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Best practices in business process redesign: use and impact

S. Limam Mansar
College of Business Sciences, Zayed University, Dubai, UAE, and
H.A. Reijers
Department of Technology Management, Eindhoven University of Technology, Eindhoven, The Netherlands

Abstract

Purpose – This paper seeks to provide business process redesign (BPR) practitioners and academics with insight into the most popular heuristics to derive improved process designs.

Design/methodology/approach – An online survey was carried out in the years 2003-2004 among a wide range of experienced BPR practitioners in the UK and The Netherlands.

Findings – The survey indicates that this "top ten" of best practices is indeed extensively used in practice. Moreover, indications for their business impact have been collected and classified.

Research limitations/implications – The authors' estimations of best practices effectiveness differed from feedback obtained from respondents, possibly caused by the design of the survey instrument. This is food for further research.

Practical implications – The presented framework can be used by practitioners to keep the various aspects of a redesign in perspective. The presented list of BPR best practices is directly applicable to derive new process designs.

Originality/value – This paper addresses the subject of process *redesign*, rather than the more popular subject of process *reengineering*. As such, it fills in part an existing gap in knowledge.

Keywords Process management, Best practice, Optimization techniques, Surveys

Paper type Research paper

Introduction

Although the focus on the business process is now a widely accepted industrial attitude, business process redesign (BPR) in practice is still more art than science. Design methodology is primarily the field of consulting firms who have developed proprietary BPR methods (Kettinger *et al.*, 1997). These mainly emphasize project management and organizational issues of process design, but often fail to address the "technical challenge" of developing a process design that is a radical improvement of the current one (Reijers, 2003). In response to this omission, practitioners tend to fall back on best practices. A best practice may be seen as a successful way to treat a particular problem that may need to be adapted in skilful ways in response to prevailing conditions. Over the last 20 years, best practices have been collected and applied in various areas, such as business planning, healthcare, manufacturing, and the software development process (Martin, 1978; Butler, 1996; Golovin, 1997).

In previous research, we have collected and described nearly 30 best practices in BPR (Reijers and Limam Mansar, 2005). Sources for these practices were seminal works on the subject by Hammer and Champy (1993) and Davenport (1993). Each of the derived best practices suggests a particular change to an existing process to influence its operation in certain ways. Based on the sources we consulted, we tried to

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categorize their effects on process performance in a qualitative way, i.e. how they generally affect cost, quality, time or flexibility. To support the application of the various best practices, we also proposed a conceptual framework that identifies the technical components of BPR as influenced by applying them (refer to the *BPR framework and best practices* section). The list of best practices and the associated framework is meant to assist practitioners in an evolutionary approach to BPR. In such an approach, the existing business process is taken as starting point, which is then gradually refined or improved by applying the various best practices. Comparable evolutionary approaches, albeit less extensive, have been proposed by Peppard and Rowland (1995); Rupp and Russell (1994) and Poyssick and Hannaford (1996).

Despite the potential richness of the presented work due to its embedding in existing BPR literature, there are many open questions. Most importantly from a practical viewpoint, these are:

- To what extent are these best practices used today, in practice, in redesigning real processes within organisations?
- What is the real impact of these best practices on process performance?

In a way, these questions try to relate our findings on BPR best practices as derived from theory and, for the greatest part, indirectly to the direct experiences of process designers in practice. Answers to these questions can give practitioners guidance to the usefulness of the presented work and, possibly, to quickly identify highly promising best practices for their own purposes. To this end, we have consulted experienced BPR practitioners in The Netherlands and the UK with a survey on the framework and best practices. In this paper, we will relate to its outcomes and implications.

The organization of this paper is as follows. The first section gives a brief background on BPR and related work. The second section describes our initial BPR framework and the set of best practices we have tested. The third section explains how the survey was conducted and describes the participants' profiles. The fourth section provides the survey's findings. Finally, the conclusion discusses the survey findings and further research implications.

Background on BPR

Various researchers have carried out extensive analyses of the essence of BPR (Heusinkveld and Benders, 2001), the differences between its various manifestations (O'Neill and Sohal, 1999), its relations with other organizational approaches (Currie, 1999), and its underlying concept of a business process (Lindsay *et al.*, 2003). For the purpose of this paper, it is sufficient to pay attention to a single point of possible confusion. That is, the difference between the concepts of "business process reengineering" and "BPR." As we see it, reengineering assumes a much broader scope than the specific focus of process redesign. Process redesign is concerned with how to articulate a process in, e.g. terms of its interdependent tasks and resources, while reengineering can refer to all aspects of restructuring an organization's processes, e.g. from change management to project management issues. Clearly, using this distinction means that a reengineering project will very likely encompass the redesign of one or more processes. Looking at it from another angle, reengineering is also often more associated with drastic change programs, where redesign is more neutral with respect to the pace or size of the change. Note that the mentioned distinction is somewhat

academic, as practitioners do not tend to make very sharp distinctions between these concepts and often speak of "BPR."

Our interest in this paper is clearly with process redesign as an effort to address the technical challenge we mentioned in the introduction: how to invent a new process design that is in one or more ways superior to the existing plan. Project or change management issues are outside our scope.

Many surveys exist in the literature about business process reengineering:

- Zairi and Sinclair (1995) conducted a survey amongst companies in the UK to identify the use of business process reengineering within different industries in the UK, and to attempt to ascertain the level of integration between BPR and total quality management at the sample organizations.
- Guimaraes and Bond (1996) studied amongst US manufacturing companies the importance of factors, problems and benefits for/of successfully implementing reengineering projects in manufacturing firms.
- O'Neill and Sohal (1998) used (Carr and Johansson, 1995) and (Guimaraes and Bond, 1996) results and tested them on Australian companies.
- Valimaki and Tissari (1997) surveyed the failure rate of reengineering projects in a US context.
- Maull *et al.* (2003) identified from the literature ten dimensions by along which reengineering projects might be measured (for example, cost focus, service improvement, effect of IT, etc.). A survey was then conducted amongst UK companies to assess the relationships between these dimensions and the maturity of BPR implementation.

Despite the above mentioned references, we could not find specific surveys related to BPR, i.e. surveys related to *how* the process should be articulated in terms of tasks and resources. For example, in the referenced surveys, the focus is more on how to manage the changes in an organization as a whole as opposed to looking to specific processes' performance or structure. For the remainder of this paper, we will use the term "BPR" to refer to this latter view and "BPR implementation" for the act of developing a new process design.

BPR framework and best practices

In our research, we are interested in developing a methodology for BPR implementation based not only in detailing steps for BPR but also on guiding and supporting the BPR execution by means of techniques and best practices.

In this context, our first concern was to adopt (or define) an existing framework for BPR. We did not try to present yet another integrated BPR methodology, the framework should only allow the user of the BPR methodology to recognize the important topics and their relationships. It should help practitioners by identifying the topics that should be considered and how these topics are related (Alter, 1999). In this perspective, the framework should identify clearly all views one should consider whenever applying a BPR implementation project. So, by "framework" we do not mean a model of a business process but rather an explicit set of ideas that helps in thinking about the business process in the context of redesign.

We have explored in the literature several frameworks and business process analysis models that were potentially suitable for BPR. In Reijers and Limam Mansar (2005), we explain how we have derived an extended framework for implementing BPR best practices. It is derived as a synthesis of the WCA framework by Alter (1999), the MOBILE workflow model by Jablonski and Bussler (1996), the CIMOSA enterprise modeling views of Berio and Vernadat (2001) and the process description classes of Seidmann and Sundararajan (1997). In our framework, six components are linked (Figure 1):

(1) the internal or external *customers* of the business process;

(2) the *products* (or services) generated by the business process;

(3) the business process with two views:

- the *operation view*: how is a business process implemented? (Number of tasks in a job, relative size of tasks, nature of tasks, degree of customisation); and
- the *behaviour view*: when is a business process executed? (Sequencing of tasks, task consolidation, scheduling of jobs, etc.).

(4) the participants in the business process considering:

- the organization *structure* (elements: roles, users, groups, departments, etc.); and
- the organization *population* (individuals: agents which can have tasks assigned for execution and relationships between them).

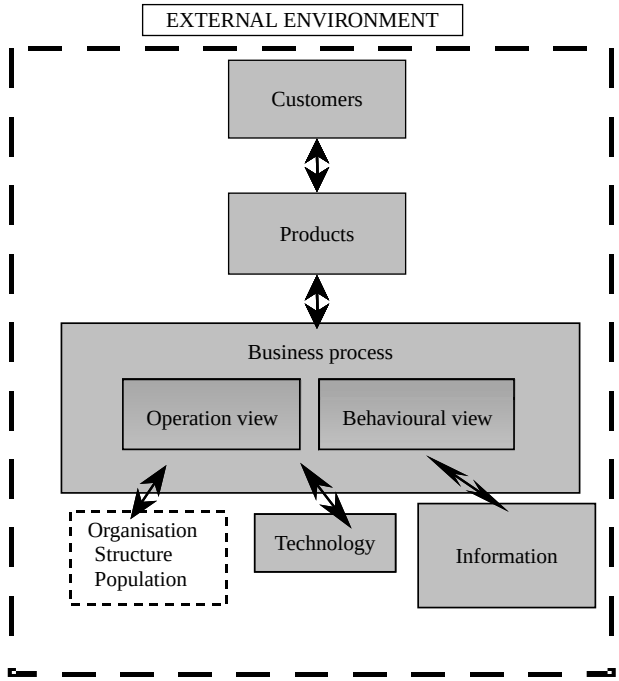

Figure 1.
Framework for BPR implementation

(5) the *information* the business process uses or creates;

(6) the *technology* the business process uses, and finally; and

(7) the *external environment* other than the customers.

In Figure 1, one can notice that the different components of the framework are represented in boxes of different sizes. This indicates the importance of each component when undertaking a BPR implementation project. We have established this importance on the basis of BPR practitioners' feedback, as reported on in Limam Mansar and Reijers (2005). "Customers" and "product" are important components. It is indeed vital to focus on *what* is being produced for *whom*. "Information" is also important because this component refers to an area where very large improvements can be made using BPR, either through using technology or not. Also note that the "organization" component's box is dashed. We indicate through this that while this component should be considered in the redesign effort, notably for fitting the business solution to the culture of the business and for matching peoples' competences to the execution of redesigned processes, the redesign emphasis is elsewhere.

Within our framework for BPR implementation, we have gathered and classified 29 best practices in BPR (see for an overview: Reijers and Limam Mansar, 2005). They are intended to support the redesigner of a business process in facing the technical BPR challenge: the implementation of an improved process design (Table I). We explained in Reijers and Limam Mansar (2005) how do each best practice fit within a given component of this framework.

The main purpose of this paper is to find indications for the actual use and qualitative impact of the previously identified best practices in actual BPR projects. To do so, we have decided to restrict the study to a "top ten" list of best practices, as we realized that a survey addressing twenty-nine best practices would have been too long and off-putting for any potential participant, (Table II).

A best practice was included in the "top ten" list according to two factors. Our ranking was established using two case studies where the ten best practices appeared to be most popular (Limam Mansar and Reijers, 2005). To classify the best practices that had equal/close ranking, we used our literature review (i.e. how often was a given best practice cited in the literature?).

As far as the impact of a best practice was concerned, we needed to clarify what we meant by "qualitative impact." We used the "Devil's quadrangle" for that purpose by Brand and Van der Kolk (1995). Within this quadrangle (Figure 2), a qualitative evaluation can be undertaken to assess the best practices against their impact on time, flexibility, quality and cost issues. It illustrates that, for example, it is sometimes impossible to reduce a process's duration (time) without increasing the process's operational cost of execution. Similarly, improving a process's quality may result in the loss of flexibility to deal with exceptions.

To address the main issues of use and impact of the ten best practices, we have, analyzed practitioners' replies to a survey, we have conducted on this subject. The survey was undertaken in 2003/2004 amongst Dutch and UK consultants in the field of BPR. The survey was designed with two research questions in mind:

Framework components	Best practice name	Definition
Customers	Control relocation	Move controls towards the customer
	Contact reduction	Reduce the number of contacts with customers and third parties
	Integration	Consider the integration with a business process of the customer or a supplier
Products	None	
Operation view	Order types	Determine whether tasks are related to the same type of order and, if necessary, distinguish new business processes
	Task elimination	Eliminate unnecessary tasks from a business
	Order-based work	Consider removing batch-processing and periodic activities from a business process
	Triage	"Consider the division of a general task into two or more alternative tasks" or "consider the integration of two or more alternative tasks into one general task"
	Task composition	Combine small tasks into composite tasks and divide large tasks into workable smaller tasks
Behavioural view	Resequencing	Move tasks to more appropriate places
	Knock-out	Order knockout decisions in a decreasing order of effort and in an increasing order of termination probability
	Parallelism	Consider whether tasks may be executed in parallel
	Exception	Design business processes for typical orders and isolate exceptional orders from normal flow
External environment	Trusted party	Instead of determining information oneself, use results of a trusted party
	Outsourcing	Consider outsourcing a business process in whole or parts of it
	Interfacing	Consider a standardized interface with customers and partners
Organisation: structure	Order assignment	Let workers perform as many steps as possible for single orders
	Flexible assignment	Assign resources in such a way that maximal flexibility is preserved for the near future
	Centralization	Treat geographically dispersed resources as if they are centralized
	Split responsibilities	Avoid assignment of task responsibilities to people from different functional units
	Customer teams	Consider assigning teams out of different departmental workers that will take care of the complete handling of specific sorts of orders
	Numerical involvement	Minimize the number of departments, groups and persons involved in a business process
	Case manager	Appoint one person as responsible for the handling of each type of order, the case manager
Organisation: population	Extra resources	If capacity is not sufficient, consider increasing the number of resources
	Specialist-generalist	Consider to make resources more specialized or more generalist

(*continued*)

Table I.
BPR best practices classified according to our BPR implementation framework

Framework components	Best practice name	Definition
	Empower	Give workers most of the decision-making authority and reduce middle management
Information	Control addition	Check the completeness and correctness of incoming materials and check the output before it is sent to customers
	Buffering	Instead of requesting information from an external source, buffer it by subscribing to updates
Technology	Task automation	Consider automating tasks
	Integral technology	Try to elevate physical constraints in a business process by applying new technology

Table I.

	Best practice	Definition
1.	Task elimination	Eliminate unnecessary tasks from a business process
2.	Task composition	Combine small tasks into composite tasks and divide large tasks into workable smaller tasks
3.	Integral technology	Try to elevate physical constraints in a business process by applying new technology
4.	Empower	Give workers most of the decision-making authority and reduce middle management
5.	Order assignment	Let workers perform as many steps as possible for single orders
6.	Resequencing	Move tasks to more appropriate places
7.	Specialist-generalist	Consider to make resources more specialized or more generalist
8.	Integration	Consider the integration with a business process of the customer or a supplier
9.	Parallelism	Consider whether tasks may be executed in parallel
10.	Numerical involvement	Minimize the number of departments, groups and persons involved in a business process

Table II.
Most popular best practices in BPR

H1. Are all of the heuristics that have been identified as "best practices" (Table II) indeed applied extensively by practitioners?

H2. Do practitioners agree on the impact of a given rule on the quality, the cost, the time and the flexibility of a business process?

As mentioned before, in another paper, we have addressed the validity of the framework itself (Limam Mansar and Reijers, 2005). In the following sections, we will reflect on our survey instrument to address the research questions as above.

Survey design and participants' profile

The survey took place in 2003/2004 and targeted well-established practitioners in the BPR field. To select potential participants to our survey, we decided to focus on Dutch and UK practitioners as we were based in the respective countries and wanted to exploit our local contacts with BPR practitioners. The survey excluded academics or, to be more precise, academics that could not show evidence of experience in BPR projects within/with real organizations. Practitioners were selected according to the company

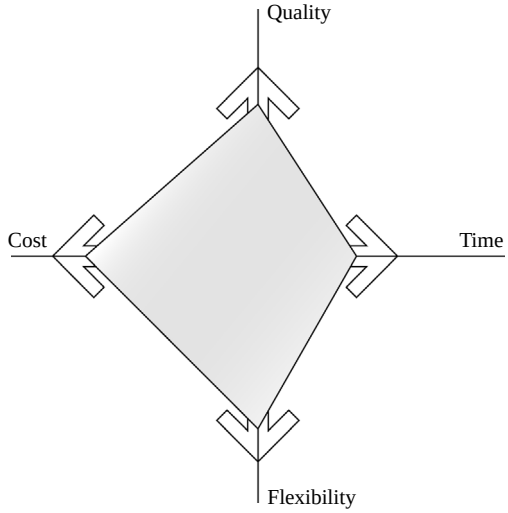

Figure 2.
The devil's quadrangle

they represented (e.g. well-established consulting groups) and also according to their track record in publishing about their BPR experiences. The survey was conducted using an online questionnaire that was referenced in e-mails sent to the participants. The survey has been pre-tested by a group of researchers, some of them active in the BPR field while others were not. The survey consisted of three major parts.

The first part included general questions to determine our respondents' profile and to assess their expertise in BPR. The results are indicated in Table III, Figures 3 and 4.

Practitioners	Dutch sample	UK sample				
Number of participants	31	60				
Response rate	42 percent	20 percent				
Percentage of BPR practitioners	92 percent	92 percent				
	Range	*Average*	*Mode*	*Range*	*Average*	*Mode*
Years of experience	7-35	14.8	15	10-35	20	10
Self-expertise assessment	5-10	7.8	8	4-10	6.75	6

Table III.
Participants' profile

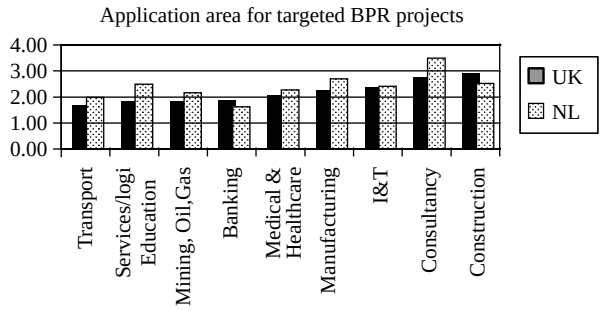

Figure 3.
Participants' application areas for targeted BPR projects

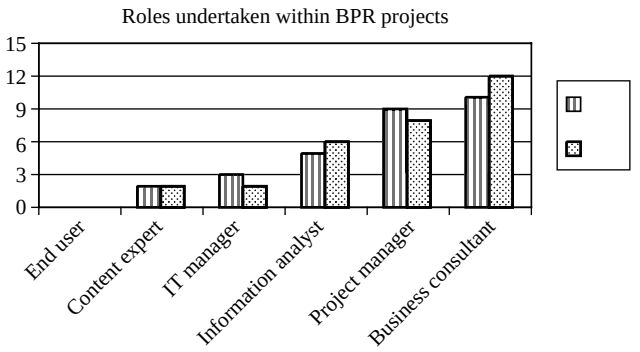

Figure 4.
Participants' undertaken roles within BPR projects

Table III summarizes our participants' profile. It shows that for both samples (Dutch and UK) the vast majority of practitioners had more than 15 years of experience and ranked their own expertise in the field close to 7 on a scale of 1 to 10. As the overall BPR experience is high, a limit of this research is that it excludes experiences of practitioners just starting in the field.

Figure 3 shows the application areas participants were mostly targeting in their BPR projects. A ranking of 4 indicates a high popularity (the participant would have been almost always involved in projects in a given application area) and a ranking of 1 a low popularity (the participant would have been almost never involved in projects in a given application area). Interestingly, hardly any practitioner indicated to be "almost always" involved in merely one particular type of organization. This diversity in the projects they were undertaking implies that the results that might be derived from this survey are not specific to one type of industry or business activity, but can be generalized to any BPR implementation project.

Figure 4 shows the roles participants took in most BPR projects they were involved in. The results imply that most practitioners were either business consultants or project managers allowing for an even better validation of the survey results. After all, the participants' experience in BPR projects allows them to see the "big picture" and not only the partial details of, say, the IT part of the project. A closer analysis shows that most respondents indicated having fulfilled three roles or more. This might be related to their relatively long experience in the BPR field and thus different roles they might have undertaken during their careers. It may also indicate that many of these practitioners do not have BPR as their primary focus anymore.

The second part of the survey listed the ten most popular best practices we have initially selected (*H1*). Participants were asked to express whether they had used any of them and, if so, how often. The results are indicated in Table V.

In the third and last part of the survey, participants were asked to rank the impact of each best practice on the quality, the flexibility, the time and the cost performances of a given best practice (*H2*). Participants were asked to indicate whether they have used the best practices in their most successful (and less successful) project. They were also asked to indicate the best practices that contributed the most to a BPR project's success.

Survey findings

Hypothesis H1, best practices validation

As far as the best practices are concerned, we wanted to check if all the rules that have been identified as "best practices" (Table II) are indeed applied extensively by practitioners. For this sake, participants were asked whether they have used a specific best practice in their BPR projects and, if so, how often (Table V).

To avoid confusion on the meaning of the best practices, we phrased our question in a way that would avoid ambiguity. For example, for the "task composition" best practice rather than asking if the participants had already used the best practices we asked: "Have you combined small tasks into composite tasks and divided large tasks into workable smaller tasks?" In addition, for each best practice we provided a link to a simple and short example where the best practice is applied. For the earlier mentioned best practice we provided the example of a conference registration procedure.

In Table V, we indicate percentages of participants who recognized a best practice as valuable and how often they have used it in their projects.

Obviously, the figures in Table V support our initial classification of best practices as largely popular amongst practitioners. For each best practice, the majority of participants mentioned to have used them at least 2-5 times in earlier BPR projects.

Interestingly, though most participants agreed that they would mostly focus on the "customer," the "product" and the "information" components of our framework when redesigning a business process, the widely applied rules are chosen and classified according to the "operation," the "technology" and the "behavioral" components of our framework. We might conclude that in order to obtain a business process which aims to become more customers'-oriented (good service, good product, and good information flow), consultants need to focus primarily on the operational and behavioral views of a business process, as well as on the structure of the processes (Table IV).

Also, it is noticeable that the bottom of the list includes the "order assignment," the "numerical involvement" and the "empower" rules. These are all related to the "organization" component of our framework. Some clues to clarify their low-ranking might be found in some participants' comments about the relevant best practices. For example, on the "order assignment" best practice ("let workers perform as many steps as possible for single orders") a participant (UK8) noted that he never uses the rule because the:

Framework components ($N = 25$)	Average	Mode	Median
Customer	3.72	4	4
Information	3.36	4	4
Product	3.40	4	4
Operation view	3.08	3	3
Behaviour view	2.92	3	3
Organisation	2.88	3	3
Technology	2.84	3	3

Table IV.
Practitioners' ranking of framework components

> . . . segregation of duties may limit the stages that one operative can perform as may the limit of an individual employees training. Simply having one operative do more of the process is not necessarily an improvement.

On the "numerical involvement" ("minimize the number of departments, groups and persons involved in a business process") another participant (UK9) claims that "On the contrary, we recognised that core processes cuts across department and invite the group to work together." Finally, on the "empower" best practice ("give workers most of the decision-making authority and reduce middle management") the same participant justified the non-usage of the rule by claiming that "This involves redefining the organisation's structure and governance authorities."

Finally, compared to Table II, one significant difference is the "parallelism" best practice's position. The participants' assessment of this best practice is much more inline with the potential benefits it might bring (drastic cut of process time).

To summarize, our first research question can be answered affirmatively. Indeed, all the rules that we have identified as "best practices" (Table II) are applied extensively by practitioners. The first three mostly used best practices are "task composition," "integral business technology" and "task elimination." These three rules are strongly related to the essence of BPR as it is reported to be an essential component of reengineering and involves analyzing tasks' usefulness. Besides, both the "numerical involvement" and the "integration" rules are not that popular. We have already explained that this is consistent with the validated framework.

Hypothesis H2, impact of best practices

The second aspect we wanted to validate using this survey is whether practitioners recognized and agreed about the impact of a best practice on the quality, the time, the cost or the flexibility of the business process. At the start of the survey, these performance criteria were explained. For each best practice when the respondent was asked for his or her opinion on its impact, hyperlinks were provided to the original explanation of these notions (Brand and Van der Kolk, 1995):

- we meant by quality performance the way the new process is generally perceived by its users (internal/external customers);
- we meant by cost performance a reduction in the operational costs of the redesigned process (not the costs to implement it!);
- we meant by time performance a reduction in the throughput time (or similar time measures) of the new process; and
- and we meant by flexibility performance the extent to which the new process offers more alternatives (in terms of resources and solutions) in delivering the product.

Participants were asked to rank the impact of a best practice on a business process between 0 and 10. If less than 5, this ranking meant a negative impact. If more than 5, this ranking meant a positive impact. We have gathered and estimated the average rankings and translated them into a qualitative interpretation. Figure 5, for example, shows the impact of the task elimination best practice. The gray diamond delimitates a neutral area. Within the area, a negative impact is expressed. Outside the area is the positive impact.

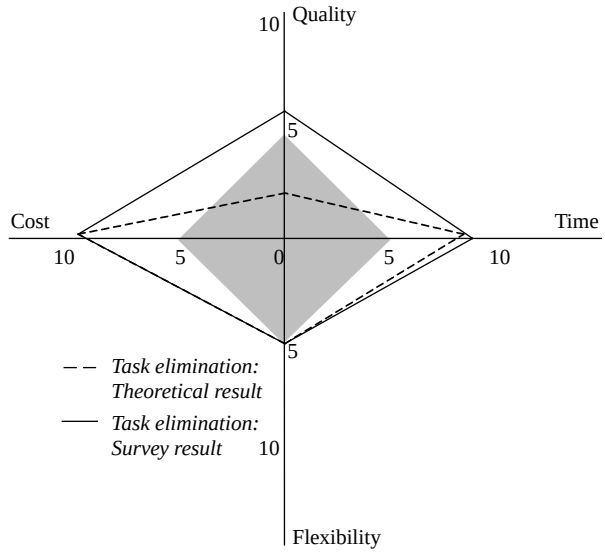

Figure 5.
The task elimination best practice's impact

The devil's quadrangle also shows two types of results. Using a continuous line, we have indicated the survey result and using a dashed line, we have indicated the theoretical result. The theoretical result refers to our own estimation of impacts of best practices on the different performance criteria. This estimation is the result of interpretation of the available literature on a given best practice mixed with our own experience in the field. For example, Figure 6 shows the impact of the "parallelism" best practice (*consider whether tasks may be executed in parallel*). The obvious effect of

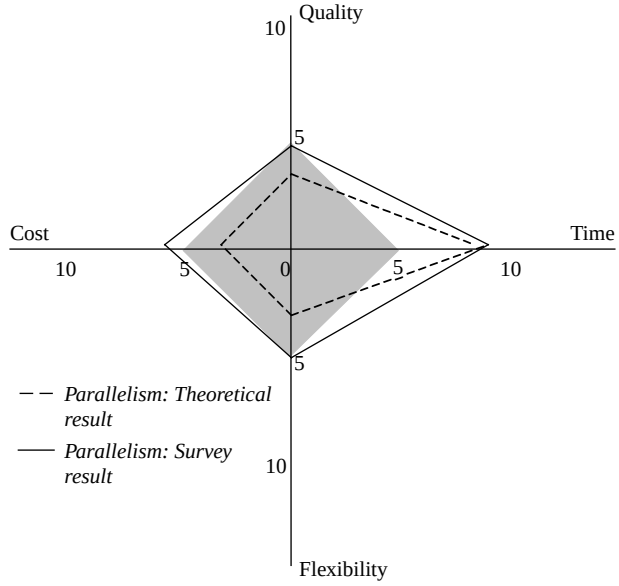

Figure 6.
Parallelism best practice's impact

putting tasks in parallel is that the throughput time may be considerably reduced. This is shown very clearly in Figure 6 as the estimation for the "time" criteria is stretched outside the gray quadrangle, suggesting a positive impact of the best practice on the latter criteria.

We now provide some analysis of this ranking: of interest, for the "task composition" best practice (Figure 7) participants have recorded only a slight positive impact on all dimensions. The reason behind this cautious opinion is explained by one of the participants. He explains that often, redesigning focuses more on *changing the technology without being allowed to change organisational roles and responsibilities*. This is inevitable would the task composition be applied.

The situation is similar for the "resequencing" best practice (Figure 8): only a slight positive impact is recorded. Indeed, this best practice might also imply organizational changes as moving tasks' positions might imply assigning the tasks to different workers, thus changing their responsibilities.

Not surprisingly, according to our Dutch and UK participants, the best practice that is reported to have the highest impact on the quality dimension is the "integral business technology" best practice. In Figure 9, we compare our and participants' evaluation of this best practice. It shows that our views diverge about the cost and quality. This might be explained by the fact that participants assessed the rule's impact on the long-term when all obstacles are overcome and the IT investment starts to pay off.

Also, the participants indicated that the best practice that had the highest impact on the process' cost is "task elimination" (Figure 5). Indeed, the aims of this best practice are to increase the speed of processing and to reduce the cost of handling an order.

The highest impact on the process' time is the "integration" best practice (Figure 10). In general, integrated business processes should render a more efficient execution, both

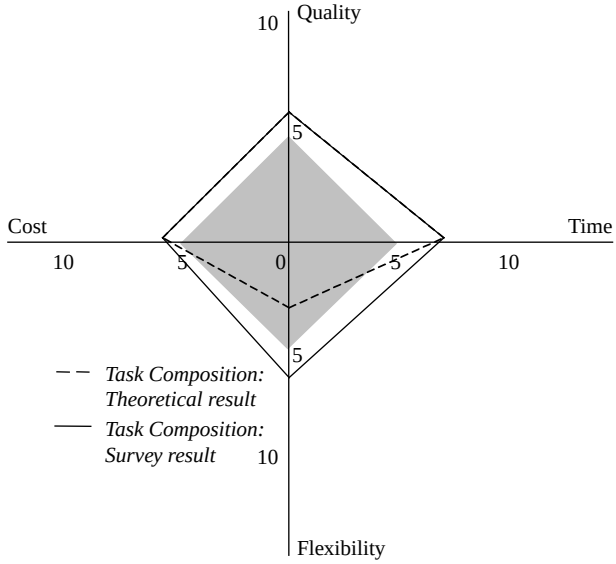

Figure 7.
The task composition best practice's impact

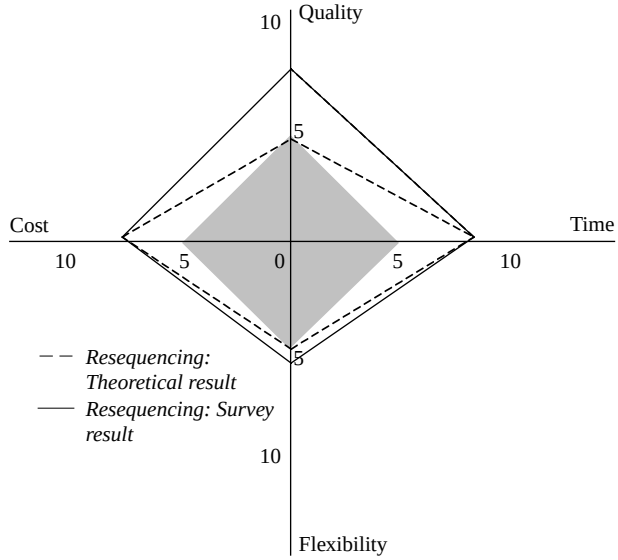

Figure 8.
The resequencing best practice's impact

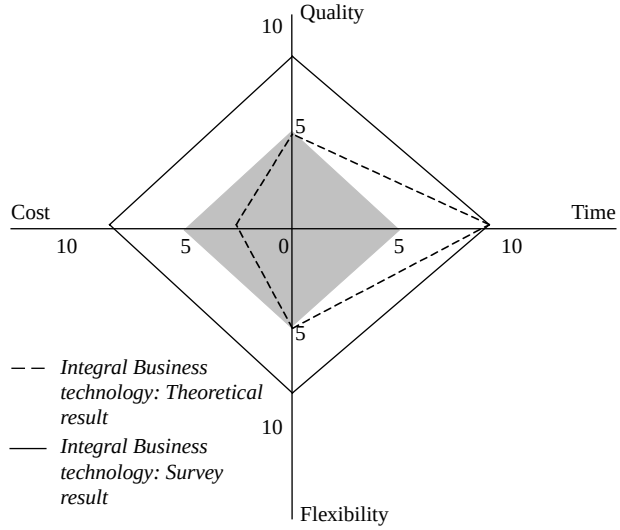

Figure 9.
The integral business technology best practice's impact

from a time and cost perspective. The drawback of integration is that mutual dependence grows and, therefore, flexibility may decrease.

Finally, the highest impact on the process' flexibility is the "empower" best practice (Figure 11). Empowered employees gain confidence and become more motivated to perform their tasks. As a participant has noted:

> . . . increased motivation of staff gives more flexibility to mix the work types and makes the process less dependent on particular staff for particular types of work.

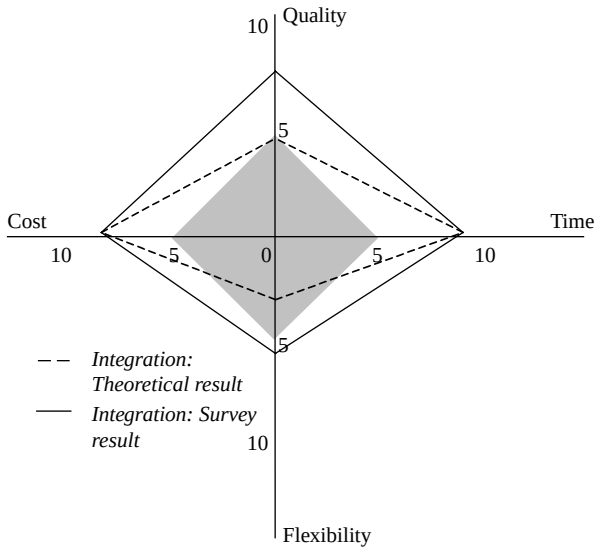

Figure 10.
The integration's best practice impact

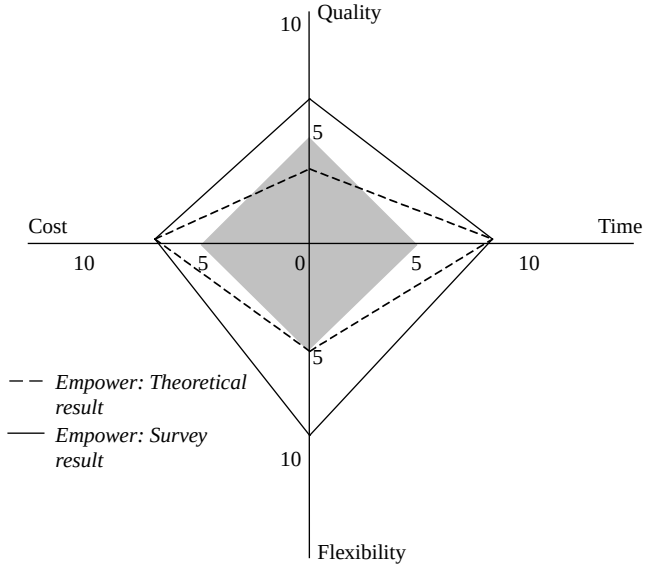

Figure 11.
The empower practice's impact

To summarize, our *H2* (Do practitioners agree on the impact of a given rule on the quality, the cost, the time and the flexibility of a business process?) seems to be valid too. The survey brought some additional, and perhaps less obvious, insights into the impact of the best practices. Hence, if we consider the four criteria of our devil's quadrangle, the highest impact on quality was reported for the "integral business technology"

best practices, on cost for the "task elimination" best practice, on time for the "integration" best practice and on flexibility for the "empower" best practice. If we would like to push the interpretation further, this can be the starting point for general guidelines as for the application and applicability of the best practices. For example, if the main objective of redesigning an existing process has been identified as "improving the quality of service delivered to customers," a guideline would be to first look at the best practice "integral business technology" as it ranked the highest on the quality criteria. Of course this remains a guideline as the major difficulty is that often, more than one issue is considered in the redesign and the BPR project in itself might be limited in budget, making the applicability of the latter best practice improbable.

Conclusion: BPR framework and best practices validation

In this paper, we have discussed the results of a survey amongst practitioners in BPR. We have first introduced a framework in which we classify best practices in BPR (Figure 1). The purpose of this framework is to set up the grounds for a directed methodology for BPR projects' implementation. The framework indicates the major areas a practitioner needs to focus on when redesigning a project: the customer, the products and the information flow. It also points out to other important areas such as the behavioral and the operation view of a process and the technology that should support the redesigned business process.

Input to the survey has been a list of "top ten" best practices in BPR (Table V and *H1*). The rules have been gathered to provide practitioners ideas on different implementation options for a new process. Indeed, all the rules that we included in this top ten list seem to be recognized and applied extensively by practitioners. The most popular ones particularly influence the "operation," "technology" and "behavioral" components of our framework (Figure 1). This list may be useful, particularly for BPR practitioners, as a checklist of redesign options.

In our survey, we have also analyzed and discussed the impact of the top ten best practices on four dimensions: the flexibility, the cost, the time and the quality (Figures 5-14 and *H2*). The four dimensions were graphically displayed using the devil's quadrangle (Figure 5). We tend to believe that applying a best practice may have conflicting impacts on the redesigned process. For example, the parallelism rule reduces the total duration of the process, but its implementation can be very costly if it implies using new technologies to support simultaneous execution of tasks. However, a closer look at our estimation and the feedback provided by the survey's participants indicates that the latter felt more positive about the four dimensions' impacts (Figures 5-14). This discrepancy can be related to the fact that participants were asked to rank the best practices' impacts and not to classify them. On the other hand, the differences are probably due to the fact that the participants were referring to different examples of BPR projects in their analysis. Each best practice was assessed in a particular context where it added value. This indicates a future research direction: to investigate for all best practices when, where and how to apply or not apply them as well as to develop a methodology in applying best practices. The methodology that we aim to develop should provide a guideline to the order/conditions in which the best practices should be implemented.

From a research perspective, the presented survey results may help academics to prioritise their further research into BPR best practices. Many BPR best practices still

Table V. Classification and level of usage of best practices amongst participating practitioners

Ranking	Best practice	Usage (percent)	Frequency	Framework component
1.	Task elimination	94	All participants used it six times or more	Operation view
2.	Integral business technology	94	16/17 participants used it from two to five times	Technology
3.	Task composition	89	15/17 participants used it from two to five times	Operation view
4.	Parallelism	88	15/17 participants used it from two to five times	Behavioural view
5.	Specialist-generalist	88	15/17 participants used it from two to five times	Organization: population
6.	Resequencing	88	15/17 participants used it from two to five times	Behavioural view
7.	Integration	76	13/17 participants used it from two to five times	Customers
8.	Empower	76	13/17 participants used it between from two to five times	Organization: population
9.	Numerical involvement	76	13/17 participants used it from two to five times	Organization: structure
10.	Order assignment	53	9/17 of those who used it did so from two to five times. The remaining used it only once	Organization: structure

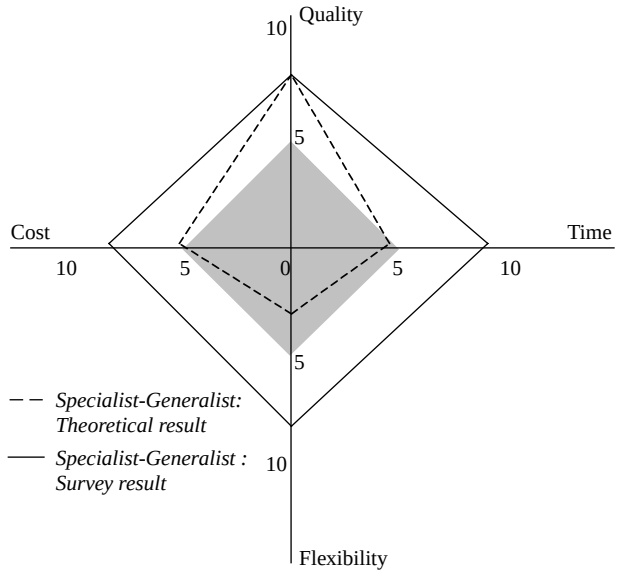

Figure 12.
The specialist-generalist best practice's impact

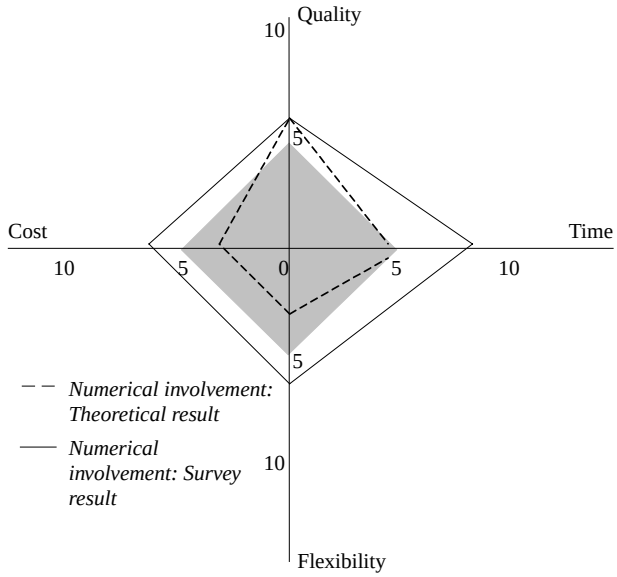

Figure 13.
The numerical involvement best practice's impact

lack an adequate quantitative support (Van der Aalst, 2000). Additional work should point out the conditions or domain validity where a best practice would give the expected results in terms of cost/time reduction or quality/flexibility improvement.

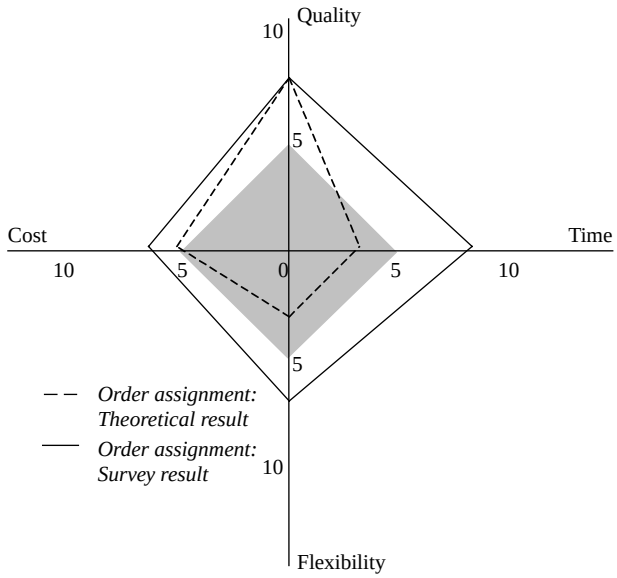

Figure 14.
The order assignment best practice's impact

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About the authors

S. Limam Mansar is an Assistant Professor in management information systems at the Business Sciences College at Zayed University, the UAEs. She has previously worked at London Metropolitan University and at Eindhoven University of Technology. She obtained her PhD in industrial engineering in 1999 at the National Polytechnic Institute of Grenoble. Her current

research interests are BPR, simulation, business-to-business systems and knowledge management applications. Selma Limam Mansar is the corresponding author and can be contacted at: selma.limammansar@zu.ac.ae

H.A. Reijers is an Assistant Professor of business process management at the Department of Technology Management at Eindhoven University of Technology. Before entering academia, he worked for several management consultancy firms, most recently as a manager with Deloitte. His main interests are BPR, information systems, workflow management systems, Petri-nets, and simulation.