



How Radical Was IT-Enabled BPR? Evidence on Financial and Business Impacts

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Abstract. Many large claims have been made about the payoffs that can and must be made from business process reengineering (BPR). Information technology is usually ascribed a critical role in BPR success. There is still a shortage of detailed information on the BPR phenomenon in terms of costs and results. This paper uses data from 168 UK-based organizations surveyed in the BPR heyday (1994–1996 period) to establish the size of expenditure, types of costs, and the types and size of benefits anticipated and experienced among these organizations. The majority were found to be “aiming low and hitting low,” though there was evidence of a small minority of organizations achieving something approaching what could be described as “breakthrough” results. The reasons for these results are discussed in detail and are related to the wider literature.

Key Words: evaluation, information technology and change, reengineering, business process management

1. Introduction

Business process reengineering (BPR) was widely adopted by organizations in the 1990s, though in recent years the fad status of BPR has been increasingly replaced by newcomers such as knowledge management, core competencies and benchmarking. In a four-year study of 3,319 organizations' use of management tools Rigby (1997) showed BPR adoption peaking during 1995 and falling away thereafter. Previously in the United States a 1993 Deloitte and Touche survey found the average Chief Information Officer involved in 4.4 reengineering projects (Moad, 1993). In the United Kingdom a 1992 survey of Times Top 100 companies found nearly two-thirds claiming to have adopted process innovation (Haughton, 1992). Price Waterhouse found that during 1993 around 69% of the several hundred client companies surveyed undertook some form of BPR (Price Waterhouse, 1994). Such figures probably reflect survey weighting toward big corporations. For example, a more random-based British survey found that only 27% of all respondents in 1993 were undergoing or had completed BPR programs, but almost all with BPR activity were large companies (Preece and Edward, 1993). However, all surveys showed increasing BPR activity throughout 1993 and 1994. This is underlined by the present survey which found 59% of the organizations surveyed planning or doing BPR in 1994 and early 1995. The real take-off point for BPR in the United Kingdom would seem to have been 1993 and 1994 when 65% of BPR programs in our sample began.

A major issue that arises from surveys, case study research, and also more anecdotal evidence is what exactly has been the payoff from all this activity labeled BPR. The more popular management literature contains many startling claims (e.g. only see Buday, 1992; Hammer and Champy, 1993; Johansson, McHugh, Pendlebury, and Wheeler, 1993;

Ligus, 1993). However, reports of more detailed research bring in several notes of caution. For example, Harvey (1994) found dramatic improvements in some companies. Thus Pilkington Optronics cut manufacturing lead times from 15 to 7 months, raised delivery to schedule accuracy from 10 to 97%, cut WIP orders from 9,000 to 900, raised purchasing on time from 60 to 90%, and cut design changes from 3,500 to 2,000. In Western Provident profitability was four times higher following reengineering than at any time in its history. Reuters brought new information services delivery down from weeks to days, and even to minutes for existing customers. However, research has found such examples to be few and far between. Preece and Edwards (1993) found 53% of BPR respondents in a position to identify types of benefits arising from BPR. Most companies claimed the benefits to be reasonably large, particularly for cost reduction, reduced fire-fighting, and higher productivity, though the quality of product as perceived by customers did not rate particularly high. However, the survey sample was small and the economics and impact of BPR were not its major focus of attention. Rigby (1997) reported that overall satisfaction with management tools was only mildly positive (B-), but that satisfaction with BPR was below this.

Another strand of reportage and research suggests that BPR often fails to live up to expectations. Hammer and Champy (1993) estimated that 70% of the reengineering efforts they had observed had not ended successfully, though they themselves admit the figure was not rigorously arrived at. Subsequently Hammer and Stanton (1994) suggested that the 70% figure “implied nothing about the expected rate of success or failure of subsequent reengineering efforts. . . . reengineering has no natural failure rate.” Also, the figure probably reflects their own focus on radical “breakthrough,” and therefore high-risk projects. However, other surveys have shown reengineering projects consistently falling short of their expected benefits. As just one example, a 1993 North American survey showed significant corporate disappointment on BPR projects whether objectives related to improvements in customer service, process timeliness, quality, reduced cost, competitiveness, new and improved technology, or sales and revenue impacts (Moad, 1993). In another example Hall, Rosenthal, and Wade (1993) studied 20 BPR programs in detail and found only six achieving an average of 19% reduction in business unit costs. Performance improvement in 11 of the cases measured less than 5%, whether evaluated in terms of change in earnings before interest and taxes or in terms of reduction in total business unit costs.

Another strand of case study research suggests that considerable complexity and risk are involved in major reengineering projects, with a few gaining large advantages but in specific circumstances, and through combinations of identifiable factors (see e.g., Grover and Kettinger, 1995; Willcocks and Currie, 1997; Willcocks, Currie, and Jackson, 1997).

In the face of this bewildering set of claims and findings, derived from research or experiences conducted and analyzed by various interest groups with varying degrees of rigor, there would seem to be a pressing need for academic research that looks in detail at whether BPR has represented yet another false dawn in the history of management fads and fixes, as claimed, for example, by Grint and Case (1998), Hilmer and Donaldson (1996), and Shapiro (1996). In particular, the present survey was designed to enable investigation into the extent and scope of BPR, the role of information technology (IT), and the anticipated and actual cost and performance outcomes that typified the UK experience up to early 1996, during BPR's heyday. The survey also looked at a range of other factors—including time

length of BPR projects, major barriers, critical success factors, role of management and external consultants, and moves to process thinking—but for reasons of space these are not reported here.

2. The research base

The survey was carried out between July and September 1994, with an additional set of follow-up questions sent out to respondents in 1995, and again in 1996. A questionnaire was prepared based on a review of the literature and previous studies including detailed case study research by Bartram (1992), Harvey (1994), and Willcocks and Smith (1994). The initial questionnaire was piloted among 15 practitioners and academics in the BPR field. The revised questionnaire consisted of a mixture of 34 closed and open questions covering details of the respondent's personal and organizational background, reengineering strategy, extent of reengineering programs, costs and benefits, design and implementation issues, and key lessons. A sample of 1,200 organizations was selected from the contact database of Business Intelligence, an independent research firm. The database contained over 20,000 names and addresses of managers in private and public sector organizations and adequately represented the major sectors of the economy. It was accepted that the sample selected would reflect biases in the database in favor of middle and senior management and medium to large organizations. The database was also European-based but with a heavy bias toward UK-located (though often foreign-owned) organizations. The sample was selected randomly, initially, but two criteria were observed in the subsequent sample selection process: the proposed respondents, by their titles, could be expected to have detailed knowledge of business process reengineering activities in their organizations, or would know someone who did. Second, given that our preference in the survey was to gain a cross section of experiences, and also to avoid double-counting, the sample would attempt to avoid duplication of responses from the same organization. The questionnaires were sent out with covering letters, definitions of key terms used in the questionnaire, and prepaid, reply-addressed envelopes.

The first mailing attracted 226 replies before the cut-off date of the end of September 1994. This represents a response rate of 18.8% and compares favorably with other mailings carried out under similar circumstances (e.g., Preece and Edwards, 1993 attracted a 5.1% response rate). Of these responses, 58 were discounted as containing insufficient information, or information insufficiently reliable for the purposes of research. This left a final, usable response of 14%, representing 168 organizations. Aware of the dangers of a self-selection bias in the sample we investigated the reasons for non-response. We took a random sample of 110 non-respondents for purposes of a telephone interview. We gained 102 responses. The overwhelming reason cited for non-response to the survey was lack of time (87 cases). The second reason given was lack of interest or not doing BPR (20 cases). The other reasons cited were: never received the questionnaire (3 cases), and addressee no longer has a BPR role (2 cases). Given that the original sample adequately covered the main sectors of the economy, we were satisfied that the sample was not compromised by the non-response rate.

A second and third mailing of follow-up questions to respondents was carried out in 1995 and 1996. It focused on those 100 organizations planning or doing BPR and attracted

a response rate of 55%. These respondents included all organizations in the sample that had completed BPR projects, thus giving highly useful detailed information on success rates, costs, and types and levels of improvement experienced.

The respondents occupied senior or upper middle management positions—25% were IT managers/directors; 21% were directors or managing directors in their organizations; 33% could be described as general/senior managers from various line functions while 13% had a specific title related to BPR, for example, process change manager, BPR or quality manager. The remaining 8% of the respondents were managers in advisory or consultancy positions within their organizations. A limitation of the research findings is, of course, that a wider sampling within each organization could well reveal divergences of opinion arising from different interests, perspectives, and information available to respondents at different work levels. At the same time we found the sampling of informed practitioner responses, based on their BPR experiences, producing a great deal of pertinent findings and lessons. Furthermore, much of the information sought was factual, and respondents tended to indicate where reliable information was not available, or through internal evidence or assessing against previous findings in our case study research, we could make a judgment on the information's plausibility and usefulness.

The survey findings derive from organizations in manufacturing ranging from heavy industrial, through electronics/computing to light consumer goods; from most major sections of central government, and some representatives from nationalized industry/services and local government; and from a large range of service industries. Therefore, most major areas of economic activity are represented in the sample, though small businesses are under-represented.

The type of organization in the sample also represents a broad spectrum. Independent firms are 33% of the total; subsidiaries are 30%; groups 18%; public sector bodies 10%; and holding companies 5% (other types = 4%). When measured by turnover or budget, most of the organizations in the sample are medium or large, with 62% having revenues of £100 million or more per year. This reflects several factors: first, the bias in the sample selection process, and second, the probability that small businesses were less inclined to respond because, as several other surveys found, they were less likely to be undertaking BPR. This is supported by our own finding that small businesses that did respond were much less likely to be planning or doing BPR than medium or large organizations in the sample (see below). Given the response rate, size of sample, and the spread of organizations and economic activities represented, it can be seen that the research base is a potentially rich source of information on the extent and nature of business process reengineering activity in the United Kingdom.

3. The scope of BPR activity

We found no particular sectors disproportionately taking to BPR relative to other sectors. Financial services, manufacturing and IT and telecommunications accounted for some 58% of BPR programs in the UK, reflecting the size of those sectors. The BPR programs in utilities (10% of the sample) were frequently triggered by recent privatization. Given the large size of the public sector, it seemed to be undertaking fewer BPR programs (6% of the sample)

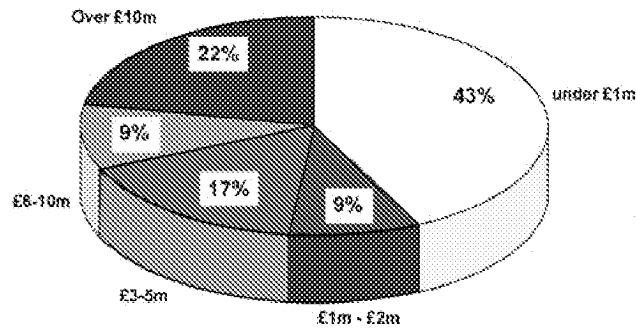


Figure 1. The size of spending on BPR.

proportionately than other sectors. This may be related to uncertainties surrounding possible privatization in certain areas, for example, rail and the post office; to the large number of other changes and restructuring taking place, for example, in the health service and in central government, and also to less clear applicability or perceived need in certain operations. We also found that medium-sized organizations were less likely to be doing BPR than large organizations.

The size of expenditure on BPR programs is revealed in Figure 1. Given that our sample covers medium and large organizations, it is surprising to see that some 43% of the organizations undertaking BPR in its heyday are each incurring related expenditures of under £1 million. Of course, the smaller organizations in the sample are concentrated in this group, but at the same time about a third of the organizations spending up to £2 million on BPR can be classified as large organizations. This would suggest that in many such cases, radical forms of reengineering were not being undertaken. At the same time it can be seen that in many cases—all very large organizations—organizations were spending in excess of £6 million on BPR. The highest spenders we found were a utility at £60 million, a retail organization at £40 million, and two financial service organizations at £50 and £20 million, respectively.

What were reengineering programs attempting to cover? A distinction can be made between process improvement—an incremental, bottom-up, narrow change to an existing process achieved within a function over a short time period and reengineering or business process reengineering defined to survey respondents as involving the radical redesign of all, or some, of an organization's business processes to achieve step-change improvements in performance. In the survey we developed this further for respondents into a typology that represented increasing radicalism, moving from single process redesign, through multiple process redesign, single major business model change to multiple integrated business model changes, including developing business network processes extending to customers, suppliers, and strategic allies. We found that 12% of the organizations were concerned with single process redesign, 46% with multiple process redesign, 36% with total internal process redesign and 36% with redesigning processes linking the organization with customers and suppliers. Clearly, most organizations were doing much more than single process redesign, but what degree of redesign was being undertaken, which processes were being

reengineered, and could we conclude whether radical redesign or process improvement was the norm?

We provided for the respondents a classification (based on work subsequently published in Earl (1996)) of the types of processes to be reengineered. The types of processes being reengineered can be classified into core (central to business functioning and relating directly to external customers); support (the “back-office” of core processes); management (those by which firms plan, organize, and control resources); and cross-boundary (those extending beyond organizational boundaries).

Respondents suggested that 83% were reengineering core processes, 59% support processes, 73% management processes and 51% cross-boundary processes (treated by respondents on a wider definition than processes linked with customers and suppliers). Again, these figures would suggest a high degree of business reengineering activity. However, how radical was this activity?

The dominant motif running through the respondents’ reengineering objectives was that of cost reduction combined with improved customer service. Sixty-one percent of the respondents explicitly stated these as their prime objectives, with figures of 20–50% cost reductions often stated, though there was little quantification of the degree of customer service improvement. Eleven percent of the organizations espoused a “transformation” agenda—for example, to become “best in the class”; “make step change improvements—the quantum leap,” while 15% stated that their objectives were predominantly about cost reduction and improved efficiency. A further 8% sought what could be called a “balance” or “integration” objective, that is, achieving a balance of control, service, and efficiency, or, as one respondent put it: “an integration of people, culture, technology and processes to achieve a business strategy.” Others had a mix of objectives that embraced cost reduction and/or customer service but included items such as reduction in supply lead times, culture change, management information enhancement, and achieving control and consistency in the credit process. One organization was using BPR to facilitate the recent merger of two separate businesses. Thus, in terms of objectives few respondents seemed to be aiming for the transformation of their businesses, while most were aiming for improvements, albeit often labeled “radical” or “dramatic” in costs and levels of customer service, and/or in some other area of the business.

A particularly revealing set of findings on the radicalism or breakthrough nature of the BPR activity surveyed concerns core processes. The majority (70%) of the organizations undertaking reengineering were dealing with between one and five core processes. However, a detailed analysis of respondents’ listings of core processes raises doubts whether many of these processes could be considered “core” in the sense in which most commentators use the term, that is, high business impact and relating directly to external customers. Our own analysis would suggest that just under half of the processes were not core in this sense, and that in many cases respondents were in fact rejigging existing functions and processes to achieve incremental improvements, rather than thinking organizationally in process analysis terms as a basis for radical redesign. This finding is supported by later evidence on the relatively low levels of expected and actual improvements experienced through BPR activity. On this basis it may well be that the respondents looking to reengineer five or more “core” processes were not at all overly ambitious; indeed our

evidence is that, with the exception of some very large programs, most were simply carrying out a process improvement rather than a radical “breakthrough” strategy.

A lack of radicalism is also noticeable in the reengineering of support processes. In fact 41% of the organizations with BPR programs were not dealing with support processes at all and a further 44% were reengineering only between one and three support processes. Management processes seemed to be gaining higher attention. A third of the organizations planning or doing BPR were reengineering more than five management processes. Only 27% were not looking to reengineer management processes; the other organizations fell between these two extremes. The relative popularity of reengineering management processes possibly related to managerial familiarity with the problems of such processes and the degree to which improvements would have a fairly direct impact on the managers’ own ability to do their jobs. Another reason for the relative popularity of management processes as targets for reengineering seems to be the type of improvements sought—again, the vast majority of the management processes described seemed to be existing ones to which improvements were sought rather than management processes identified as a result of a radical rethink of how the organizations needed to be reconfigured and managed.

At the beginning of 1995 the reengineering of cross-boundary processes was the least popular BPR activity. Nearly half the organizations planning or undertaking BPR were uninterested in reengineering such processes. It may well be that such reengineering lay in the future for many organizations, which preferred to get internal processes improved first, had not thought through the possibilities, or had either not identified appropriate technology to underpin the process, or doubted their ability to implement the technology.

This section, then, reveals an ostensibly great deal of BPR either planned or being undertaken, but produces findings that question whether most of these organizations in the 1994–1996 period were undertaking radical redesign as opposed to a process improvement route. Cost reduction together with improved customer service—albeit often declared as needing to be radical, dramatic, or significant—dominated among the declared objectives for BPR. Business reengineering for radical breakthrough as portrayed by Hammer and Champy (1993) emerged in aspiration and practice as a distinctly minority pursuit as far as the evidence here is concerned. These conclusions receive further endorsement below when the expected and actual improvements gained from BPR activity are considered.

4. Was information technology critical?

Most commentators point to IT being a critical enabler of business process reengineering (see e.g., Bartram, 1992; Davenport, 1993; Hammer and Champy, 1993; Heygate, 1993; Keen, 1997). But has this really been the case, and is there a strong relationship between the utilization of IT and the BPR payoff? Information technology emerges as an important enabler of BPR activity and support for redesigned processes. Fifty-eight percent of the respondents rated the IT role in enabling radical process redesign as “critical”, 32% rated the IT role as “marginal” while 10% said IT had no role to play in their BPR projects. For even more organizations IT played an important role in supporting redesigned processes. Sixty-eight percent of respondents rated IT process support for BPR as “critical” in their organizations.

IT, or rather its management, also figured as one of the top ten critical success factors for BPR programs, while technical deficiencies together with poor IT management were also experienced as seventh out of the ten most significant barriers to BPR. Many respondents saw it as a mistake to think of IT as a driver of BPR. Rather, these respondents saw IT as a critical enabler. The following comments are typical of this view:

“The IT is essential but often tends to take the lead in the project” (Senior Manager, European Bank).

“The way that the IT systems are lagging behind is quite positive. . . . This way we are becoming much more clear about the systems and information we really need” (Nursing Manager, Major UK Hospital).

We checked to see if IT was regarded as a critical element in the success of the top “best performers” that had completed BPR programs. This group consisted of the “break-through” organizations and those organizations gaining significant profitability, revenue, and cost reduction improvements as a result of BPR (see below). These came mainly from manufacturing sectors, including packaging, electricity and gas manufacture, and aerospace but also, business to business services, financial services, and IT consulting. In practice, over 75% of the top 30% “best performers” in BPR did see IT as critical to both enabling radical process redesign and supporting redesigned processes. Only one organization recorded IT as not at all useful but commented that: “it should have been but the area most resistant to BPR is IS (information systems).” Over half of the top best performers were incurring more than 40 percent of their total BPR spending on IT, but for the others IT spending was average or below for the type of process being reengineered. This finding is based on a small sample but supports research findings elsewhere that there tends to be little or no correlation between size of IT spending and organizational performance (Willcocks, 1994; Willcocks and Lester, 1999). In BPR as elsewhere, it has been the management of IT rather than the size of IT spending that has counted.

Finally, what types of technology were being used? Thirty-eight percent of the organizations planning or doing BPR mentioned specific, usually several, information technologies. Of these nearly a third mentioned groupware, a quarter cited EDI, and a fifth workflow. Several technologies were specific to a sector, for example, EPOS scanning on store tills and computer-aided engineering. Other technologies mentioned as important in BPR activity were client server, integrated packages, enterprise modeling, the “virtual office”, e-mail, expert systems, EIS, open distributed applications, pen-based systems, imaging, and databases. Among the BPR “top performers” the most cited technology was groupware followed by databases and then e-mail. The data are not strong enough to establish correlations, if there are any, between the type of technologies used and performance improvements experienced as a result of BPR.

5. The cost of BPR programs

In this section we analyze the anticipated costs for all organizations planning or undertaking BPR. The results provide some pattern to the types of costs that were being aimed for by

UK organizations across sectors. To apply some yardstick of actual against expected costs, we also identified 38 organizations in our sample that had completed BPR programs. These organizations had undertaken 67 BPR projects (there may be more than one project per BPR program) covering 287 processes in total. In the figures below we compare the anticipated costs in all organizations planning or doing BPR against the actual costs incurred across our sample of 67 completed projects. This comparison has some obvious limitations that need to be borne in mind throughout, but can provide some useful pointers.

5.1. The main cost elements

We first focus on anticipated and actual costs incurred in BPR programs. An indication of size of spending on BPR was given above. The limitations of these estimates should be recognized—they represent a mixture of anticipated and actual expenditures by organizations at different stages in their BPR activity. To get some sense of whether the organizations were incurring higher or lower BPR costs than originally anticipated, 30 of the 38 organizations that had completed BPR programs were contacted subsequent to the survey. In 18 cases the actual costs were higher by 20–60%, in seven cases the costs were said to be much as anticipated, while in five cases respondents found they were unable to separate accurately the total BPR cost from other costs being incurred in the organization.

In the remainder of this section we look at the main costs anticipated and actually incurred, and the percentage of total costs for each type of process they represent. The findings for core processes only are shown in Figure 2. It should be noted that for simplicity in presentation the figure shows average percentages. We indicate extremes in certain categories wherever the average figure conceals a noteworthy finding.

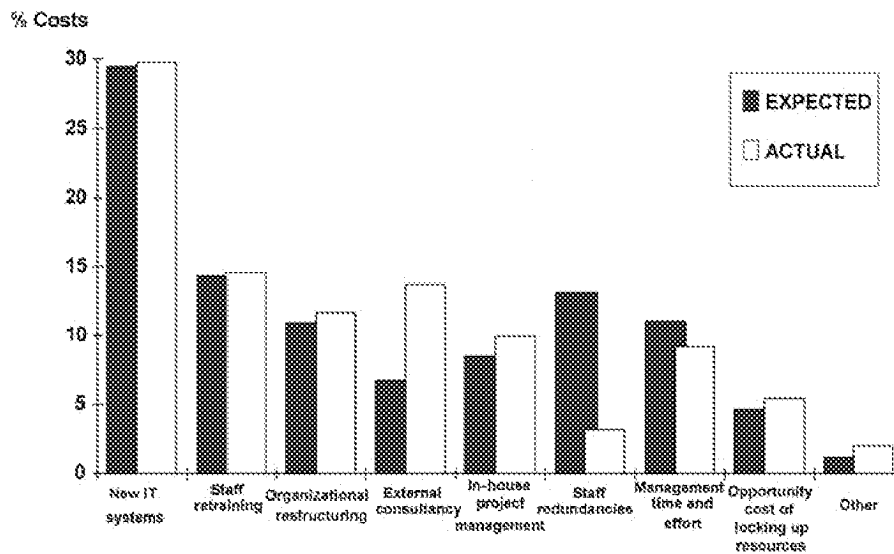


Figure 2. Core process costs.

BPR costs were found to be concentrated in eight main areas—new IT systems, staff retraining, organizational restructuring, external consultancy, in-house project management, staff redundancies, management time and effort, and opportunity costs of locking up resources. Across all types of processes four summary points stand out:

- (1) *Staff redundancies*—the single issue most often identified with BPR, particularly among employees—were in practice 10–20% lower as a percentage of total costs than was being anticipated in organizations still undertaking BPR. For all completed BPR projects and all types of processes staff redundancies averaged less than 5% of total costs. This raises questions about whether BPR is achieving the job losses it is often portrayed as being introduced to effect. Certainly, staff redundancies were an insignificant cost in those BPR projects completed by 1996. This could mean that radical forms of BPR were not in fact being adopted, or at least, their radicalism was being lost—on the job front at least—along the long path to implementation. There is internal evidence in the survey findings to suggest several additional explanations in practice, though these cannot be quantified. It may well be that organizations were relocating staff rather than making them redundant, or that organizations were looking to improve business performance, partly through lower costs, with much the same staff numbers rather than achieve more or the same performance with less staff. The figures could also indicate that organizations were separating off BPR from redundancy programs. Several respondents who had completed or were some way through BPR remarked that in retrospect they would not have introduced BPR and redundancy programs at the same time. Other organizations could have been taking account of political concerns and achieving redundancies before or after BPR, while using it as the real means of enabling the organization to achieve work with fewer job numbers.
- (2) *Actual external consultancy* costs were 7–15% higher as a percentage of the total costs than were anticipated by organizations still undertaking BPR projects. It would appear that external consultants were being widely used. On completed BPR projects consultancy fees represented an average of 12–15% of total costs. The figures, of course, may indicate just higher consultancy fees rather than higher use of consultants than anticipated, but, more probably, it has been a mixture of both.
- (3) *New IT systems* represented the biggest anticipated cost across all process reengineering efforts. On completed BPR projects IT averaged between 22% and 36% of actual total costs, the largest single cost factor for all except cross-boundary process reengineering, where it was only superseded by staff retraining. Additionally, it should be noted that clearly IT would seem to have been treated as a major enabler for most BPR activity, a point that will receive further confirmatory evidence below. However, the relatively high expenditure levels did not necessarily translate into effective IT implementation, and indeed, later findings show that IT could be a major trip-wire. IT difficulties, in fact, can have the consequence of raising its relative cost, as a number of our respondents explicitly mentioned, and this needs to be borne in mind when examining the IT expenditure on reengineering.
- (4) *Staff retraining* emerged as the second largest single BPR cost, representing on average 13–26% of total anticipated and actual costs across all types of processes. Later findings

will suggest that even high levels of expenditure on retraining are an insufficient indicator of the effectiveness of retraining efforts. In particular, many respondents who had completed BPR projects suggested that the timing of retraining and education was vital. Early attention to retraining, that is, well before implementation phases, in tandem with more open communication activity, would have eased BPR implementation considerably.

The most noticeable feature of the core process costs is that, for each type of cost, actual costs were higher than anticipated costs as a proportion of total costs in every case, except staff redundancies, which were significantly lower than anticipated. This would suggest regular underestimation of the real costs of core process reengineering and some overestimation of either the costs of staff redundancies, or at least the number that would be achieved. There were some very IT-intensive core process reengineering (CPR) projects. Just over one quarter (26%) of the organizations with completed CPR projects registered IT as costing 50–90% of their total CPR bill. However, only 8% of the organizations planning or still undertaking BPR projects estimated that their IT costs would be 50–90% of total IT costs.

IT costs as a proportion of total costs were highest where support processes were reengineered (SPR). One third of the organizations that had completed SPR projects had IT representing 50–90% of the total SPR cost. This suggests that support process reengineering tended to be the most IT intensive. SPR also seemed to generate very low levels of redundancies, averaging, in completed projects, under 1% of the total reengineering costs.

Management process reengineering (MPR) seemed to incur higher actual management time and effort and project management costs than were anticipated. In the completed MPR projects we looked at such costs representing on average some 35% of total reengineering costs, probably reflecting the role of managers as end-users as well as implementors of management process changes. Some 13% of the organizations that had completed MPR incurred expenditure on management time and effort representing 40–60% of costs.

The highest single cost incurred in cross-boundary process reengineering (CBPR) was that of retraining staff and management (24% of total costs). Higher outlays on retraining were needed for reengineering cross-boundary processes than for all other types of processes. The probability is that this type of process reengineering inherently requires much more new learning for management and staff because it involves linking up with external organizations. Actual IT and staff redundancy costs were lower as a percentage of total costs than those being anticipated for cross-boundary process change where CBPR is planned or is as yet incomplete. A qualifier to this picture is that 23% of the organizations that had completed CBPR recorded IT as 40–70% of total CBPR costs. This would suggest that the rest were not investing in IT anything like the average figure of 21% of total costs. In fact the average IT costs for three-quarters of the organizations with completed CBPR comes down to just under 9% of total CBPR costs.

It is not clear whether this overall picture on CBPR indicates a lack of expenditure or lack of ambition on IT and staff redundancies. More likely, the finding reflects changes in the overall composition of costs. There were higher than anticipated outlays on staff retraining, external consultancy, in-house project management, and management time and

effort necessitated by cross-boundary process (CBP) reengineering. This suggests that cross-boundary processes were experienced as being marginally more difficult to reengineer than core, support, and management processes.

6. The benefits arising from BPR

In this section we first highlight the types and levels of benefits arising from completed BPR activity in 38 organizations. The benefits here cover: the reduced cost of doing business; overall figures for whether or not organizations are achieving anticipated benefits; and percentage improvements achieved in the 11 major areas highlighted in our pilot work and by respondents. The section then looks at anticipated benefits from core, support, management, and cross-boundary process reengineering among those organizations that were planning or were still undertaking BPR activity. Finally, these anticipated benefits are compared directly against actual benefits attained by the 38 organizations in the sample that had completed BPR programs by 1996.

7. Overview of benefits from completed BPR programs

This section provides an insight into the impact of BPR on the costs of doing business. It also shows the type and levels of benefit being gained from BPR programs in the sample completed between 1990 and 1996. The findings are based on a limited sample of 38 organizations. The results indicate that the vast majority of organizations completing BPR programs experienced beneficial effects. This somewhat contradicts one impression left from the literature of high failure rates. However, the findings here also question whether most organizations were aiming for or achieving the high levels of benefits registered by the high-profile examples of success often found in the literature.

7.1. *Has BPR resulted in lower costs in doing business?*

Of the organizations with completed BPR programs 71% experienced lower costs of doing business as a direct consequence of BPR. However, some 14% experienced an increase in the cost of doing business, though they could not always quantify the size of this increase. Another 16% were not clear on the effect of BPR, suggesting that BPR had not really had a significant effect on the size of business costs. The figures for the size of decrease in the costs of doing business are shown in Figure 3.

Clearly, 59% of the organizations with completed BPR programs experienced 1–20% decreases in the costs of doing business, while another 20% experienced between 21% and 50% decreases in the costs of doing business. While cost decreases are probably welcome in every sector of the economy, one would expect to see more organizations getting sizeable cost decreases given the radical claims often espoused for BPR. There was no discernable pattern in the type and size of organizations getting large increases or decreases in the costs of doing business, possibly due to the small sample size.

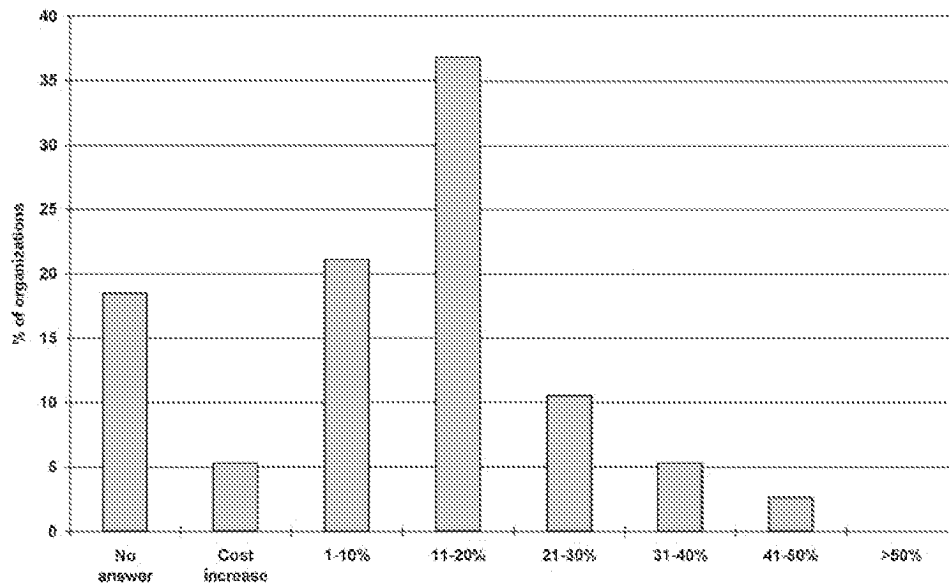


Figure 3. BPR and decreases in the costs of doing business.

7.2. Have organizations been getting anticipated benefits?

It is clear from Figure 4 that 46% of the organizations were getting anticipated or above-anticipated benefits from their completed BPR programs. The levels of benefits achieved were not necessarily high (see Figure 4). However, about half of organizations with completed BPR programs were getting less than anticipated benefits, of which only 5% were expecting what could be described as “breakthrough” improvements. Against this only one organization described its BPR program as a failure with adverse financial and business impacts. Subsequently this organization was taken over.

7.3. What sorts of benefits have organizations been getting?

The types and levels of benefits achieved from BPR in the 1990–1996 period are shown in Figure 5. The most typical pattern was of benefits being achieved of up to 50% improvements on between four and seven of the 11 gains listed, with sometimes marginal improvements on others. In fact, the graph overstates the case. It is important to note that two-thirds of these “typical” organizations, where they were making gains, were getting 1–25% improvements. For these organizations this added up to process improvement rather than radical or “step” changes in performance.

As Figure 5 shows, some organizations were getting over 50% improvements, but for each category of benefit, it was never more than 13% of the organizations in the sample that were getting these 50% plus gains. The organizations experiencing 100% improvements

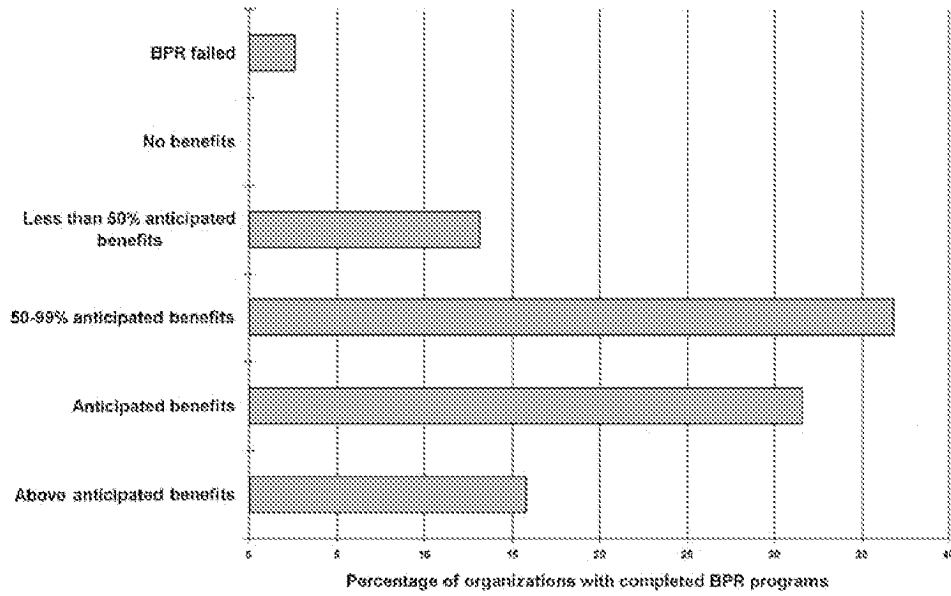


Figure 4. Benefits from BPR.

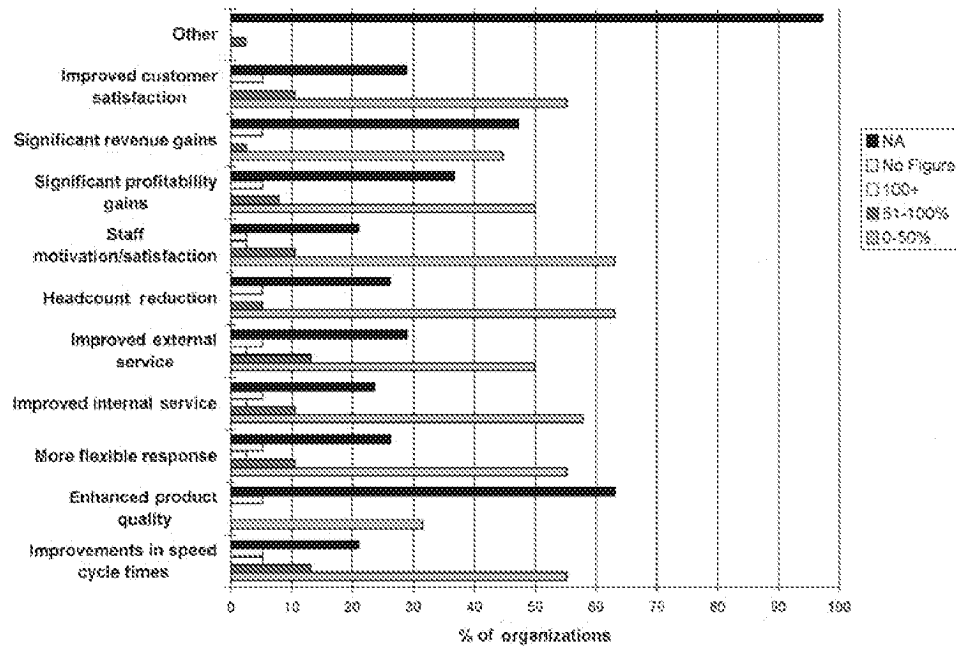


Figure 5. BPR benefits from completed programs: Types and levels.

in each benefit category never exceeded 6% of the total sample. Where 100% or more improvements were recorded among the organizations with completed BPR programs, these tended to cluster in improvements in speed or cycle times, more flexible response, improved internal service, improved external service and/or staff motivation, and job satisfaction. In practice, only 11% of the organizations that had completed BPR programs could claim “breakthrough” results, conservatively defined here as achieving at least 100% improvements on three of the benefit categories, and above 30% improvements on at least three others. These “breakthrough” organizations were all achieving 50% or more profitability gains. Among these organizations revenue gains through BPR ranged from “not sought” to 10%, while decreases in the cost of doing business ranged from 1.8% (for the business overall) to 50% (for the processes reengineered).

Some additional commentary is needed to help interpret Figure 5. Some 16% of the organizations achieved profitability gains of 50% or more. An important figure to look at is that half the organizations that had completed BPR programs were achieving up to 50% profitability gains. This, in fact, overstates the size of the gains made, with four-fifths of this group actually attaining 25% or less profitability gains—still showing, however, that BPR in these cases was filtering through into important financial improvements.

On headcount reductions 22% of the organizations recorded job numbers declining by 25% or more. On the other hand, 55% of the organizations either did not experience job reductions as a result of BPR, or these job reductions were 10% or less of the original workforce. On job satisfaction and motivation as a result of BPR, this is of course, a difficult area in which to assign quantified measures. Fifty-eight percent of the organizations recorded either no increases in job motivation and satisfaction or improvements of up to 10% only. On significant revenue gains 85% of the organizations recorded these as either nil or under 10%. Only one company registered revenue gains as high as 60%. On the face of it, 67% of the organizations got improvements in customer satisfaction as a result of BPR. In fact, the graph again overstates the case somewhat. A balancing figure is that 55% of the organizations got either no improvements, or the improvements in customer satisfaction were quantified as 10% or less.

Looking at Figure 5, “not applicable” here refers to gains being neither anticipated nor achieved. It can be seen that 62% of the organizations were not aiming to enhance product quality, another 48% were not looking to achieve significant revenue gains, while another 38% were not aiming to achieve significant profitability gains through BPR. For each benefit category at least 20% of the organizations that had completed BPR had not been trying to achieve, and did not achieve that particular benefit.

A final way of looking at the results is in terms of those organizations experiencing substantial gains on the main financial measures of success. Did any organization experience significant improvements in profitability, revenue, and decreases in the costs of doing business? Of the organizations that had completed BPR programs, 26% reported gains on all three measures. However, if a relatively conservative benchmark of significance of 20% profitability gain, 20% revenue gain, and 10% decrease in costs of doing business is used, only 18% of the organizations achieved significant financial benefits from BPR on all three measures. These were concentrated in manufacturing, with an IT consultancy and two service companies also being represented. Obviously this result partly depends on whether the

organizations intended to achieve all such gains. The only feature here is that, taking the top 45% financial performers on BPR in the sample, some 16% were not aiming for revenue gains. Using an adjusted benchmark, a total of 40% of the organizations with completed BPR programs got two out of three benefits: at least 20% profitability gain, 20% revenue gain, or 10% decrease in costs of doing business. All the “breakthrough” organizations (described above) were in this group. The manufacturing sector is over-represented in this group and represents a majority (60%) of the top 45% of financial performers on BPR.

8. Different processes, different benefits

In this section we take the anticipated benefits of the organizations planning or still undertaking BPR. These anticipated benefits are then compared against actual benefits gained by the 38 organizations in our sample that had completed BPR programs by 1996. It should be noted that Figures 6–9 represent averages throughout and need to be read in the light of the findings on benefits detailed in the previous section. Some general findings are worthy of note:

- (1) Looking across the findings for all four types of processes, it was core process reengineering that consistently achieved the higher than anticipated gains. This occurred across all benefit categories except staff motivation and job satisfaction.
- (2) Though the figures shown are averages, further detailed analysis of the survey data supports the picture portrayed in the figures: generally speaking, whatever the process being reengineered, organizations did not seem to be aiming high when they looked for improvements from BPR. There may well be a cause and effect here with organizations aiming low and hitting low because the actual improvements achieved were also relatively low. As indicated above, few organizations got more than 50% improvements on any of the criteria, whatever process was being reengineered. The findings in Figures 6–9 on the whole do not appear to be the results of successful radical redesign.

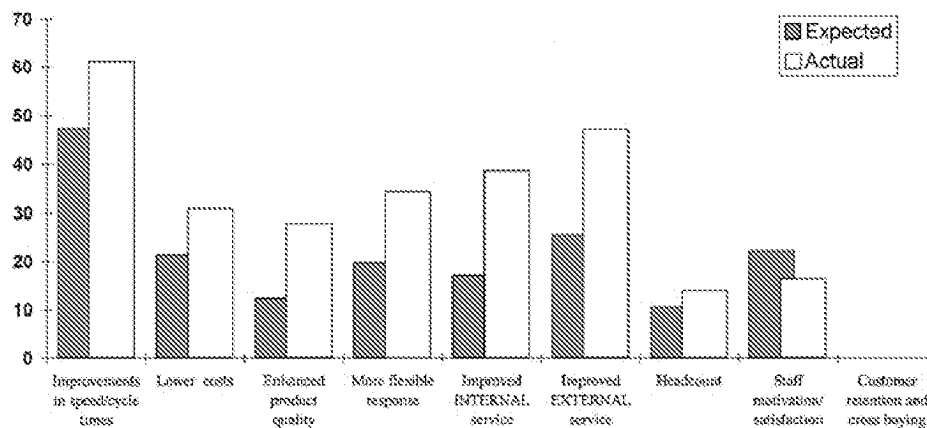


Figure 6. Core process improvements.

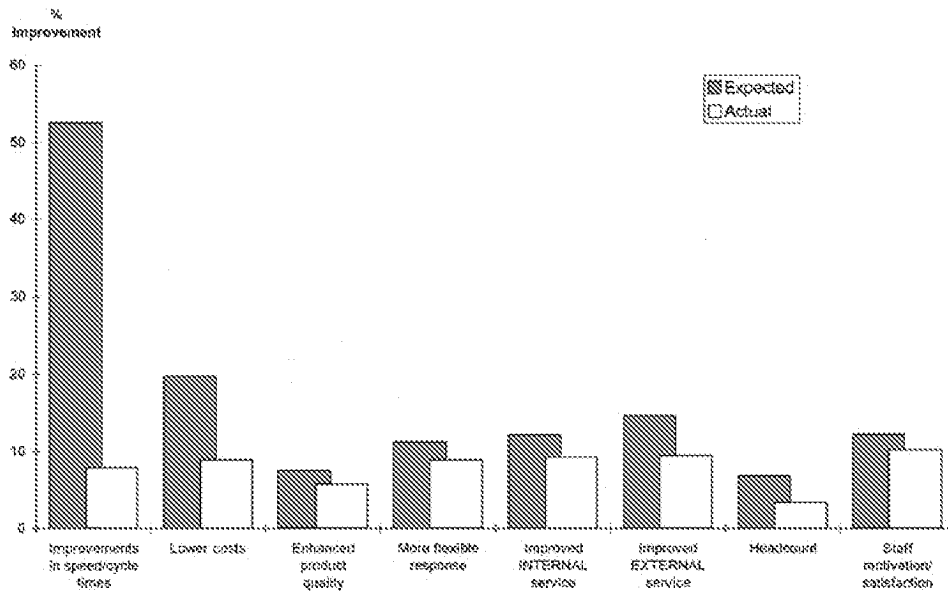


Figure 7. Support process improvements.

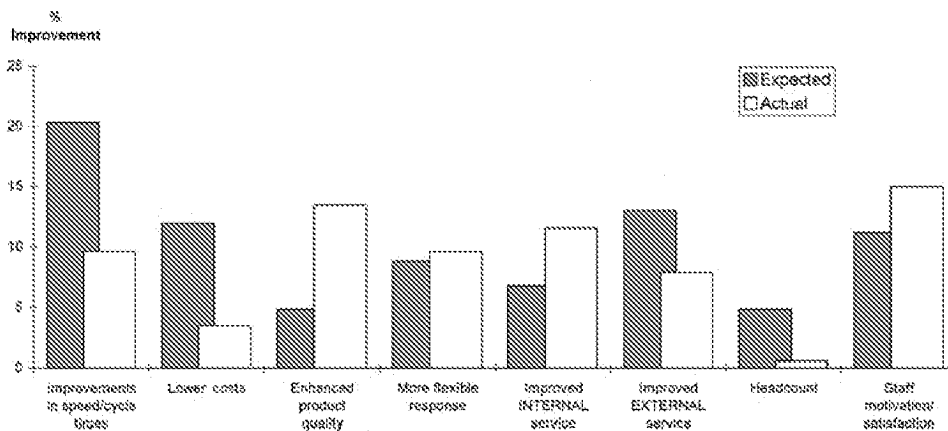


Figure 8. Management process improvements.

(3) For support, management, and CB processes actual gains were being made, on average, across all types of benefit, but for improvements in speed and cycle times, lower costs, and headcount reductions these gains were consistently below those anticipated. The discrepancy is particularly noticeable on lower costs and headcount reductions. Actual gains in these two areas never averaged above 8% across the three types of processes. (For core process reengineering, where aimed for, actual gains averaged 30% for lower costs and 15% for headcount reductions.)

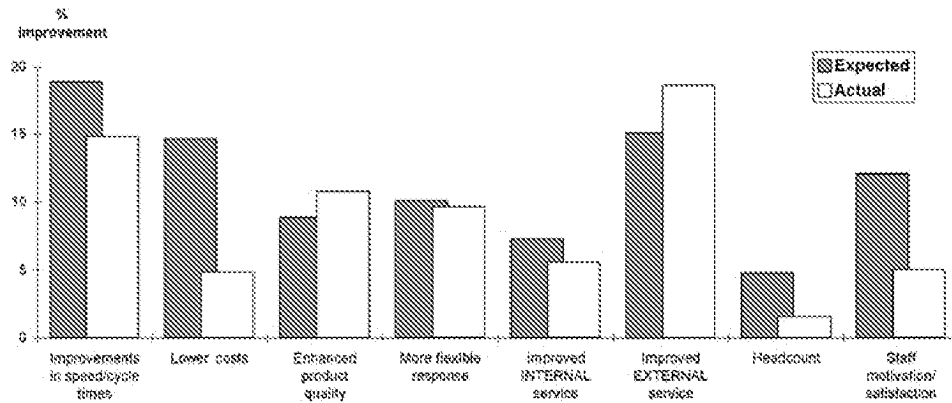


Figure 9. Cross boundary process improvements.

The good news for core process reengineering is that actual benefits tended to be higher than anticipated. For each of speed and cycle time, cost reductions, enhanced product quality, more flexible response, improved internal and external service, and headcount reductions, the gains were higher than anticipated by at least 10% improvement on pre-BPR organizational performance. It is consistently the picture that the larger gains across eight major types of benefits were achieved for core process reengineering rather than support, management and CB process reengineering.

Actual improvements as a result of support process reengineering averaged under 10% across all major types of benefits. On the whole, support process reengineering did not seem to be delivering significantly large benefits to organizations and the benefits achieved for completed BPR projects were invariably at a lower level than those anticipated for BPR projects still underway.

Management process improvements showed a number of higher than anticipated gains, notably in enhanced product quality, improved internal service, and improved motivation and job satisfaction. However, it seemed to have very little impact on headcount in organizations and achieved cost reductions of 4% on average.

The most noticeable gain arising from CB process reengineering was, not surprisingly, improved external service, though as an improvement on previous performance it averaged only 20%. The next best improvement was in speed and cycle times (15% gain) followed by enhanced product quality (11% gain) and more flexible response (10% gain). Again, while improvements were achieved across all eight major benefits listed, and though the figures shown are averages, there is little evidence here, or in the detailed data we have analyzed, to suggest that radical improvements were forthcoming from cross-boundary process reengineering.

The overall picture suggests that BPR was achieving a number of benefits for organizations in the 1990–1996 period. However, it was core process reengineering that consistently gained the major benefits, while support, management, and cross-boundary process reengineering tended to achieve results much more in line with incremental process improvement rather than radical process redesign. Core process reengineering was achieving particularly

high improvements, on average, for improvements in speed and cycle times (60% gains), improved external service (50% gains), and improved internal service (40%). However, the gains from core process reengineering recorded for different types of benefits were never less than 12%, though it should be remembered that few organizations were aiming for, let alone achieving improvements across all types of benefits represented in Figure 5.

9. Discussion and conclusions

Radical BPR has received very dichotomous treatment in the literature. The high failure rate has been explained by some proponents as being due to a lack of real radicalism, or due to a mistaken management belief that process reengineering was an end-point in the transformation agenda (Champy, 1995; Hammer and Stanton, 1994). But even Hammer (1998), while announcing selective examples of reengineering triumph, has simultaneously felt the need to go “beyond reengineering.” Others have always seen radical BPR as a management fad concealing some serious organizational productivity possibilities to be derived from process improvement (e.g., Davenport, 1993; Hilmer and Donaldson, 1996; Keen, 1997). Nievelt and Willcocks (1997) have produced evidence providing qualified support for the latter position showing that too often techniques like benchmarking, reengineering, and total quality management have been applied at the wrong time or to the wrong set of circumstances for organizational performance and market position to be enhanced. The present survey research has further deepened our understanding of IT-enabled BPR in a number of significant ways.

Research shows that a great deal of activity was being conducted in the UK in the 1990–1996 period, with considerable sums being spent under the banner name of business process reengineering. However, there were many indicants that very little of the activity could be classified as radical redesign. In terms of objectives, few respondents seemed to be aiming for transformation of their businesses. In terms of activities, nearly half of the core processes being reengineered were probably not core in the sense that commentators such as Davenport (1993) and Hammer and Champy (1993) use the term. Whatever the type of process being reengineered, with a few exceptions, most respondents were carrying out process improvement rather than a radical “breakthrough” strategy. There was widespread recognition, including among a majority of the “best performers” on BPR, of the critical role that information technology could and does play in BPR programs. However, we could find no clear relationship between size of spending on IT and “best performance” on BPR. However, new IT systems still represented the biggest anticipated and actual cost across the vast majority of reengineering efforts, averaging between 22 and 36% of actual costs on completed BPR projects.

The survey produced some discrepancies between anticipated and actual costs of BPR. In particular, staff redundancies incurred in completed BPR programs were in practice 10–20% lower as a percentage of total costs being anticipated in organizations still undertaking BPR, while actual external consultancy costs were 7–15% higher than the anticipated percentage of total costs. On benefits, BPR activities were found to be producing anticipated or above-anticipated benefits in nearly half of the completed BPR projects surveyed. However, there was strong evidence that few organizations were achieving “breakthrough” results. Aiming

low and hitting low seemed to be a typical pattern. Of the organizations with completed programs, only 18% had achieved significant financial benefits on three measures, that is, better than 20% profitability gain and 20% revenue gain combined with 10% or more decrease in the cost of doing business. The findings of Hall et al. (1993) are endorsed here: in most cases business process improvements would not seem to be finding their way to the bottom line for the business unit as a whole.

What needs further analysis is why radical reengineering was not the typical organizational response to the declared crises and clamor for “breakthrough” results as found in the management literature. That analysis is not attempted here. Elsewhere the author and others have sought explanations in the politics inherent both in BPR rhetoric and practice and in everyday organizational operations (Grint and Willcocks, 1995; Grint, Case, and Willcocks, 1995). And indeed, in the survey there was strong internal evidence that the major barriers to BPR were human, political and cultural, especially at senior and middle management levels of organizations. Pragmatism may well dictate less risky strategies than those frequently espoused by commentators and consultants. Hammer and Champy (1993) declared: “It is about beginning again with a clean sheet of paper. . . . marginal improvement is no improvement at all but a detriment.” However, the evidence is that the majority of UK-based organizations undertaking BPR in the 1990–1996 period seemed more likely to pursue a path either more ad hoc or more pragmatic, and certainly less risky than this. Davenport (1993b) has pointed to “a revisionist alternative that allows reengineering and quality to exist in tandem, applying the radical approach only where it is absolutely necessary, and being happy with 10% improvements elsewhere.” This may be an over-rationalized version of the actual, more messy practices we uncovered in organizations. However, our evidence is that something like it represented the more traveled BPR route to delivering the goods, though a small number of organizations were making real the more heady promises inherent in BPR.

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