, a rather less radical approach to
organisational re-engineering than the rhetoric with which Hammer is usually associated.

Consideration of the illustrative examples of processes which are proposed in the BPR literature adds another twist to this narrative on the paradigm of the process enterprise. Hammer and Stanton [10] describe the BPR implementation of Duke Power, an electricity company in Carolina, which, prior to 1995, had a Customer Operations function led by four regional unit heads; this was replaced by five core processes. Interestingly, the five processes named below hardly represent the sort of radically new, cross-functional processes one would expect Hammer and Stanton to be promoting; indeed, they could cynically be seen as simply new names for the traditional functions (added in brackets):

- Develop market strategies (marketing).
- Acquire and maintain customers (sales).
- Provide reliability and integrity (operations/maintenance).
- Deliver products and services (operations).
- Calculate and collect revenues (accounting).

In their review of the BPR literature, Childe et al. [19] argue that “there is substantial commonality of processes across industry types” (p. 33) and identify what they believe to be six generic processes, which again appear to map onto the traditional functions:

- Direction setting process (corporate planning).
- Order flow process (production operations and distribution).
- Service process (service operations).
- Capital markets (finance).
- Labour markets (HRM).
- Technology markets (IT, maintenance services).
- Factor markets, defined as the processes of make-or-buy decisions and supplier development (purchasing).
- Product/service markets, defined as the process which maintains the awareness of potential customers (marketing).

Moreover, the processes identified by the authors in both these examples are quite different to the product, volume and customer focused process types identified by Bounds et al. [9]. To add to the complexity, the concept of the customer process, as distinct from business process, has played a major role in the growing service operations literature, and a number of techniques have been developed to facilitate customer process mapping (for example, service blueprinting [20,21] and service transaction analysis [22]). Meanwhile, Paul Allaire, CEO of Xerox in the 1990s, proposes yet another three-way typology of processes [23]:

- management processes, which set the organisational context and style of working;
- business processes, which are large, cross-cutting collections of activities like product design, order fulfillment and customer service;
- work processes, which focus on how the work gets done, for example, activities such as prototype development, finished-goods warehousing, purchasing.

So Allaire regards traditional functional activities (like warehousing and purchasing) and vertical managerial reporting lines as processes; bringing the debate on vertical and horizontal structures full circle! Indeed this creates quite a different picture from the “warp and weft” model originally envisaged by Ishikawa, where processes would be more narrowly defined as Allaire’s business processes.

The definitional confusion which is manifest in the literature makes serious debate about the relative benefits and costs of functional versus process structures at best paradoxical, at worst contradictory.

In response to the promotion of BPR during the 1990s many organisations have radically re-structured their organisations on process lines but there is a dearth of literature which empirically evaluates the effects of implementing process-based structures on operations. Many authors have highlighted the need for further research into the potential dangers of radical re-structuring, including the trade-offs between vertical and horizontal structures [24], as well as Imai’s [4] earlier concerns that long term sustained quality improvements are not achieved when management efforts are focused on large scale, revolutionary changes. Moreover, for those organisations who have already invested in the implementation of TQM, the potential conflict between BPR and TQM [25] and the danger of throwing the baby out with the bath-water and losing the organisational learning gained through years of incremental improvements, are also major concerns. Meanwhile others (e.g. [26,27]) contend that BPR and TQM are different but compatible approaches to process improvement.

Much of the debate about the effectiveness of BPR has centred around this comparison between BPR and incremental change initiatives such as TQM and Kaizen, and around the question of their mutual compatibility. Yet a key tenet of the BPR movement seems to have gone largely unquestioned, namely that process structures need to be strengthened, and, some would argue, replace the old functions. There is a clear need to conduct empirical studies of companies implementing BPR in order to explore and understand the relative benefits and costs of process, versus functional structures; as well as consider whether “pure” process-based structures are feasible, and indeed preferable, to matrix structures, which overlay processes onto existing functional structures. Such studies are necessary not only to advance academic frontiers in management, but also for practitioners who need to understand the implications, advantages and disadvantages of their long-term structural decisions. The research questions to be addressed in this paper
are therefore as follows:

1. Are the new structures adopted in the wake of BPR implementation genuinely process based, or are they overlaid onto the traditional functions in a matrix structure?
2. Do the new structures actually result in the erosion of functional barriers, and have new organisational barriers emerged?
3. What is the perceived effect of these new structures on quality and cost?

This paper reports a study of the implementation of BPR in two large UK organisations, with a view to the development of an understanding of the benefits, costs and risks associated with process-based organisation structures. Both companies implemented BPR in an attempt to move away from the functional structures which they believed reduced the responsiveness and quality of service provided to customers. It was believed that the previous organisation structures were only as efficient as the weakest links in the customer process which, typically, cut across several different functional areas.

3. Research methodology

A latitudinal case-study methodology was considered to be appropriate in view of the highly qualitative nature of the data to be collected, and the in-depth knowledge of the organisations which would be required in order to understand the implications and operational changes resulting from the new process structures. The usual apologies are therefore offered for the limited sample of case studies on which this research is based, with the defense of the requirement for rich data resulting from the observation of complex social phenomena in widely differing organisations [28,29]. Indeed, there have been repeated calls for more qualitative case-study-based research in operations management (see for example, [30,31]), despite the clear difficulty of drawing generalised conclusions from a small number of instances. Given the breadth and depth of understanding required to develop an understanding of the company-wide impact of re-engineering, coupled with the resource constraints of the research, two large organisations were investigated in different industries, with a view to “extending emergent theory” [32] on the process enterprise.

The case studies were based on the UK division of a large, multi-national electronics company, and one of the UK’s largest retail organisations, drawing on multiple sources of evidence and combinations of qualitative data [32]. The principle sources of evidence were in-depth interviews with managers and examination of archival and secondary data.

3.1. Interviews

Semi-structured interviews were conducted with at least 10 managers and staff in each organisation, with each interview lasting between 1.5–2.5 h. Interview guides (described later) were used to structure the interviews, to ensure the comprehensiveness and triangulation of the data. The interviewing process started with at least two senior managers in each organisation, to obtain their account of the business environment and the company’s competitive strategy; a description of the organisation structures before and after re-engineering; and the perceived reasons for re-structuring on process lines. Both organisations employed internal consultants who were directly involved in the implementation of process re-engineering; at least one of these managers were interviewed in each company. These were followed by interviews with operations managers and staff in order to document the operational changes to the service delivery system and the management of the operations network, as well as their perceptions of the impact of these operational and structural changes.

In line with McCutcheon and Meredith’s [33] recommendations for ensuring the reliability of case information, all interviews were taped, subject to the permission of the interviewees (in fact, only one interviewee expressed reservations about this practice and in this case detailed notes were taken during the interview). This ensured that the traceability of data was maintained throughout the research process.

The aim of the research study was to document the perceived changes brought about in the wake of the new process structures; no claims are therefore made for the objectivity of these perceptions and an extensive analysis of changes in organisational performance was not undertaken. However, managers were asked for objective evidence when they made claims for improved or reduced performance, so that, for example, perceived changes in financial performance or customer satisfaction were substantiated with performance data. A limitation of this research, therefore, is that the evaluation is based on management and staff perceptions of the changes resulting from organisational re-structuring; however, according to Meredith et al. [30], “people’s perceptions of reality” form appropriate data for operations management research which is based on an “interpretive” paradigm. Nevertheless, the conventions of research triangulation were observed in order to ensure internal validity [28,33], and specifically to see to it that the perceptions being documented were supported with evidence, rather than being purely subjective, personally held views.

3.2. Archival and secondary data

The interview data were supplemented and corroborated against a wide variety of internal documentary evidence and secondary data. Annual reports and external promotional materials, in-company reports and newsletters, strategy statements and documented organisation structures were studied to throw light on the strategic imperatives of re-engineering. Operating manuals, training materials,
process maps, performance reports and other internal documents were examined to throw light on the operational changes brought about by the new process structures. Some flexibility, what Eisenhardt [32] refers to as “controlled opportunism”, was exercised in admitting archival and secondary data since reporting procedures and data availability inevitably varied between the two companies.

3.3. Data analysis

The semi-structured interviews were based on detailed interview guides which were used to facilitate an understanding of the business environment and the strategic drive for re-engineering; the differences in organisation structure pre- and post-engineering; the BPR implementation process; and the operational changes resulting from BPR. The interview guides also contained a range of questions on the perceived impact of re-engineering upon the following:

- organisational culture,
- relations with customers and suppliers,
- intra- and inter-departmental communication,
- employee involvement and morale,
- product and service delivery,
- control and performance measurement systems,
- business performance.

The interview guides were used (a) for triangulation purposes (i.e. to ensure internal consistency of the data within each company), and (b) to ensure comprehensiveness and comparability of the data collected in the companies. Interviewers were, however, given the discretion to further probe interviewees, rather than adhere rigidly to set questions. Moreover, the interviews were necessarily open-ended [33] so that the interviewer could adapt the questioning in response to the characteristics of the organisation and service delivery systems under scrutiny.

The content of each interview was documented in the form of structured notes, using the interview guides to provide the outline structure. This enabled the researchers to continually monitor and review coverage of the research issues in both companies, and identify data gaps to be addressed in further interviews with the same or other employees as necessary. Descriptive case-study protocols were then prepared on the basis of the structured notes. From the case studies, profiles could be drawn of the perceived benefits, costs and disadvantages of implementing the new process structures, and these were compared and contrasted with the tenets of extant process enterprise theory. These findings would then stimulate a process of inductive theory development which would, hopefully, facilitate the generation of research propositions that could be empirically tested on the basis of a much larger sample; although it is envisaged that future testing of such theory is likely to remain case study based.

4. The electronics company

The electronics company had implemented a TQM programme for over a decade and had already established widespread quality management systems throughout the company which were well embedded in the organisation culture. However, the company’s management was aware that its performance measurement systems remained functionally based. Moreover, despite many attempts to improve inter-functional communication, there was little day-to-day communication between staff of different functions at ground level; and it was believed that customer service suffered due to poor handovers between functions, with customers typically interfacing with at least seven different functions.

In pursuit of a differentiation strategy and with the aim of increasing the company’s responsiveness to the customer, the organisation re-structured along process lines in the mid-1990s. The functional directors of sales, marketing, and after-sales service were eliminated from the structure. Six regionally based Customer Business Units were introduced with full operational responsibility, each with its own General Manager and each with its own teams of functional expertise. A process structure was overlaid onto this structure, based on four Strategic Business Divisions, each division covering a different product and market segment.

The new structure was perceived by the management of the company to bring a number of benefits. The CBUs were more focused on the market requirement of their industry sectors, resulting in improved key account management. Communication between the functions was perceived to improve and the CBUs became more business oriented. Because the CBUs were so much smaller, there was more communication and closer collaboration between the functions within each CBU. Functional organisation structures were flattened and the span of management control increased significantly. For example, a manager would be responsible for around 100 service engineers, or 10 self-managed work groups. The work groups were highly empowered, the engineers being responsible for job scheduling, work load management, individual appraisals and even salary reviews. All these changes, brought about in the wake of the new process structure, are in line with Hammer and Stanton’s [10] best practice recommendations, as well as Majchrzak and Wang’s [34] guidelines on cultivating collective responsibility.

There were, however, some perceived costs to the new structure, particularly with regard to the performance of the service function. Service response times were perceived to have dropped for a number of reasons. First, CBU managers came from a sales rather than a service background and their focus was therefore on sales growth rather than service excellence, despite the fact that the latter brought in around 60% of annual revenues. Secondly, reward schemes were based on sales volume and
service engineers’ bonuses, which had previously been based both on productivity and customer satisfaction, were now based entirely on internal measures of performance (response times, weighted jobs per day and cost of materials). The customer survey used to routinely monitor customer satisfaction with service engineers was discontinued. Some managers also took the view that the span of control was too great and that self-managed work groups were beginning to manage workloads and schedules to suit themselves rather than with a view to cost efficiency.

In the late 1990s the organisation underwent another major re-engineering which reverted to a functionally based structure. With aggressive cost competition from competitors who were driving costs down through product standardisation and modular design, cost control became a major strategic focus. Sales and marketing, and service directors were re-introduced and there was a directive to reduce manning levels across the organisation. It was considered that managing the service function centrally would bring benefits in terms of cost efficiency and tighter utilisation of resources. So engineers’ discretion was reduced, scheduling was centralised and team managers were introduced, each in charge of 20 engineers, to manage the teams and conduct appraisals and salary reviews. The operations network was also re-engineered with increased outsourcing in both the service and sales functions.

5. The retail company

The retail organisation managed a large operations network of suppliers, warehouses and retail stores. Again it was believed that the traditional functional structure of the organisation reduced the responsiveness of the network and led to high inventory levels. This structure was perceived to be jeopardising the company’s strategy of differentiation and improved customer loyalty. The company decided that a product structure reflecting customer buying habits would facilitate greater market sensitivity and a more responsive stock management system.

Three business units based on the core product lines were defined and each business unit was composed of seven product categories, each taking responsibility for managing supply, purchase and distribution of products to the retail stores (refer to Fig. 1). Functional expertise was duplicated within each product category. This represented a dramatic and fundamental power shift within the organisation from the functional heads of operations, purchasing and logistics, to the product category managers. Product category managers would negotiate floor and shelf space allocation for their various products, store managers having very little discretion over store layout, location of products or product mix. Each of the product categories had profit responsibility; whilst store management performance was based on sales volumes.

At the time of interview, managers and staff in all product categories were being moved into new purpose-built headquarters, representing state-of-the-art office architecture, and designed to promote transparency and accessibility between departments. Open plan layouts made even senior managers much more accessible than before and different types of work area facilitated different modes of working. This was very much in line with Majchrzak and Wang’s [34] contention that changing physical layouts “can encourage people to share information about one another’s work and try out new ideas openly” (p. 98).

The objective, and indeed the perceived advantage, of the new product category structure was that managers began to plan stores on the basis of customer needs. Rather than grouping products together in the traditional way, different products required by the same market segment would be displayed together. The focus became meeting the customer requirement rather than simply making products available for customers to pick off the shelves. However, the conflicting interests between category and store managers often proved difficult to resolve. Whilst the category managers’ priorities for product location would be product profit margin, store managers might wish to display low margin products in key locations with a view to maximise customer footfall, or to encourage customers to follow a particular route through the store. The amount of negotiation that was required between category managers increased to the point that a special unit was created to resolve space allocation issues between product categories and stores.

It was also perceived that the duplication of functional expertise between the product categories was not only costly, but also resulting in inconsistencies in decision-making between product categories. It was found that many managers from different categories were negotiating with the same suppliers, because single suppliers offered product ranges which cut across product categories. The contracts agreed with a single supplier differed widely both in cost and delivery terms, and the quality of relationships with the same supplier differed significantly between product categories. This was considered to be detrimental to the company’s image in dealing with suppliers, as well as being expensive and inefficient.

Gradually, as the category managers became increasingly sensitive to the differing needs of different market segments, there was a move towards further segmentation, resulting in a proliferation of product categories. Two years down the line there were 40 different product category managers, each with their own functional teams. The operational complexity implicit in this structure was giving rise to complex decision-making processes, and long lead times for certain key operational decisions. For example, product and space management strategies at store level were taking 14 months from inception to customer purchase. The turn of the century saw a further re-structuring of the organisation, retaining the product categories, but drastically reducing their number and increasing the control of certain centralised units.
6. Discussion

There follows a discussion of each of the three research questions postulated above in the light of the research findings.

(1) Are the new structures adopted in the wake of BPR implementation genuinely process based, or are they overlaid onto the traditional functions in a matrix structure?

The processes defined by both the electronics company and the retailer were based on market segmentation and product type. But are product categories really processes? Certainly, Bounds et al. [9] would accept that they are, as they argue that processes are defined either in terms of product markets, production volumes or customer types. However, Hammer and Stanton [10] argue that processes can cut across, not only functional silos, but also regional or product silos. So are the product categories in the retail company really product silos rather than cross-functional processes?

This raises the question how, in a large retail network of stores, processes should be defined when different customers, with myriad requirements, take different routes through stores offering tens of thousands of different products? Clearly, a process in this context cannot be an individual customer process through the store. However, we can trace a business process which starts with procuring the product from the supplier, then moves product through distribution channels and warehousing, through to the stores, and ends with delivery to the customers. If the process is modelled in this way, then presumably different families of products can be treated as different processes which cross the different functions of purchasing, warehousing, distribution, etc.; and the new structure can be regarded as a product-based process structure. Certainly, a marked shift in power was perceived within the organisation as a result of the re-structuring: a shift from the functions to the product categories, with functional staff now reporting to product category managers.

In the electronics company, the Strategic Business Divisions were processes, based on product and market segmentation, which cut across the CBUs, which, in Hammer and Stanton’s terms, would be seen as regional silos. Thus, in effect we have a process structure overlaid onto a regional structure, but a structure in which the functional departments are again much weaker since the staff are distributed amongst the CBUs.

So whilst both companies had introduced processes based on market segmentation, neither had “pure” process structures (i.e. they were not structured exclusively along process lines). But were the new processes overlaid onto the traditional functions in a matrix structure? In the electronics company, at an organisational level the processes did not cut across functions, but across regionally based business units, so the functional structure was not retained in its traditional form. However, at business unit level there was, in effect, a matrix of accountability to processes and functions. But the size of the business units meant that staff from different functions worked more closely together and focused on the same set of objectives; thus reducing opportunities for functional rather than organisational optimisation [2,8]. Similarly, in the retail organisation functional structures existed within the product categories; however, the smaller organisation size meant that staff from different functions worked much more closely together, functional barriers were much less in evidence and there was greater alignment of business objectives between the functions.

To conclude, neither of these companies had simply overlaid the new processes onto a traditional functional structure, even though at an operational level matrices of process and functional accountabilities were in evidence.
Management in the electronics company believed that the creation of CBUs had resulted in the erosion of functional barriers and that sales, marketing and service managers and staff communicated and collaborated much more effectively than they had done before. However, CBUs were operating quite independent of each other and it was observed that this was leading to some inefficiencies in the scheduling of service. Arbitrary geographic boundaries between CBUs meant that it was not uncommon for a service engineer to serve a customer who was geographically closer to an engineer on a neighbouring patch. Decentralisation of the service function was therefore perceived to have led to a reduction in cost efficiency.

In the retail company, it was found that barriers emerging between the product categories resulted in widely differing contracts being negotiated with the same suppliers. This was leading to inconsistencies in supplier costs and delivery agreements, and was considered to be both inefficient (by reducing the effect of volume discounts) and generally bad for the company’s public image in dealing with suppliers. This points to the problem raised by Hammer and Stanton [10] of deciding between process diversity and process standardisation. In this company the number of processes proliferated over time but there was an apparent failure to standardise on the management practices and systems implemented across the product categories.

Hammer and Stanton’s [10] recommendation for tackling this critical issue is far from helpful: “Our rule of thumb is that companies should standardise their processes as much as possible without interfering with their ability to meet diverse customers’ needs”. Clearly this is easier said than done! The retailer’s solution in this study was to simplify the process structure (by drastically reducing the number of product categories) and introduce centralised units to improve coordination between processes, reducing, in effect, the power of the product category managers and creating a matrix of accountability. At the time of the interviews, it was too early for managers to comment on the effects of this next phase of re-engineering.

To conclude, management of both companies perceived functional barriers to have been eroded as a result of the implementation of process-based structures. However, both companies also witnessed the development of new organisation boundaries in the wake of the new structures, which were leading to poor intra-organisational communication, and inconsistency in management practices and performance. Horizontal silos were indeed emerging.

(2) Do the new structures actually result in the erosion of functional barriers, and have new organisational barriers emerged?

Managers in both companies believed that their organisations had become more customer focused and market responsive with regard to sales, although there was evidence in the electronics company to suggest that after-sales service levels had deteriorated. This deterioration was, however, partly explained in terms of there being stronger representation of sales in the management of the business units and the changes to the internal reward systems (i.e. not a direct result of re-organising on process lines). Nevertheless, the lack of focus on functional excellence may be seen to be a negative bi-product of the process structure. Indeed, since 60% of this company’s revenues were generated by the service function, functional excellence (in terms of after-sales service) was a value-adding activity from the customers’ perspective. It appeared that the process-based structure was in fact undermining function-driven value.

Both companies recognised that the process structures had costs associated with duplication of functional expertise in different parts of the organisation. Moreover, in the electronics company the decentralised scheduling of services also led to reduced cost efficiency. For this reason both companies had, to very different degrees, withdrawn from their process structures, and reverted to centralisation of some decision-making. The electronics retailer had radically re-engineered the organisation structure for a second time within 4 years, returning to a clearly functional structure; the retailer simplified its product category structure and introduced specialist central units to support the negotiation between category managers and store managers, and to ensure consistency in performance across the organisation.

The changes to and from functional- and process-based structures also reflected the changing strategic priorities of the two companies. Both the retailer and electronics company had introduced process structures in the wake of differentiation strategies. The electronics company’s return to a functionalised structure was a response to the need to improve cost efficiency and to focus on the high margin business, with a trend towards outsourcing the low technology, low margin business. Centralisation of the service function and increasing outsourcing of low value service contracts was seen to support the cost competitiveness the company was trying to achieve. The retail company had seen an escalation of costs with the proliferation of product categories and cost-based competition eventually necessitated a return to a simplified category structure.

What this suggests is a contingency approach to organisational design based on the chosen competitive strategy [35]. Study of these companies suggests that process-based structures may be appropriate to support differentiation strategies, when the processes are perceived to be adding value for the customer, such that the cost of functional duplication implied by the new structure is justified and absorbed. The process structures increase, moreover, the flexibility of the organisation to respond to changing customer requirements.

(3) What is the perceived effect of these new structures on quality and cost?

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To conclude, management of both companies perceived functional barriers to have been eroded as a result of the implementation of process-based structures. However, both companies also witnessed the development of new organisation boundaries in the wake of the new structures, which were leading to poor intra-organisational communication, and inconsistency in management practices and performance. Horizontal silos were indeed emerging.

Managers in both companies believed that their organisations had become more customer focused and market responsive with regard to sales, although there was evidence in the electronics company to suggest that after-sales service levels had deteriorated. This deterioration was, however, partly explained in terms of there being stronger representation of sales in the management of the business units and the changes to the internal reward systems (i.e. not a direct result of re-organising on process lines). Nevertheless, the lack of focus on functional excellence may be seen to be a negative bi-product of the process structure. Indeed, since 60% of this company’s revenues were generated by the service function, functional excellence (in terms of after-sales service) was a value-adding activity from the customers’ perspective. It appeared that the process-based structure was in fact undermining function-driven value.

Both companies recognised that the process structures had costs associated with duplication of functional expertise in different parts of the organisation. Moreover, in the electronics company the decentralised scheduling of services also led to reduced cost efficiency. For this reason both companies had, to very different degrees, withdrawn from their process structures, and reverted to centralisation of some decision-making. The electronics retailer had radically re-engineered the organisation structure for a second time within 4 years, returning to a clearly functional structure; the retailer simplified its product category structure and introduced specialist central units to support the negotiation between category managers and store managers, and to ensure consistency in performance across the organisation.

The changes to and from functional- and process-based structures also reflected the changing strategic priorities of the two companies. Both the retailer and electronics company had introduced process structures in the wake of differentiation strategies. The electronics company’s return to a functionalised structure was a response to the need to improve cost efficiency and to focus on the high margin business, with a trend towards outsourcing the low technology, low margin business. Centralisation of the service function and increasing outsourcing of low value service contracts was seen to support the cost competitiveness the company was trying to achieve. The retail company had seen an escalation of costs with the proliferation of product categories and cost-based competition eventually necessitated a return to a simplified category structure.

What this suggests is a contingency approach to organisational design based on the chosen competitive strategy [35]. Study of these companies suggests that process-based structures may be appropriate to support differentiation strategies, when the processes are perceived to be adding value for the customer, such that the cost of functional duplication implied by the new structure is justified and absorbed. The process structures increase, moreover, the flexibility of the organisation to respond to changing customer requirements.
Table 1
Comparison of organisation structures

<table>
<thead>
<tr>
<th></th>
<th>Functional structure</th>
<th>Process structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits</td>
<td>Efficient functional performance</td>
<td>More responsive to market requirements</td>
</tr>
<tr>
<td></td>
<td>Consistency in functional decision-making</td>
<td>Facilitates market segmentation</td>
</tr>
<tr>
<td></td>
<td>Functional excellence</td>
<td>Improved communication and closer collaboration between functions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alignment of functional objectives</td>
</tr>
<tr>
<td>Limitations</td>
<td>Functional silos</td>
<td>Costly duplication of functional expertise</td>
</tr>
<tr>
<td></td>
<td>Poor customer handovers between functions</td>
<td>Emergence of horizontal silos</td>
</tr>
<tr>
<td></td>
<td>Optimisation of functional rather than organisational performance</td>
<td>Inconsistency in the execution of functional decisions between processes</td>
</tr>
<tr>
<td></td>
<td>Lack of focus on end-to-end process performance and throughput times</td>
<td>Loss of functional excellence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proliferation of processes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increased complexity in terms of network design</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increased operational complexity</td>
</tr>
<tr>
<td>Value added</td>
<td>Value is added within the areas of functional expertise</td>
<td>Value is added along the process</td>
</tr>
<tr>
<td>Strategic match</td>
<td>Supports a cost leadership strategy</td>
<td>Supports a differentiation strategy</td>
</tr>
</tbody>
</table>

Functional structures may be more appropriate when a cost leadership strategy is being adopted, allowing the company to take advantage of the cost benefits of centralisation and functional specialism. The heavy and often unquantified costs of increased operational complexity which can be incurred in process-based organisations (as in the retail company) may be at odds with the strategic objectives of cost leadership. A further practical imperative for managers implied here is the need to identify where in the organisation value is being added: in the functional centres of excellence or in the flow of activities along the process.

This raises the question as to what structures best support those companies adopting mixed strategies, which Porter [35] viewed with scepticism, but which are a reality in many markets where high-quality products and services at low cost are the expected norm. It is perhaps in these organisations that matrix structures come into their own. The potential advantage of matrix structures in this strategic context is that the relative strength of the horizontal and vertical structures can be adapted to changes in the business environment and in strategic direction (as advocated by Hammer and Stanton [10]). The danger, of course, is that the matrix structures become complex and unwieldy, and that multiple reporting and ambiguity of accountability can result in an unresponsive and inflexible organisation.

The warp and weft model of organisational structure which is implicit in the matrix may, in fact, be constraining management thinking here. With his three types of processes, Paul Allaire (Garvin [20]) conveys the idea that processes straddle organisations both horizontally and vertically, both within, between and across the traditional functions. Viewing organisations as networks of activities may therefore be more realistic than the rigid “warp” and “weft” model. The future challenge then is to develop tools which enable managers to identify the key value-adding sequences of activities, or processes, within the network, so that they can apply themselves to improving the effectiveness of those processes to the benefit of the organisation as a whole. It may be hypothesised that the successful organisations are those whose strategic response to changes in the business environment include a recognition of the changing sources of value within the organisational network, and the ability to adapt the relative strength of the processes in the light of strategic change.

7. Conclusion

This preliminary research has facilitated the identification of a number of benefits and limitations of functionalised and process-based organisation structures as summarised in Table 1. There has been a tendency for the BPR literature to focus on the benefits of process structures, without recognising their costs, and without countenancing the advantages of traditional functional structures. What this study reminds us is that value for the customer can be added not only along the process but also within functions (as was the case in the electronics company).
Porter [35] stressed the importance of identifying the value-adding activities along cross-functional processes and value chains; this study reminds us of the opportunities to increase value within the functions. The lesson to be learned here is not that functional structures are best after all, but simply that functional and process structures have different benefits and limitations. The dysfunctional effects of each structure are minimised only when there is a match between the organisation structure and the competitive strategy, and this implies the ability to identify where in the organisation value is added for the customer.

The BPR literature has been criticised for not being “context sensitive” [17]. This paper proposes a contingency approach to the implementation of BPR and the choice of functional versus process-based organisation structures. It appears that the cost advantages of functional structures may make them suitable for companies adopting cost leadership strategies, whilst the increased customer focus facilitated through process structures may render them appropriate to realise differentiation strategies. For companies adopting mixed strategies, matrix structures may be appropriate, so long as these structures can be made flexible to respond to the changing dynamics of process and functional-based value. Further research is now required to test these contingencies in different industries and competitive arenas.

It is further proposed that Ishikawa’s “warp and weft” model of organisation structures should not constrain future management thinking. A move away from the disjunction between vertical and horizontal structures towards a network perspective, whereby processes traverse in complex ways across the organisational fabric, promises to be a liberating perspective on organisational design. The challenge for the future is to develop guidelines of best practice for strengthening and improving the processes that add value, recognising the need to be able to adapt the relative strength of different processes in the light of strategic change. Ironically, this implies not so much the radical, step changes of different processes in the light of strategic change. Iron-

References