

## 4 BPR Methodologies

### 4.1 Introduction to BPR

Business Process Re-engineering (BPR) is a process of radically changing organisational structures in a short period of time. The objective of the radical change is to innovatively redesign the organisation to perform its business as effectively as possible in line with operational strategies, while at the same time bringing about cost reductions and improved processes and systems. Michael Hammer defines re-engineering as "the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality and speed". [4. Hammer et al] Chase and Aquilano identified the following 6 step approach to BPR [1. Aquilano et al]:

1. State a case for action. Analysis of the organisation have to be done and a need for action have to be defined with a vision.
2. Identify the processes for re-engineering. The processes that will deliver the greatest opportunities from re-engineering must be identified. A project scope with costs must be identified and compared to cost savings that is summarised in a business case for BPR.
3. Evaluate Enablers for re-engineering. Creative applications must be identified with which existing processes can be redesigned and enhanced. Aspirational Business processes are defined with "Could-Be" models.
4. Understand the current processes by means of 'As-Is' and 'Should-Be' analysis.
5. Create a new process design with "To-Be" models.
6. Implement the re-engineered process. Relevant processes can be tested with a pilot to review the designed 'To-Be' processes, or implementation can be planned for processes that do not need pilots. Finally, full scale implementation and embedding of the 'To-Be' processes in the organisation.

### 4.2 Chapter Objective

A generic BPR methodology, as proclaimed by a re-engineering consulting company, will first be examined in this chapter. In addition useful BPR tactics, tools and interventions will be explained with hints for practical use. Note that these tools discussed are practical of nature, with no special software packages needed, which makes it even more useful. Experiences from the process and method followed within the Sietel BPR case study will then be given, demonstrating the fusion between theory and practice.

### 4.3 Generic BPR Methodologies

#### 4.3.1 Consultant's Generic BPR approach.

The Sietel case study, which will later be discussed in detail, mention the use of a consultation company. Because BPR is such a well defined topic in the literature, it will often be found that various consultation companies use the same high-level approach to BPR. These companies distinguish themselves in the business contracts they provide to their customers and the detail customisation of methodologies during design and implementation.

Gemini consulting distinguish between what they call their overall approach, and methods, tools and interventions utilised during BPR. They have a fairly straightforward high level approach which is segmented into 4 phases namely Business Development, Analysis & Design, Results Delivery, and Embedding & Sustaining [16. Gemini].

##### 4.3.1.1 Business Development

Gemini's model of business development is based on account development with a client, and relationship management. As can be seen from the diagram below, the objective is to identify various types of opportunities for themselves and their clients and then selectively pursue these.

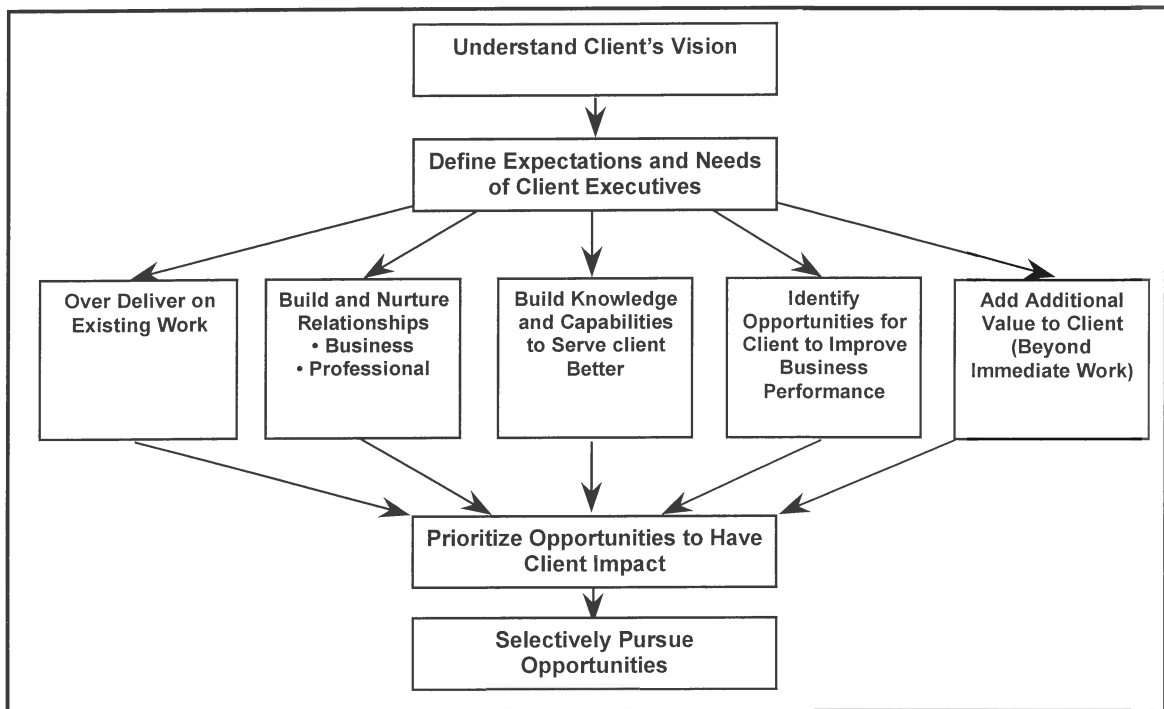


Figure 4-1 Gemini's model of business development. [16. Gemini]

#### 4.3.1.2 *Analysis & Design*

The primary function of the Analysis and Design phase is to develop a rationale for change with the client by means of identifying opportunities for BPR. The main activities during this phase are:

1. Set-up and onboarding of the joint client - Gemini analysis team.
2. Preliminary process mapping.
3. Hypothesis development which are studied and tested.
4. Deep drills into processes and data mining.
5. Development of an opportunity chart that gets validated, consolidated and formed into benefits cases.
6. BPR project design and costing
7. Presentation of costs versus benefits analysis to the client in the form of a business case.

#### 4.3.1.3 *Results Delivery*

The Results Delivery phase only continue when the client agreed with the business case and negotiated a contract with Gemini for a BPR project. This project is very much directed by the scope, which was generally indicated in the Analysis & Design phase. Management of the project in this phase needs to be flexible and situational driven though. The main activities during this phase are:

1. Set-up and onboarding of the BPR project team.
2. Validation of the Analysis & Design findings.
3. Detailed mapping of the current processes.
4. Redesign of these processes and validation by the organisation of the new processes.
5. Implementation of the new processes
6. Benefits delivery and tracking of defined opportunities from BPR.
7. Constant project re-alignment as necessary.

#### 4.3.1.4 *Embedding & Sustaining*

In this final phase the new processes are handed over to the process owners. The organisation then needs to accept the ownership of these processes and embedding are ensured through an existing loop of Plan - Do - Review which later leads to continuous improvement. Ongoing benefits tracking and support of the new processes are continued. The sustainability of the new processes are measured by means of quality audits.

### 4.3.2 Methods, Tools and interventions

As mentioned, within this consultant's approach various methods, tools and interventions are used. These are not only restricted to a single phase, but are continuously used through out the re-engineering project and implementation.

#### 4.3.2.1 Onboarding

Every group or team of client employees (and consultants) that get involved in the BPR project, have to go through an onboarding process. The objectives of this onboarding are:

- to set the scene for these people to work as a project group since all come from different functional departments;
- to present the expectations from the team to ensure understanding of BPR, what their roles will be in the process, and what the objectives will be for the BPR project;
- to explain the terminologies of BPR such as what is the concept of BPR, some BPR tools namely Brown Papers, Plan-Do-Review (PDR), Responsibility, Accountability, Consulted, Informed (RACI's), Key Performance Indicators (KPI's) and how the process of facilitating works.
- to explain what paradigms are, its role in organisations, and how BPR must overcome paradigms.
- the team is introduced to their coach, who is one of the directors of the company, and the interaction with the coach is explained.
- The team finally has to draw their own charter and time-line for the objectives, deliverables, scope and milestones of the BPR project.

Onboarding is therefore a team building exercise for the project team, as well as education for the task of BPR and understanding the methodology that have to be followed to reach objectives and deliverables.

#### 4.3.2.2 Brown Paper (BP) Methodology

Brown Paper (BP) Methodology is one of the simplest but one of the most effective tools in Business Process Re-engineering (BPR). The definition for a BP is as follows:

“It is a pictorial representation of a process, detailing and highlighting interfaces, decision points and information sources” [17. Gemini]

#### 4.3.2.2.1 The objectives of a Brown Paper

- Describe the realistic process flow as it works (it shows the ‘big picture’).
- Helps identify the strengths and opportunities of the process, as well as capturing the complexity of operational issues.
- Gains support for validation of opportunities or suggested solutions (in To-Be models) by developing ownership through participation.
- Describes the link between the process flow and measurable elements such as time, volumes, resource capacities, costs, etc.

#### 4.3.2.2.2 The benefits and uses of a Brown Paper

Because a BP process flow is a “high-touch, low-tech” tool, it is easily understood by all people, as opposed to conventional process flow charts where most participants simply “switch-off” when being presented. Thus high organisational involvement and ownership is possible when processes are validated and opportunities are identified.

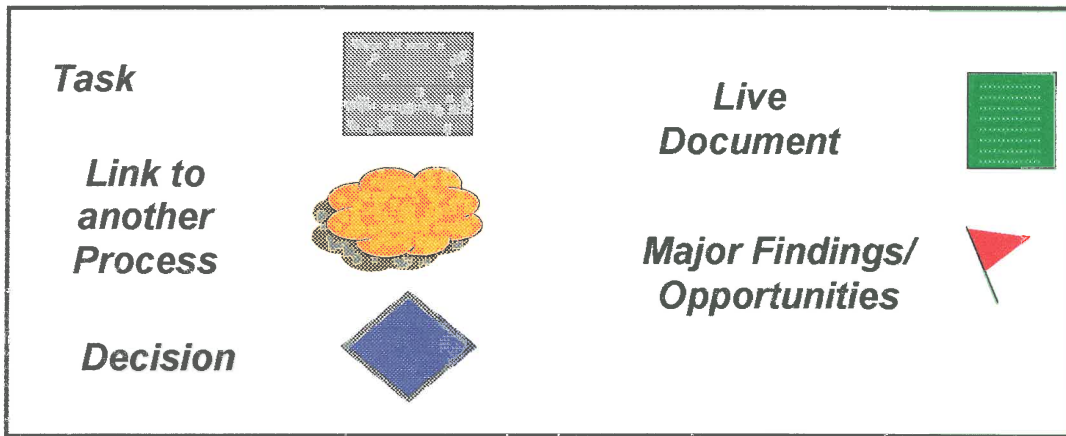
Building Brown Papers is the most useful tool during the analytical phases of a project in order to study the “current situation”, or when presenting results such as the designed “future process”.

Typically, Brown Papers are built for:

- As-Is processes (the current situation)
- Should-be processes (the situation according to the procedure)
- Could-be processes (the aspirational situation for the future)
- ‘To-Be’ processes (the desired situation for implementation)

#### 4.3.2.2.3 The typical elements used in a Brown Paper

- Tasks (square shape) that describe tasks performed. The definition starts with an action verb.
- Decisions (diamond shapes) which describe a decision taken with a ‘yes’ and ‘no’ outcome.
- Links to other processes (cloud shapes) which describe a link to another process flow that is out of scope or on another BP.
- Findings (flag shapes) which indicate where major opportunities exist.
- Live documents (a copy of the document itself) which show the documents used in the process. These can be in the form of reports, delivery notes, computer screen printouts, etc.

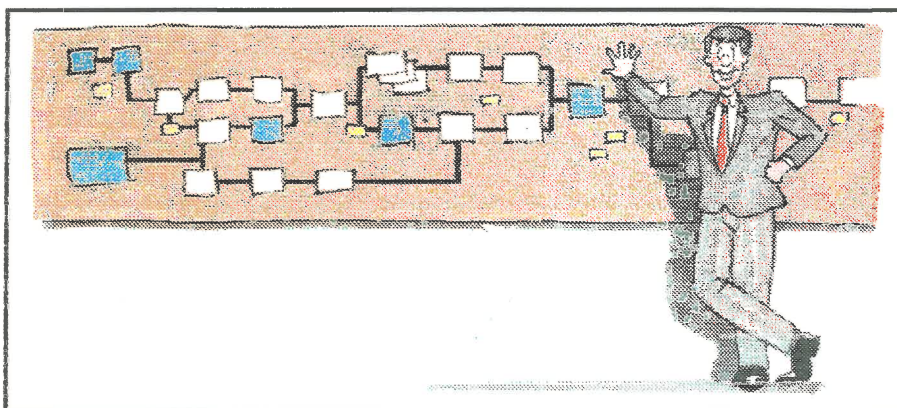


*Figure 4-2 Elements used in Brown Paper process flows.*

#### 4.3.2.2.4 Brown Paper construction steps

The typical steps taken when building a BP and utilising it to analyse and present information are:

1. Identify the process of relevance. Also define the scope of study by means of defining the beginning and the end.
2. Recruit the process owners or experts to build the BP. The experts should be the creators of the BP, while the BPR team members usually only facilitate the building process.
3. By means of a workshop the experts map the process flow on a blank BP and include all relevant information (cycle times, systems, documents used, etc.).
4. This BP then has to be validated by other people from the organisation that are also involved with the processes. These people have to give their comments on process issues and opportunities, which are written on “post-it notes” and stuck onto the BP. As validation, all participants should write their names on the BP on the validator's sheet.
5. Once completed, the BPR team has to study all comments made regarding the overall process. Findings and conclusions have to be made on the strengths and opportunities of the processes.
6. Finally, these findings and opportunities have to be presented back to management.



*Figure 4-3 Brown Paper Process Flow*



BP's are an effective tool to quickly gain information on how processes work and to find out what the opportunities are within the process. Going through the exercise of constructing and validating BP's is a method of getting buy-in from the organisation for BPR.

#### 4.3.2.3 *Plan – Do – Review (PDR) during BPR*

The PDR cycle is a simple method that can be used when executing a meeting, a workshop, building Brown Papers, and even managing the phases of the BPR project. Following the PDR cycle for planning and executing meetings or workshops, involves the following steps:

- **Plan:**
  - Establish the need for the meeting / workshop.
  - Set a clear agenda.
  - Make all arrangements for the meeting (location, media, ect.)
  - Define roles and responsibilities for the meeting (chairman, facilitator).
  - Pre-position key contributors as input to the meeting.
  - Identify barriers that need to be overcome.
- **Do:**
  - Follow the agenda.
  - Record group thinking, issues and ideas on flipcharts to include in minutes.
  - Practice good meeting behaviour and facilitate the meeting properly.
  - Encourage participation of all participants.
  - Record Benefits and Concerns of the meeting.
  - List all Next Steps that need to be taken care of in the future.
- **Review:**
  - Evaluate the effectiveness of the meeting.
  - Circulate meeting summary and issues that were recorded.
  - Follow up on Next Steps.
  - Incorporate Benefits and Concerns into the next meeting plan.

BPR itself might seem like a constant exercise of building models, but in this repetition of BP building there is also a PDR logic to facilitate the process:

**PLAN** - Set an objective for building a BP model, which might be:

- to gain understanding of the process under investigation, or
- to identify opportunities within the process, or

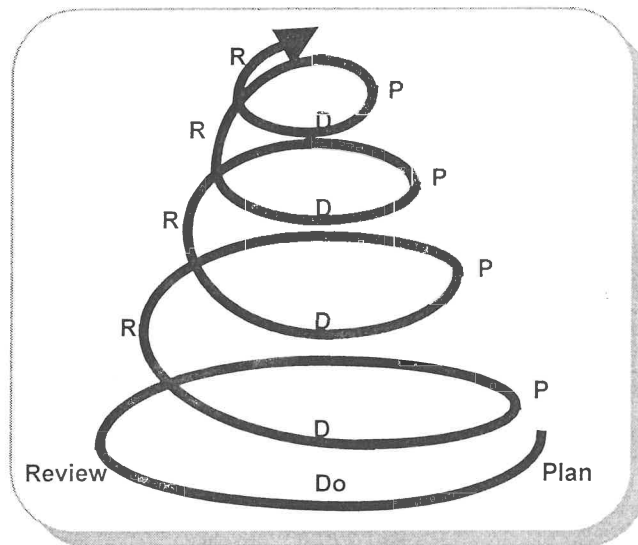
- to validate a new process design (To-Be / Aspirational models).

**DO** - Build the BP model by means of a Workshop

- A workshop has to be used to get the ‘experts’ to build the model

**REVIEW** - Have the BP model reviewed by the organisation with the following objectives:

- the organisation has to validate the accuracy of the model;
- get comments on the model to gain additional information from the organisation and get buy-in;
- finally the BPR team has to review if the objective of the BP model, or BPR phase has been met, and if the next phase can continue.



*Figure 4-4 Continuous loops of Plan - Do - Review.*

Plan – Do – Review is an iterative cycle of constantly managing the activities performed during BPR and making sure objectives are achieved.



#### 4.3.2.4 RACI charting

In the process of analysing organisations in need for re-engineering, clearly defined roles and responsibilities are nearly always a shortcoming. This can usually be deduced by statements like: “It seems every department has someone putting together a spreadsheet on the same data”, or “Things are always falling through the cracks”. Typical results of clearly defined roles and responsibilities are:

- Increased productivity through well defined accountability
- Increased capacity by eliminating overlaps and redundancies
- Streamlined work processes by eliminating unneeded interfaces and placement of accountability where it belongs
- Improved organisation effectiveness results by allowing disciplines to co-operate and share responsibility

The benefits from such results can have significant improvement effects on an organisation without any expenditures in additional resources or systems. It can require a notable change in the organisation though, thus a technique is required to properly analyse and identify roles and responsibilities correctly.

RACI charting [16. Gemini] is a systematic and participative technique to:

- Identify all functions (activities, tasks, and decisions) that have to be accomplished for effective operation.
- Clarify roles and individual levels of participation in relation to each of these functions.
- Develop best methods for individuals to fill these roles.

RACI is an acronym for:

- **Responsible** - This is the individual(s) who perform an activity or is responsible for action / implementation. For a single function the Responsibility can be shared, thus there can be more than one R per function / activity.
- **Accountable** - The individual who is ultimately accountable, which includes yes/no and power of veto. Only one “A” can be assigned to an activity / decision.
- **Consulted** - The individual(s) to be consulted prior to a final decision or action is taken. It is an indication of two-way communication required.
- **Informed** - The individual(s) who needs to be informed after a decision or action is taken. Only one-way communication to these individuals are necessary.

Developing RACI charts is a simple process, which basically consist of a four steps:

1. Determine the activities / decisions. This is usually taken directly from process flows that have been developed via Brown Paper exercises.
2. Prepare a list of participant roles. All possible departments that can be involved in a process have to be listed.
3. Develop the RACI chart. The format of a RACI chart is illustrated below. The activities are listed on the side and all the roles listed on top. For each activity all the possible roles are defined as R's, A's, C's, or I's.
4. Get feedback and buy-in. To ensure the highest possibility of defining accurate and correct RACI charts, it must be developed in workshops with all the relevant parties. This will also maximise the buy-in for accepting the RACI chart as correct.

		<i>Participant Roles</i>				
		<i>Role<sub>1</sub></i>	<i>Role<sub>2</sub></i>	<i>Role<sub>3</sub></i>	<i>Role<sub>4</sub></i>	<i>Role<sub>5</sub></i>
<i>Activities (or Tasks)/ Decisions</i>	<i>Task<sub>1</sub></i>	A		R	R	
	<i>Task<sub>2</sub></i>	A	R		C	
	<i>Task<sub>3</sub></i>	I	A		R	
	<i>Task<sub>4</sub></i>	R		C	A	I

Figure 4-5 RACI chart

The last step of defining RACI charts are most probably the most important and difficult step. Defining RACI's is also not an action that should be seen as being done separately to all the other BPR activities, but as a part of the whole exercise to complete the picture of the optimum organisation.

#### 4.3.2.5 KPI Measuring

Measurement are important to help manage a business. If a business or project don't measure against a plan, there is no way of knowing if things are good or bad compared to what needs to be achieved. Without measurements, improvement cannot be quantified. By measuring Key Performance Indicators (KPI's) it is possible to know where a business or project is going and how well it is doing.

A KPI is a clear, understandable reference of the wellness of an operation. It is measurable and point to controllable leverages for changing an operation. [16. Gemini] The diagram below illustrates how a KPI can be used to measure and improve a process by focussing on performance gaps.

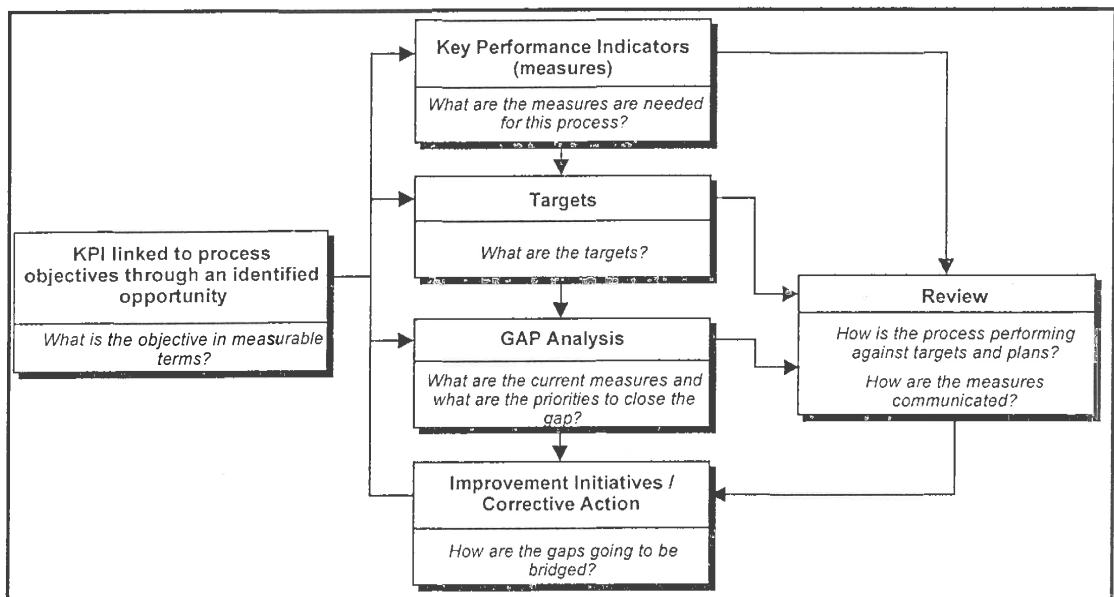


Figure 4-6 Process Improvement driven by KPI's.

Characteristics of good KPI's are:

- It focuses on the "critical few" in stead of the "trivial many".
- It facilitates pro-active and corrective action.
- It is bought into by those accountable for achieving the target objective.
- It motivates the process owners and helps to achieve continuous improvement.

The effect of successful BPR can only really be seen if reasonable KPI's has been put into place and are measured to indicate the improvement of the business. As a rule of thumb there should not be more than 5 KPI's per process, otherwise it becomes a troublesome exercise to measure it regularly. During the final BPR implementation it is KPI's targets that drives the embedding and sustainability of the improved processes.

## **4.4 The Sietel BPR process**

### **4.4.1 Analysis and Design Phase**

The objective of the analysis and design phase was to build a business case for a BPR exercise. This business case has to contain clearly defined opportunities in the organisation, with quantified cost or asset reductions, and revenue enhancement scenarios linked to the opportunities. These opportunities are identified by means of hypothesis testing. Hypothesis are made about insufficiencies in the organisation such as for ex: Invoicing of customers take a substantial amount of time which causes delayed payment. This hypothesis then has to be proven true or false. This is done in two ways:

Firstly, extensive interviews are held with relevant people in the organisation to gain information around the issues, such as for ex: what is the average lead-time to invoice the customer. If needed 'day in the life of' (DILo) studies can also be done to gain information of processes.

Secondly, generic Brown Papers (BP) are build of the processes within the organisation. Weaknesses and strengths are identified on these BP processes. The organisation is then invited to validate these BP and make their comments on the BP. Comments are written on 'stick-on' papers and stuck onto the BP. From these comments, or 'builds', conclusions and findings can be derived of the opportunities within the organisation.

Once a hypothesis has been proven true, a value of the opportunity has to be calculated in terms of an asset reduction, a cost reduction, or revenue enhancement. In the example of reducing invoicing cycle time, the interest cost for total late payments must be compared to the reduction of interest lost if payments were received earlier.

Collections of proven hypothesis on opportunities are thus transformed into benefits cases and form a business case. The business case is laid before management for decision whether BPR should be taken on or not. If BPR is to proceed the business case will be the guideline to which processes should be re-engineered and what benefits must be gained.

## 4.4.2 Analysis of current business processes

### 4.4.2.1 *As-Is analysis*

The As-Is analysis is a process of gathering as much detail information of the current business processes in as shortest time as possible. The generic process maps delivered by the A & D phase are used as a starting point. These processes with its comments and identified opportunities are studied to gain understanding of how these particular processes work in general. It does not give any information though of what is really going wrong, only the comments provide glimpses of insufficiencies. To learn the root causes of the insufficiencies in the processes detail process maps have to be build that will demonstrate the variations in the organisation from the generic processes. This is done by means of workshops where process experts are called in to build detail process maps. The generic process maps are hung-up in the workshop for reference, but the experts have to map the processes on blank sheets of brown paper using stick-on papers to record the individual activity blocks. The stick-on papers provide the benefit of moving the blocks around and nobody has to worry about it being placed wrong the first time around.

Once the business processes have been mapped in detail, the BP's have to be cleaned-up. This is basically rebuilding the BP's as neatly and understandably as possible in order that the organisation can validate it.

A special BP fair must then be organised where the whole organisation are invited to see the BP's and validate the truth and accuracy of the processes. The BPR team also has to prepare themselves to present these processes and answer any questions on the processes. Such an As-Is BP fair have the following benefits:

- The processes get validated by many process participants / owners, which ensure the BPR team that the information is true and accurate. Validators sign their names on the BP.
- The organisation is once again invited to give comments and build on the BP process which supply the BPR team with additional information.
- As people put their own comments on the BP, they get ownership of that BP, which makes them part of the BPR exercise. This is in itself a process of getting buy-in from the organisation for the product of the BPR process.
- Because the BPR team has to present the BP to the organisation and be able to answer questions and interact with the organisation, they are continuously getting to know the functioning of the processes better.

- Very few people in an organisation ever know and understand the total functioning of the organisation. A BP fair provides the opportunity for all employees to learn how the organisation works and how its processes operate.

After the BP fair all the comments have to be noted down, categorised to the different process areas and consolidated into findings. From this analysis exercise the BPR team should get a clear understanding of how the processes function and what is exactly wrong with it. At this stage there may still be no, or very few answers to solutions for the problems, but that is not important for As-Is analysis. It will most probably be that additional opportunities have been identified that was overlooked during the A&D phase. All these findings have to be summarised and reported back to the Executive Steering Group in order to ensure a proper understanding of the situation within the organisation. Only after a clear understanding of the processes, with its inadequacies and inefficiencies has been formed, can the BPR team continue to the To-Be design phase.

#### 4.4.2.2 *Should-Be Design Phase*

The objective of mapping 'Should-Be' process flows is to identify the way business should work, the theoretical process, or the way it is intended to work. Identifying the areas where the 'As-Is' processes go astray from the 'Should-Be', represent the gaps for improvement. This is very useful when Business Process Optimisation is the goal. When attempting Business Process Re-engineering the aim is to break out of even the 'Should-Be' paradigms and looking with a total new perspective at the business processes.

To quote Michael Hammer in what he call the essence of Re-engineering: "At the heart of reengineering is the notion of discontinuous thinking-of recognising and breaking away from outdated rules and fundamental assumptions that underlie operations. Unless we chance these rules, we are merely rearranging the deck chairs on the Titanic. We cannot achieve breakthroughs in performance by cutting fat or automating existing processes" [21. Hammer].

Within Sietel the resulting 'Should-Be' processes were totally unplanned. Workshops were held with the objective to deliver 'To-Be' processes. Due to an inability to break out of the organisational mind frame, only optimised processes were produced, and not redesigned processes.

To facilitate the organisation in breaking out of their paradigms, a radical new vision had to be designed, which resulted in 'Aspirational' Models.

### 4.4.3 Designing the New Business Processes

#### 4.4.3.1 *Aspirational Models and Migration Strategy*

As already mentioned, the objective of ‘Aspirational’ models is to create a drastic new vision of how the organisation’s business can operate. Ideally this vision should indicate how technology is utilised, what the ultimate target lead-times should be, and a new way in which business will operate in the future.

The ‘Aspirational’ models were designed to be simplistic demonstrations of drastically improved processes. It is usually based on improved forecasting, taking as much operations out of the critical path as possible, and outsourcing non-core business activities. These models can also be referred to as the ‘Could-Be’ processes and show an option for how the business could operate in 2 to 3 years time.

Along with the Aspirational models, a stepped migration strategy also have to be designed. The migration strategy must indicate how the business will need to change over a 2 to 3 year period in order to reach the aspirational vision of operation. Such a migration strategy indicates various steps, or phases the business will need to go through.

Examples of such phases to reach the aspirational Supply Chain vision could be:

- First improve forecasting to 95% accuracy.
- Then start producing, and later on ordering against the forecast.
- Alter the product design to allow for pre-assembly to order.
- Finally outsource non-core business activities such as installation.

From the Sietel experience it was realised that small teams should design the ‘Aspirational’ models instead of using workshops. Project Team members that did analysis of the processes (As-Is and Should-Be) designed the Aspirational Models and Migration strategies. The logic were not to use people directly involved in the processes, but rather knowledgeable experts that had a different perspective. Benchmarks and Best Practices information provided by the consultants were very important in these models. It formed the basis of the assumptions made in the Aspirational Models.



#### 4.4.3.2 *To-Be Design Phase by Cross Functional Teams*

Before moving on to 'To-Be' designs, Sietel had gone through two phases of analysis, which consisted of:

- The A&D phase in which the opportunities for re-engineering in Sietel was defined and the project design for BPR was done.
- The Design phase in which Sietel's processes were analysed, a vision was determined for the company, and the exact scope for process design was set.

At this stage of the project it was exactly known how the various processes in the organisation interacted, and which of these business areas required 'To-Be' processes designed. Sietel's Value Chain were further sub-divided for this purpose and 'To-Be' models had to be designed for the following Value Chain aspects:

- Customer Relations - this related to all contacts with customers and setting up Service Level Agreements (SLA's) for the service that will be delivered.
- Offer Preparation and Order Processing - the process involved in tendering and subsequent handling of the customer's orders.
- Supplier Optimisation - focus on reducing the amount of suppliers and setting SLA's in place with the preferred suppliers.
- Procurement Processes - involved placing orders with suppliers and expediting goods or services.
- Inbound and Outbound logistics - involved any transportation of goods from the suppliers up to the point where the customer receives it.
- Warehousing - all the storage areas and the processes to receive goods, store it and dispatch it.
- Installation and Commissioning - these were all processes involved in preparing and performing installation of systems, and setting the systems up for operation.
- Service Business Development - these activities focussed on new business that can be generated from providing additional services to already existing customers.
- Service processes - these are all the after sales services such as help desk, maintenance and repairs.
- Invoicing and Collection - focussed on invoicing customers for goods delivered and services rendered, and making sure that money is collected on time.

In order to design 'To-Be' models for each of these processes a Cross Functional Team had to be allocated for each. Managers from the Key Accounts in Sietel were required to allocate various experts to each of these Cross Functional Teams. Each of these cross-functional teams was also taken through an onboarding process and the expectations explained to them. The Sietel members from the BPR project team each had to lead two cross-functional teams and the consultants had to facilitate these teams. The process these teams went through to redesign the Supply Chain segments were:

1. Define an aspiration for the supply chain segment. This step required the team to identify the inputs and outputs to that particular process. They also had to define what "good" would look like for that process in terms of aspirational operation.
2. Identify the strategy for the Supply Chain segment. With strategy, it meant the best practices applicable for that particular process had to be identified. Examples were: Optimise suppliers with ABC classification, establish a centralised procurement department, ect.
3. Design and map a new process. In workshop format brown paper processes had to be designed for each of these processes with all possible interfaces. It then was captured electronically for later integration into other process.
4. Define the RACI's for each of the process activities. All the involved parties had to be identified and their responsibilities were identified with RACI charts. These RACI's were later on also integrated with each other for the total supply chain view.
5. The detail tasks performed in each process activity had to be defined. This was the step by step actions that were performed in each activity. These detail tasks also had to correlate with the RACI charts in terms of who perform these tasks. From this, later estimations can be made of the staff requirements to perform these processes.
6. Identify KPI's for the Supply Chain segments. It was suggested that an average of 5 KPI's had to be identified to measure each process. To measure more KPI's would be illogical. KPI's usually consisted of either measuring lead times, costs / savings, or volumes such as stock.
7. Identify the organisational structure that needs to own and operate the process. From the RACI's and detail tasks staff estimates could be made that was required to handle the new processes and micro organisational structures had to be designed for these.

The result from these cross-functional teams were detail designs which were documented and referred to as the "process steps 1-7" for each supply chain segment. With the accomplishment of this objective, the operation of the cross-functional teams was stopped. The 10 Supply chain segmented processes were then linked with each other into one integrated supply chain process by the BPR project team. The purpose of this integration was to ensure that a proper flow exists for the 'To-Be' Sietel supply chain, from Offer Preparation until final Invoicing and Collection.

#### 4.4.4 Implementation and Embedding of the designed processes

The biggest challenge of the project was to implement the newly designed processes, but this required the following three preliminary activities:

1. Proper project planning had to be done for implementation. This required a realistic timeline with milestones, resources that had to be made available, extraordinary costs for implementation had to be estimated, and interdependencies between various processes and systems had to be established. This implementation planning were done by the BPR project team members in conjunction with the future process owners (the managers in whose units the processes will exist), with even some involvement from the coaches.
2. An implementation team whom had to ensure the designed processes became implemented and embedded, had to be selected and made available. Ideally the team had to consist of the future process owners, some of the experts from the cross-functional teams, and once again some of the BPR project team members to facilitate the implementation project.
3. Any Critical Success Factors for implementation have to be addressed by the coaches. An example of a critical success factor is the initiation of changes in the organisational structure to adapt for the new processes.

During this part of the project, the BPR project team has to act as project co-ordinators and rely on project management and monitoring principles to drive implementation. The deliverables were much clearer at this stage than at the beginning of the project, and the following list of criteria were the indication of successful implementation for each process:

- Process documentation has to be in place and updated according to the latest relevant changes.
- Orientation and training of the key users of the new processes has to be complete.
- The process owners have to accept ownership of the new processes, and accountability and responsibility have to be transferred to the relevant functional areas (old process owners had to relinquish ownership).
- Long term enablers to support the processes, such as information systems, have to be implemented.
- Measurements (KPI's) for the new processes have to be in place and tracking the operation of the supply chain.
- The people (process users) have to understand the basic processes.

Once these criteria were met and the Executive Steering Group were satisfied with the results, a final "accomplishment permit" was awarded, which meant the BPR objectives were achieved and the BPR project team could be disassembled.

## **4.5 BPR Methodologies conclusion**

For Sietel the end of the BPR project did not mean the process of change stopped. The biggest intangible benefit that resulted from this BPR project was the culture change. This episode could be considered as a quantum leap for Sietel into a world class situation from which continuous improvement could effectively proceed.

From the various BPR techniques and methodologies studied and discussed, with specific reference to the approach followed in the Sietel Case study, a remarkable similarity can be concluded for BPR approaches. This can be summarised as:

1. Identification of the re-engineering opportunity (as performed in the A&D phase for Sietel)
2. Analysis of the current business processes.
3. Designing of the new business processes.
4. Implementation and embedding of the designed processes.

## 5 Best Practices and Benchmarks

### 5.1 *Best Practices and Benchmarks Introduction*

The road to becoming a world-class company requires an organisation to compare all its fields constantly with the best companies in the industry. The technical term for this process is "benchmarking", which basically means measuring oneself against others and learning from them. Only then does an organisation really know where it stand relative to its competitors; and only then can it take concrete measures to change things. [46. Siemens top+] Essentially, there are two types of benchmarking: comparison with the industry leader (competitor benchmarking); and comparison with the process leader ("best of best" benchmarking). The process leader is the company, which irrespective of its line of industry, has the best mastery of its process anywhere in the world. A possible third type of benchmarking can be included, and that is benchmarking against oneself. If an organisation is already a process leader, or is in such a niche business that there is no one to compare to, it can measure its progress against itself to see if it is constantly improving on its own standards.

International Best Practice (IBP) has its origins in the decline of American manufacturing, which became apparent in the 1980s. In an attempt to explain this decline, researchers developed the idea of best practice as a means to identify the reasons for successful manufacturing on the part of America's competitors (Japanese in this case). As a result of this type of research, 6 components in best practice were defined [7. Lloyd]:

1. Focus on simultaneous improvement in cost, quality and delivery.
2. Establish closer links to customers.
3. Establish closer relationships with suppliers.
4. Use technology effectively as a strategic advantage.
5. Create flatter organisation structures for greater flexibility, commonly involving only four or five levels from shopfloor level to management director.
6. Set human resource policies, which promote continuous learning, teamwork, participation and flexibility.

### 5.2 *Chapter Objective*

Best Practices and Benchmarking are useful tools during BPR. Unfortunately it is often misunderstood in practice and not used. Process owners commonly have the reasoning: "our business is so different that the text book stuff does not apply to it", which cause stubbornness about best practices or intentions to measure against anybody else. This chapter will look at how benchmarking and best practices originated and some examples of best practices. It is not the aim of this dissertation

to name and discuss all best practices (that would be a dissertation on its own, and would most probably be outdated by the time it is being examined). The main objective of this chapter though, is to explain how benchmarks can be used during the As-Is analysis of an organisation, and the how best practices are designed into To-Be processes.

### **5.3 Best Practices descriptions**

In a way, each one of the chapters in this dissertation examines a best practice: identifying EVA opportunities, BPR in itself, the Balanced Scorecard approach, utilisation of Project Management, and creating Business Architectures. In business, there are often ‘ways of doing things better’, which can be applied to other industries. In the following paragraphs generic ‘ways of doing things better’ are explained as best practices. In his re-engineering article Hammer referred to these ‘ways of doing things better’ as: ‘Principles of Re-engineering’ [21. Hammer] and in his book: *Reengineering the corporation*, Hammer explained best practices as methods to rethink business processes, enabling IT, and creating a new world of work. [4. Hammer]

#### **5.3.1 Customer Relations**

To establish close links to one’s customers can be one of the most beneficial aspects for an organisation from a revenue point of view. Kaplan suggested the following best practice goals: get standard products to markets sooner, improve customers’ time to market, become customer’s supplier of choice through partnerships with them, and develop innovative products tailored to customer needs. [24. Kaplan et al]

To get close and satisfy one’s customer, customer strategies must be followed.

Ken Lewis from Dutton Engineering, a small UK company that won the prestigious Wedgwood Trophy (1994), and the KPMG Anglia Award for Motivation (1997) describes their attempts of strong customer focus as: “Be proactive to understand the customer, often customers don’t know where they are going themselves, but if spend enough time, it is possible to get to know the customers ambitions”. [6. Lewis]

Hammer suggested: *case managers to provide single point of contact* as customer interface strategy. A case manager is an interface for the customer to the dispersed and complex processes that produce his products or services. When reporting have to be done on the progress of a product or service, the customer only deals with the case manager, not the red tape of searching for answers himself. Another customer strategy by Hammer is to *have multiple versions for processes*. For example, each customer request should not take the same tedious procedure, but have a fast track route for simple requests, standard route for medium to hard requests, and specialist attention for exceptions. [4. Hammer]

### 5.3.1.1 *Customer Value*

Brecker Associates, a Pittsburgh based consulting firm that focus on maximum value performance, state that ‘**Customer Value** is why customer purchase an organisation’s products and services. They want the most value for the price and they define value in their terms. Enhancing that value enables organisation’s to increase their customer satisfaction and competitiveness in the marketplace.’ [39. Brecker] This emphasises the importance in listen to, and understanding customers continuously to keep up with changing customer needs and desires, and being flexible in responding to their needs.

Employing principles such as Quality Function Deployment (discussed under Research and Development) ensures that the focus of product and service development, production and implementation, focus on customer value, which is the basis for the existence of the organisation. A structured approach to define best practice levers to enhance customer value is:

- Identify and quantify customer needs,
- Evaluate product and service features against these customer needs, and
- Identify critical process characteristics and measurements required to reduce the variation in meeting these needs.

### 5.3.1.2 *Service Level Agreement*

One of the keys to better customer service is the introduction of **Service Level Agreements** (SLA’s). Gemini’s Service Level Management explained SLA’s as: ‘The most important step in the provision of a credible service is the definition of a realistic Service Level Agreement (SLA). [18. Gemini] A Service Level Agreement describes what is to be measured, how it is to be measured, the target service levels to be achieved, and any qualifying conditions, which must be met in order for it to be achieved.’ At its basic level, a SLA is an exchange of expectations between the customer and supplier and provides an agreed framework for doing business. SLA’s open the door to co-operation, create trust and reduce conflict by solving problems as (or before) they occur.



### 5.3.2 Logistics Management

The field of logistics management generally includes Procurement, Transportation and Warehousing functions. Globally it can be seen as the whole process of ensuring that the right materials, is on the right place, at the right time, in the right quantities. A key enabler to achieving world class logistics management is supplier and agent management. As Kaplan explained the benefits: “An excellent supplier may charge higher unit price for products than other vendors but nonetheless be a lower cost supplier because it can deliver defect free products in exactly the right quantities at exactly the right time directly to the production process and can minimise, through electronic data interchange, the administrative hassles of ordering, invoicing, and paying for materials.” [24. Kaplan]

#### 5.3.2.1 *Supplier Management*

Brecker Associates suggests that analysing materials and services purchases can yield quick savings even in well-run organisations. Purchases can be examined by

- Commodity,
- Supplier,
- monetary value,
- frequency of transactions, and
- make or buy decisions

to determine how value can be enhanced while saving time, effort, and money. [39. Brecker] Often it can be found that the same commodities are bought from various suppliers, at various prices. Improvement actions taken depends on the strategic nature of the materials or services being purchased and the impact on the business in terms of cycle time and monetary savings.

Performing an ABC classification (according to business volume) on suppliers can quickly determine which suppliers are important. **Partnership sourcing** analysis and actions can then be undertaken. Ken Lewis identified partnership sourcing as: ‘a commitment by both customers and suppliers, regardless of size, to a long-term relationship based on clear, mutually agreed objectives to strive for world-class capabilities and competitiveness’ with the objectives of [6. Lewis]:

- Minimising total costs.
- Maximising product and service development.
- Obtaining a competitive advantage.

The benefits and advantages to be gained from partnership sourcing are:

- Security of supply – Identifying and developing good suppliers and give them the business of the bad ones. These good suppliers will start treating the organisation as a valued customer.
- Reduced paperwork – Instead of various purchase orders and invoices, only single purchase orders have to be made and single invoices are received, reducing administrative costs.
- Improved Quality and cost savings – Good quality is a prerequisite to become a preferred supplier. With this in place, in-coming quality inspections can be eliminated.
- Simpler delivery systems – Utilising Just-In-Time (JIT), direct-to-line and Kanban methods, suppliers can deliver raw materials directly to production lines in the correct quantities.
- Lower stocks and better asset management – On time deliveries from good suppliers ensure that optimum stock levels can be maintained and ‘just-in-case’ stocks (which can in anyway not be found when needed) can be eliminated.
- Forward planning – Suppliers can do better forecasting based on open communication, and improve their ability to meet delivery targets and deadlines.
- Financial stability – A mutual trust must be created in which suppliers will deliver on time, and then get paid on time. Supplier’s stable cash flow is of importance for both the supplier and the customer.
- Reduced total cost – Open communication ensures proactive steps to remedy problem situations, which in retrospect could always have high cost impacts.

### 5.3.2.2 *Materials Transportation*

Transportation Best Practices does not feature much in text books or academic articles, yet this activity presents itself with various opportunities / threats. It is an important activity in any supply chain, involving valuable time and presenting risks. The Siemens top+ award program identified the following best practices for international transportation [46. Siemens top+]:

- Project / Batch consolidation – Utilising optimum quantities for transportation, and ensure all project components are shipped at once reduce double shipments.
- Close partnership with Transportation Agents – Same as with supplier partnership sourcing, good agents reduced risks involved with transportation. Some agents can even provide customers access to electronic tracking systems, thus an ability to exactly pinpoint cargo location.
- Pre-clearances at customs – Custom delays are often found to be the longest ‘hold-ups’ when transporting across borders. If correct material and shipment documentation is presented to customs before cargo arrives at a border, pre-clearance can be done and any delays eliminated.

- Air freight versus Sea freight – With the transportation of expensive telecommunication equipment, the interest cost on 4 weeks of sea freight justifies air freight.

### 5.3.2.3 Centralisation / Decentralisation of Logistics functions

To centralise or to decentralise? The following Dilbert illustration by Scott Adams is most probably the best answer.

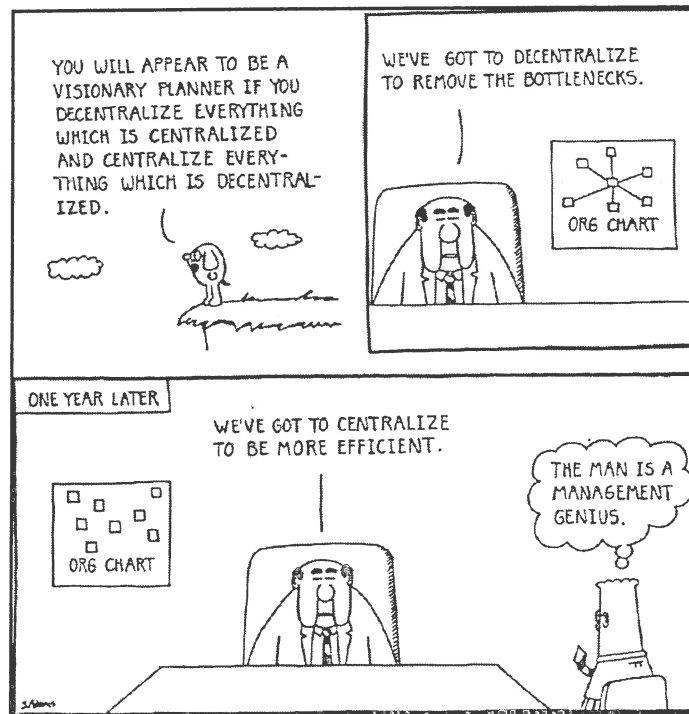


Figure 5-1 To centralise or not to centralise [Adams]

The drive to Centralise functions is very dependent on organisation characteristics such as topography, size, bureaucracy, and supporting communication and information systems. Centralisation or decentralisation of logistics activities is usually based on establishing control versus creating flexibility. Hammer's views on this topic were [4. Hammer et al]:

- *Work should be performed where it makes the most sense – don't use a specialist for a job just because it is a specialist, where possible, have those who use the output of the process, perform the process.* The advent of expert systems and databases can provide process owners sufficient specialist knowledge to perform those tasks themselves.
- *Establish hybrid centralised/decentralised operations – IT, communication systems and shared databases provide the facility to pool knowledge and make it accessible in far regions. Geographic dispersed resources can be treated as though they were centralised.*

In the Sietel business it was realised that logistics activities are of importance because the majority of the telecommunication products and components are sourced from various suppliers abroad. The Sales Account Managers traditionally tried to manage these activities themselves. To optimise quality

of delivery and cost effectiveness, this function was centralised in a Logistics Department with decentralised logistic project managers in the Sales departments. This resulted in close control, on time delivery and a decrease in stockholding and eliminated duplication. The centralised facility made the implementation of logistics best practices much more effective. But this facility first had to prove their capability to handle logistics activities. In addition a real-time Enterprise Requirement Planning (ERP) system have to be in place to ensure immediate responses and transparency of information (for example: stock availability / order progress). The centralised Logistics department had to provide SLA's to the Sales departments promising a certain amount of flexibility (such as expedite possibilities). [33. Tirisano]

### 5.3.3 World Class Manufacturing

Ken Lewis made the following comments of becoming a world class manufacturing company [6. Lewis]:

- World-class manufacturing means top management commit to manufacturing as a competitive weapon. The whole company is committed to use its resources to beat the competition.
- World-class manufacturing is not a scattergun attempt to be best at everything. You have to know what you are good at, and sub-contract the rest to good quality suppliers
- Awareness of best practice techniques. Make time to see best practice techniques in operation.

#### 5.3.3.1 *Just-In-Time (JIT) Manufacturing*

Just-In-Time manufacturing is an integrated set of activities designed to achieve high-volume manufacturing using minimal inventories of parts that arrive at the workshop just in time. Producing customised products one-at-a-time for each customer order and delivering it virtually the same day has been popularised as the ideal, agile manufacturing enterprise. Common sense economics requires that the degree of product customisation versus production volume be considered and balanced with processing capabilities for each product.

A wide variety of techniques can be utilised to determine appropriate JIT practices to implement. JIT requires a "systems" look at the product variety being manufactured and assembled, process capabilities, purchased materials, and competitive advantage. Each situation has its unique facets based on volume, mix, and technologies. Objectives are to reduce the amount of shop floor co-ordination required while increasing the flexibility to handle individual orders. Techniques applied to accomplish JIT manufacturing include [1.Aquilano et al]:

1. Design Process Flows
2. Total Quality Control
3. Stabilise schedules

4. Kanban Pull
5. Work with Vendors
6. Reduce Inventory even more
7. Improve Product design

### 5.3.3.2 *MRP and MRP II*

MRP (I & II) is a logical, easily understandable approach to the problem of determining the number of parts, components, materials and resources needed to produce an end item / service.

Based on a master schedule derived from a production plan, a Material Requirements Planning (MRP) system creates schedules identifying the specific parts and materials required to produce end items, the exact numbers needed, and the dates when orders for these materials should be released and be received or completed within the production cycle. [1. Aquilano et al]

Manufacturing Resource Planning (MRP II) is simply an improved version of MRP as discussed above. MRP II considers resources as well as materials.

### 5.3.3.3 *Total Quality Management (TQM)*

The term Total Quality Management has been coined to describe a philosophy that makes quality values the driving force behind leadership, design, planning and improvement initiatives. [1. Aquilano et al] In drives to implement TQM organisations perform Quality Control utilising certain tools, achieve ISO 9000 registration, put Continuous Improvement cycles in place, and some even apply for the Malcolm Baldrige National Quality Award.

#### 5.3.3.3.1 **Quality Control**

Process Quality Planning for products / services starts with an understanding of the random defects that occur in the manufacturing of related products. A facilitated team, using a structured process, combines new product specifications with process specifications and predicts the defects at each step in the process flow. Action plans are developed to improve the processes or improve design robustness. Increasing the process First Time Yield (FTY) greatly improves financial performance.

Statistical Process Control (SPC) involves testing a random sample of output from a process to determine whether the process is producing items within a pre-selected range. Generic SPC tools that can be used for problem solving and process improvement are [1. Aquilano et al]:

- Process Flow Charts – A picture that describes the main steps, branches and eventual outputs of a process.
- Check Sheets – An organised method for recording data.

- Pareto Analysis and histograms – A co-ordinated approach for identifying, ranking and working to permanently eliminate defects. Focus on the important error sources (80/20 rule).
- Data collection – Have a clear reason and purpose for data collection, then use 5H2W method; ask: What? Why? Where? When? Who/ How? How much?
- Cause and effect (or Fishbone) diagrams – Uses a graphical description of the process elements to analyse potential sources of process variation.
- Run charts – A time sequence chart showing plotted values of a characteristic.
- Control charts – A time sequence chart showing plotted values of a statistic, including a central line and one or more statistical derived control limits.

#### **5.3.3.3.2 ISO 9000**

ISO 9000 is a series of standards agreed upon by the International Organisation for Standards (ISO) and adopted in 1987. More than 100 countries now recognise the 9000 series for quality standards and certification for trade. The 20 elements comprising ISO 9000 certification are [1. Aquilano et al]:

1. Management Responsibility
2. Quality system
3. Contract Review
4. Design Control
5. Document Control
6. Purchasing
7. Customer-supplier material
8. Product Identification and traceability
9. Process control
10. Inspection and testing
11. Inspection, measuring, and test equipment
12. Inspection and test status
13. Control of non-conforming product

14. Corrective action
15. Handling, storage packaging and delivery
16. Quality records
17. Internal quality audits
18. Training
19. Servicing
20. Statistical techniques

#### **5.3.3.3.3 Continuos Improvement**

Continual Improvement of machinery, materials, labour utilisation and production methods through application of suggestions and ideas of team members. This management philosophy makes use of quality circles/teams (see later under workforce empowerment) that continually assess processes for minor improvements in PDCA (plan-do-check-act) cycles.

#### **5.3.3.3.4 The Malcolm Baldrige National Quality Award (MBNQA)**

The MBNQA represents the United States government's endorsement of quality as an essential part of business strategy. "Using the Baldrige criteria helps American businesses improve their competitive advantage, productivity, customer satisfaction and employee involvement, yielding stronger financial performance and business results," said Harry Hertz, director of the office of quality programs at the National Institute of Standards and Technology (NIST), Gaithersburg, MD. [44. NIST]

To apply for this award, companies are measured against performance excellence. The criteria for the year 2000 are:

- Leadership—examines how senior executives guide the company and how the company addresses its responsibilities to the public and practices good citizenship.
- Strategic planning—examines how the company develop strategic directions and how it deploys key action plans.
- Customer and market focus—examines how the company determines requirements and expectations of customers and markets, and how it builds relationships with customers.
- Information and analysis—examines the management and effective use of data and information to measure and analyse company's performance.



- Human resource development and management—examines how the company’s systems work, how it educate, train and develop its workforce and maintain employee well-being and satisfaction.
- Process management—examines how key product and service design and delivery processes are managed and supported, and how key suppliers / partnering are handled.
- Business results—examines the company’s performance and improvement in its key business areas—customers focused results, financial and market performance, human resources, supplier and partner performance and organisational effectiveness—and how it performs relative to competitors.

### 5.3.4 Product and Service Development

Manufacturing and Services operations are found to be in a constant state of flux due to changes in sales, both product mix and volume, and changes in product or service design. To ensure overall competitiveness, it is essential to minimise cycle time both in product delivery and product development.

#### 5.3.4.1 Concurrent Engineering

Concurrent Engineering is the earliest possible parallel integration of a company’s knowledge, resources and expertise, regarding all factors that will influence the product over its life-cycle; so as to develop the product, and its manufacturing and support processes in parallel, with the shortest possible time-to-market and the highest product quality. [29. Minaar]

Minimising the cycle time to bring new products or services to market, enables an organisation to maximise its return from those new products and services. It is well established that developing products and services that

- respond timely to customer needs,
- minimising the changes required to fix problems after introduction, and
- maximising the fit to the organisations existing and planned process capabilities,

lead to higher profits. [39. Brecker]

Quality Function Deployment (QFD) and Value Analysis / Value Engineering (VA/VE) techniques are utilised in the facilitation of multi-functional product teams to

- develop customer needs and product requirements,
- design the product and the processes,

- and guide products and processes through development.

#### 5.3.4.2 *Quality Function Deployment (QFD)*

QFD is a system for translating consumer requirements into appropriate company requirements at every stage, from research, through product design and development, to manufacture, distribution, installation and marketing, sales and services. QFD is a systematic process that ensures that the voice of the customer is being transferred into engineering processes through all stages of the product lifecycle. A structured QFD approach is utilised to plan and satisfy [39. Brecker]:

- customer needs
- product characteristics
- component characteristics
- process requirements
- operations requirements

#### 5.3.4.3 *Value Engineering / Value Analysis*

Value engineering is a system that evaluates each step in design, materials, processes, and operations so as to manufacture a product that performs its intended functions and has the lowest possible cost. The value of a product is then defined as the ratio of product function and performance to the cost of the product. Thus the goal of value engineering is to obtain maximum performance per unit cost. [39. Brecker] A variety of structured Value Engineering or Value Analysis techniques, such as

- targeting
- economic analysis
- function diagramming
- brainstorming (blast, refine, create)
- cost analysis
- competitive comparison

are utilised to identify and quantify all product or service features, functions, and components. Emphasis is on utilising creativity to identify opportunities to increase the value of a product / service, while reducing costs of purchased materials and process labour.

#### 5.3.4.4 *Design for Manufacturing (DFM)*

DFM brings design, manufacture, and service personnel together in the product design phase to ensure that new products fit the process capabilities of the organisation and are easy to service. Design standards are developed and applied to integrate with critical process requirements. Focus is also brought on future product and process equipment requirements.

#### 5.3.4.5 *Design for Assembly (DFA)*

DFA focuses on increasing the quality of an assembled product while reducing the labour content. Whether a product is assembled by automated equipment or by hand, reducing the number of parts and simplifying the assembly steps leads to lower assembly cost as well as higher quality. DFM and DFA are frequently used concurrently in developing cost effective designs.

### 5.3.5 **Workforce Empowerment**

To have an empowered workforce is not a best practice or benefit that can be quantified in terms of cost, time or quality, but it is the most important critical success factor to achieve any type of BPR success.

Hammer & Champy explained the following changes related to re-engineering, with the following workforce empowerment best practices in particular [4. Hammer et al]:

- Work units change from functional departments to process teams – Instead of products / services progressing from one department to another, a single team of multiple experts owns the process to deliver the product / service to a customer.
- Several jobs are combined into one – Work is not segregated and workers get to see the results of their activities. They are not just cogs in the organisational wheel.
- Jobs change from simple tasks to multi-dimensional tasks – Working in cross-functional teams cause that team members get broader exposure and see more of a product / service's life cycle.
- Workers make decisions – With more of a holistic process view and understanding, workers are better enabled to make decisions. This cause not only a horizontal squash of the organisation (due to single teams accountable for processes), but also a vertical squash by eliminating the need for managers that have to make process decisions.
- People's roles change from controlled to empowered – By working in teams, having process ownership and decision authority cause teams to become empowered and reduce the need for checking and controlling.
- Job preparation requires an education instead of just training – Education ensures workers the ability to learn and think for themselves.

- Performance measures don't focus on activities, but on results – Compensation should not be based on job rank or seniority, but on outputs.
- Advancement should not be based on performance, but on ability – The best sales reps are usually not the best sales managers. Growth and development requirements must be identified and given to prospective managers.
- Values change from protective to productive – Once employees realise their importance in the organisation, they will stop protecting and hiding their jobs, but try to deliver and contribute.
- Managers stop being supervisors and start becoming coaches – The main task of a manager must be to co-ordinate and facilitate teams. It is possible to mentor more people, than manage people, thus requiring a flatter organisational structure.
- Organisational structures change from hierarchies to flat – Process teams, empowered decision making and mentoring enables flatter organisation structures.
- Executives changes from scorekeepers to leaders – Checking the financial outcomes should not be the main focus of executives, but ensuring right designed processes and organisations that permit workers to produce their highest possible outputs.

Most of these best practices are underlying in all change management philosophies, which always require some form of teamwork. In most cases, a team will result in one of the following three types:

1. Natural working / Process teams – these are multi-skilled permanent teams that have to manage a process or deliver specific products / services.
2. Cross-functional / Virtual teams – these are non permanent teams with members from various areas that has a specific deliverable, such as new products development.
3. Rapid action teams / Quality circles – these are teams with members all from the same area, or different areas, but with a common problem that can be solved in a short time.

Teamwork and the structure of teams are explained in more detail in a later chapter.

### 5.3.6 Information Technology strategies

The progress of IT and the possibilities it offers was one of the key enablers for BPR. But often it is found that heavy investments in IT have delivered disappointing results, largely because companies tend to use technology to mechanise old ways of doing business. [21. Hammer] The power of modern IT allow the radical redesign of business processes by challenging the following business rules:

- Shared databases allow the same information to be viewed in as many places as possible.
- Expert systems allow generalists to do the work of an expert.
- Telecommunication networks allow organisations to simultaneously reap the benefits of centralisation and decentralisation.
- Decision support tools (database access and modelling software) cause decision-making to be part of everyone's job.
- Wireless data communication and laptop computers provide field personnel the capability to send and receive information from wherever they are.
- Interactive multimedia software creates new opportunities for effective contact with potential buyers.
- Automatic identification and tracking technology (smart chips / satellite tracking) improves traceability of assets and resources.
- High performance computing power can make it possible for plans to be revised instantaneously (MRP-runs can be performed daily instead of monthly).
- Information can be captured once, at the source, and the information processing is done at the activity where it is required (bar-code readers facilitate picking and storing activities).

Being at the end of the second millennium (year 2000), IT has enhanced civilisation's progress with leaps and bounds, and that is especially evident in how effective it made the modern organisation. Due the size of computing power, fast information transfer over wide distances, and the ability to store and instantaneously retrieve vast amounts of data, IT created new ways of running operations. It has changed the business administration paradigm to one requiring the least amount of effort, with efficient and accurate results. Examples of best practices found in the form of IT applications are:

#### 5.3.6.1 Enterprise Resource Planning (ERP) systems

Enterprise Resource Planning or ERP has been defined as: The set of integrated software and tools that a company needs in order to ensure effective operation of its supply chain [30. Moulding]. Spawned from the MRPII philosophy, ERP systems pro-actively utilise information to dynamically

balance the use of financial, manufacturing and distribution resources. The key features of ERP systems that provide benefits to organisations are:

1. Integration of Data and Software – It provides a single set of data for the organisation to work from and cause interaction of activities between various functions.
2. Operates along the total Supply Chain – It does not simply automate order processing or production control activities, but co-ordinates all activities in the organisation's supply chain.
3. Effective and agile enterprise operation – Utilising the strong computing power provided by modern technology, ERP systems enable real time operation and immediate response.

Examples of some of the best ERP systems on the market today [rated by SAPICS 98] are:

- SAP R3
- Oracle Applications
- The Compact Collection
- Impact Encore
- OPENPRO developed by QAD
- BAAN

#### 5.3.6.2 *Finite Capacity Scheduling systems*

Finite Capacity Scheduling systems focus on predicting demand as accurately as possible and then plan capacity accordingly for manufacturing and related logistics processes. These systems differ from ERP systems in that it focuses on the complex forecasting functions, which is achieved by means of:

- The use of advanced planning and scheduling capabilities to balance demand and supply. The goal being to get as close to the ideal of make-to-demand in virtually no lead time.
- Advance algorithms test various combinations of demand supply balances to assist planners in optimum resource scheduling.

The ideal should be to integrate a finite capacity scheduling and ERP system, given adequate organisational need and resources. Examples of the best finite capacity scheduling systems on the market are [32. SAPICS]:

- Manugistics
- OPT-21 and ST-Point both supplied by the Scheduling Technology Group (STG)

- Concorde XAL
- Rhythm developed by i2 Technologies

#### 5.3.6.3 *Workflow systems*

Workflow can be described as the flow of information and control in a business process. Consequently Workflow management is the efficient management of this flow of information and control in a company's business processes [42. GFI] The IT required to support workflow consist of the following four elements:

1. Workflow, or process definition tools
2. Workflow servers or engines
3. Workflow client applications
4. Workflow monitoring / administration tools

The benefits from utilising workflow technology are streamlined, speedier processes, with improved tracking and control of business operations.

#### 5.3.6.4 *Business Intelligence systems*

Business Intelligence (BI) systems provide the ability to report critical corporate data efficiently and in real time. It goes beyond structured query language (SQL) type queries that only delivers transaction-level details from data warehouses. By means of online analytical processing (OLAP) interactive reports that are highly formatted, easily deployed and effortless to use, it provides selective chunks of information to decision makers. OLAP reports can be regular status reports, but are especially effective for KPI reporting, business performance measurement reporting and scorecard keeping. [40. Cognos]

#### 5.3.6.5 *Electronic Commerce*

The formal definition for Electronic Commerce (e-commerce) is 'the commercial exchange of goods, services, information, or ideas between two or more parties enabled by a digital medium'. [15. Gemini C<sup>4</sup> Lab] This term are beginning to not only include business transactions, but also processes leading up to, and following the actual sale. The main enablers for e-commerce are the Internet and intranet-based private networks, in conjunction with electronic data interchange (EDI), call centres, interactive television and other multimedia channels. During the last decade, most of the 'cyberspace-smart' businesses could increase their sales through penetration of new markets made reachable via the Internet.



### 5.3.6.6 Knowledge Management

Knowledge Management (KM) involves all those deliberate efforts to maximise an organisation’s performance through creating, sharing and leveraging knowledge and experience from internal and external resources. It provides a knowledge enrichment in organisations that promotes better business understanding for existing employees, ensuring knowledge redundancy from employees leaving the organisation, and a shorter introduction period for new employees. The ‘BPR toolbox’ CD accompanied by this dissertation is an example of KM of BPR training material.

## 5.4 Using Best Practices and Benchmarks during re-engineering

The purpose of benchmarking is to compare an organisation’s current situation to another’s, then determine how good, or bad, it measure against this reference and where it wants to be in comparison. Thus benchmarks are most effectively used during As-Is analysis and Aspirational design phases. To get detail benchmarking information with direct implication on one’s own operations would require information from somebody with the same processes as oneself, such as competitors, which is usually hard to come by. Alternatively, generic benchmarking characteristics can be used.

As a generic benchmarking exercise, Gemini Consulting would use the following graph and ask clients to rate themselves on such a scale. [16. Gemini] For aspirational business models, they were then asked which types of initiatives would they want to pursue.

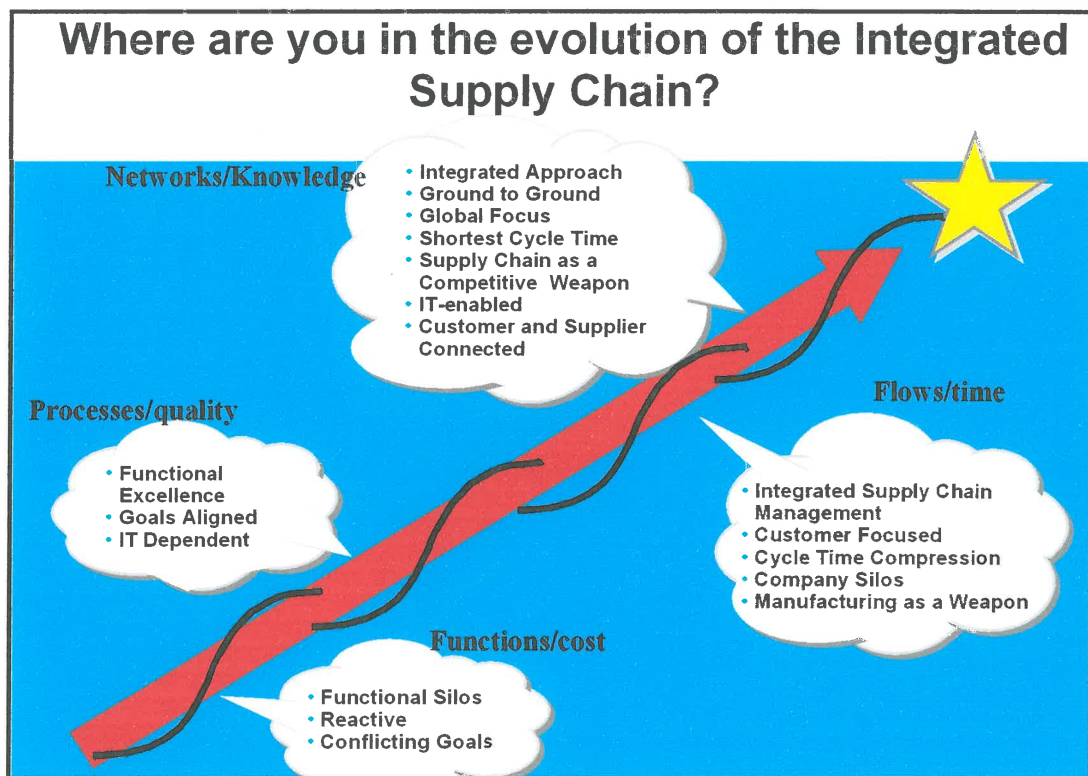


Figure 5-2 Gemini benchmarking scale [16. Gemini]

Ron Kubera from Manugistics (a consulting firm providing software and services for Supply Chain Management), used the following illustration to ask their client’s opinion on their rank as a market leader.

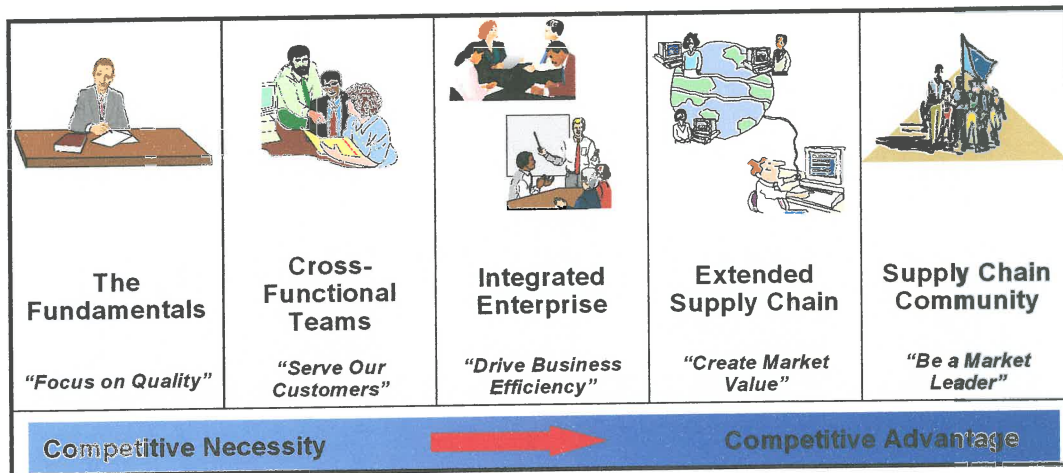


Figure 5-3. Ranking as a Market leader [27. Kubera]

To support this generic benchmarking rating they use the following matrix to ask clients to define their major business pain regarding their Supply Chain. Related to these ‘business pains’ Manugistics then identified resulting strategy and actions to be taken.

	<i>The Fundamentals</i>	<i>Cross Functional Teams</i>	<i>Integrated Enterprise</i>	<i>Extended Supply Chain</i>	<i>Supply Chain Communities</i>
<b>Business Pain</b>	Cost of Quality	Unreliable Order Fulfilment	Cost of Customer Service	Slow Growth Margin Erosion	Non-Preferred Supplier
<b>Driving Goal</b>	Quality and Cost	Customer Service	Profitable Customer Responsiveness	Profitable Growth	Market Leadership
<b>Organisational Focus</b>	Independent Departments	Consolidated Operations	Integrated Supply Chain (Internal)	Integrated Supply Chains (External)	Rapidly Reconfigurable
<b>Process Change</b>	Standard Operating Procedures	Cross Functional Communications	Cross Functional Processes	Customer Specific Processes	Reinvented Processes
<b>Metric</b>	Predictable Costs and Rates	On-time complete delivery	Total Delivered Cost	Share of Customer	Net Worth
<b>IT Focus</b>	Automated	Packaged	Integrated	Inter Operable	Networked
<b>Key Tools Planning</b>	Spreadsheets	Point Tools	Enterprise Supply Chain Planning	Point-of-Sale Supply Chain Planning	Synchronised Supply Chain Planning
<b>Execution</b>	MRP & Other Home-grown Applications	MRP II	ERP	Customer Management Systems	Network Centric Commerce

Table 5-1 Business pains related to resulting strategies [27. Kubera]

The following figure illustrates a roadmap to becoming a market leader according to Manugistics. [27. Kubera] Each time certain benchmark initiatives must be accomplished to reach the next rank of market leadership.

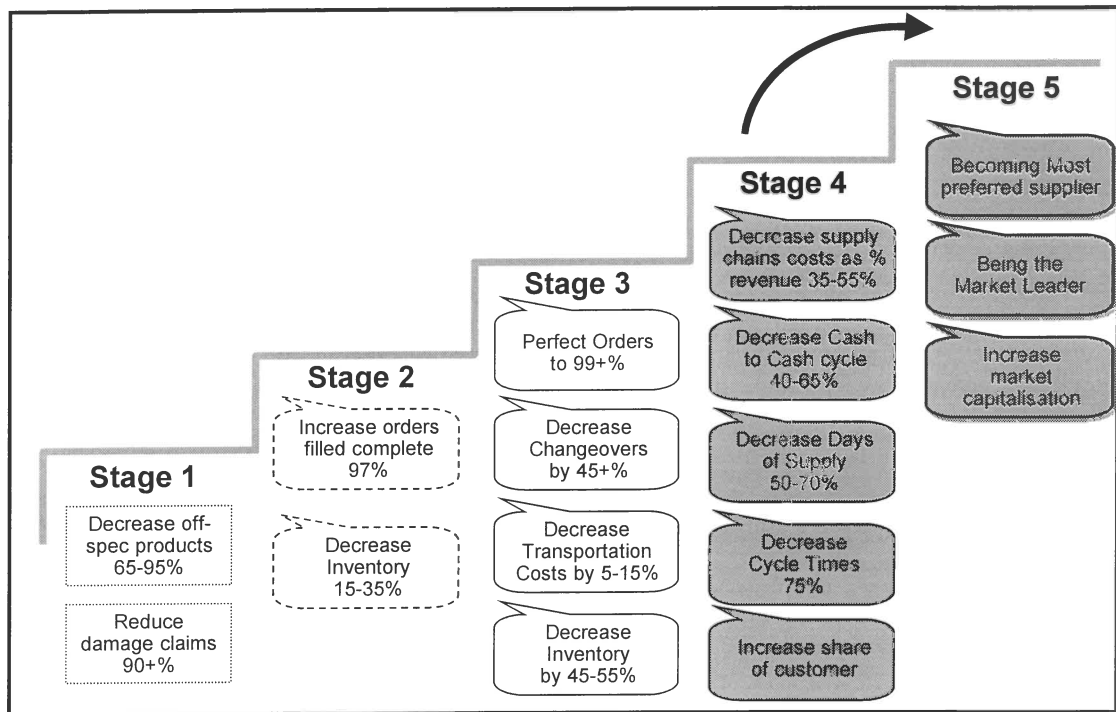


Figure 5-4 Roadmap to becoming a market leader [27. Kubera]

To generally identify benchmarks in the industry, indicators are needed from market leaders that can be used as measures. If an organisation has good ties with certain market leaders, such as filial companies, benchmark measures can simply be exchanged and used for comparison. If information needs to be obtained from competitors, external survey or consultancy companies can be used. Alternatively literature studies of leading companies' year-end reports and academic articles can also provide benchmark information. Specifically case study articles would provide pertinent references from initiatives undertaken by market leaders.

Best practices, on the other hand, are certain manners of conduct that must exist in a process. It can be implemented, or followed to varying degrees, but it cannot be used as some comparative yardstick. Sometimes best practices have to be incorporated into a process in order to achieve a certain benchmark. To achieve a best practice within a process, one of the following three options can be used:

1. A best practice can be designed into a process. This means some key enabler (such as a barcode reading system) are implemented and utilised within a process.
2. A process can be designed around a best practice. A specific best practice concept (centralised purchasing via a company wide ERP system as example) are taken and then the processes are redesigned to ensure workability of the best practice.
3. A process is transformed into a best practice. This would require reinvention of a process with no prerequisites or predefined outcomes.

During To-Be designs, knowledge of best practices is best used as enablers to direct the energy of redesigning workshops. In the implementation of To-Be designs, activities to close the gap between the existing methods and the desired best practice, should be the main focus.

To identify best practices in industry, concepts that are known to practically improve operations must be spotted. Often these improvement concepts can also be referenced in literature. In fact, the best source for best practices remains theory in the form of up-to-date textbooks and articles (academic and business). The challenge is making the theoretical concepts work in practice, thus each organisation needs to customise theoretical best practices into workable solutions for themselves. Articles with case study examples, conference presentations, and consultants with exposures to various industries can provide useful guidelines to identifying, customising and implementing best practices.

## ***5.5 Best Practices and Benchmarks Conclusion***

During this chapter, various forms of benchmarks, and only a handful of best practices were named and explained. The purpose of these explanations was mainly to indicate the format of these philosophies, rather than detail workings and knowledge of the concepts. The importance though, is that benchmarks and best practices are useful, if not compulsory during BPR.

Benchmarking's main role in BPR is to serve as reference during As-Is analysis, and to serve as a gauge for establishing an Aspirational picture.

Best Practices are most useful to focus attention during To-Be designs and Implementation phases. Take into consideration though, that Best Practices can either be a cause or an effect of re-engineered processes. When focussing on Best Practices, first distinguish between best practices addressing the cause for improvement (examples: Concurrent Engineering, SLA's, JIT), and Best Practices that is a result of improvements (examples: Customer Value, Employee Empowerment, TQM). Reversed engineering have to be applied on Best Practices that was as result from improvements, and those improvement have to be focussed on, such as:

- QFD and setting SLA's to achieve customer value,
- Job restructuring and implementing teamwork to achieve employee empowerment,
- Implementing SPC methods and continuous improvement to achieve TQM.