**UNIT 3**

**ORGANIZATIONAL ISSUES**

***(“The first McDonald's opened in Moscow preferred job applicants without work experience so that the McDonald's work ethic could be taught without first having to unlearn other corporate work habits. In the post cold war information economy, with technology changing so quickly, even twenty years of experience is not always an advantage.”)***

*The organizational issues of the business should be discussed in terms of: the organizational reporting structure; staffing issues and plans; the skills of the employees; training issues and plans; the formal organizational structure of rules and procedures; and the informal organizational structure of how employees actually interact. Assessing information technology (IT) performance has become increasingly important as companies continue to invest heavily in IT to streamline and reengineer business operations in order to compete more effectively in the global environment.*

**BUSINESS PROCESS REDESIGN**

What is Business Process Redesign?

Business Process Redesign is "the analysis and design of workflows and processes within and between organizations" . Teng et al. define BPR as "*the critical analysis and radical redesign of existing business processes to achieve breakthrough improvements in performance measures.*"

***What is a Business Process?***

Davenport & Short define *business process* as "a set of logically related tasks performed to achieve a defined business outcome." A process is "a structured, measured set of activities designed to produce a specified output for a particular customer or market. It implies a strong emphasis on how work is done within an organization". In their view *processes have two important characteristics*: (i) They have customers (internal or external), (ii) They cross organizational boundaries, i.e., they occur across or between organizational subunits. One technique for identifying business processes in an organization is the value chain method proposed by Porter and Millar .

Processes are generally identified in terms of beginning and end points, interfaces, and organization units involved, *particularly the customer unit.* High Impact processes should have *process owners*. Examples of processes include: developing a new product; ordering goods from a supplier; creating a marketing plan; processing and paying an insurance claim; etc.

*Processes may be defined based on three dimensions* :

Entities: Processes take place between organizational entities. They could be Inter organizational (e.g. EDI, i.e., Electronic Data Interchange), Inter functional or Interpersonal (e.g. CSCW, i.e., Computer Supported Cooperative Work).

Objects: Processes result in manipulation of objects. These objects could be Physical or Informational.

Activities: Processes could involve two types of activities: Managerial (e.g. develop a budget) and Operational (e.g. fill a customer order).

What are the Myths about BPR Created by the Popular Literature?

The popular management literature has created more myth than practical methodology reengineering. The concept of BPR has been with us since about 1990, however it is widely misunderstood and has been equated to downsizing, client/server computing, quality, ABC, and several other management nostrums of the past several years. Based on interviews and conversations with more than 200 companies, and 35 reengineering initiatives, Davenport & Stoddard (1994) identify seven reengineering myths.

The Myth of Reengineering Novelty: Reengineering, although about familiar concepts, is new in that *these concepts are combined in a new synthesis*. These key components have never been together before.

The Myth of the Clean Slate: Regardless of Hammer's (1990) exhortation: "Don't automate, obliterate!" clean slate change is rarely found in practice. Or, as Davenport and Stoddard (1994) state: A "blank sheet of paper" used in design usually requires a "blank check" for implementation. Hence, a more affordable approach for most companies is to use Clean Slate Design which entails a detailed vision for a process without concern for the existing environment. However, the implementation is done over several phased projects. Also supported by preliminary findings of Stoddard & Jarvenpaa 1995: their findings ran contrary to Hammer (1990): "although reengineering can deliver radical designs, it does not necessarily promise *a revolutionary approach to change*. Moreover, a revolutionary change process might not be feasible given the risk and cost of revolutionary tactics."

The Myth of Information Systems Leadership: In contrast to the much touted leadership role, Information Systems (IS) is generally viewed as a partner within a cross- functional team that is generally headed by a non-IS project leader and a non-IS business sponsor who have better control over the processes that are being redesigned.

The Myth of Reengineering vs. Quality: Unlike Hammer & Champy's (1993) call for all out "radical change," most companies have a portfolio of approaches to organizational change including reengineering, continuous improvement, incremental approaches, and restructuring techniques.

The Myth of Top-Down Design: The implementation and execution of the redesigned processes depends upon those who do the work. Hence, the participation, and more importantly, acceptance and ownership, at the grass roots level is essential for successful BPR.

The Myth of Reengineering vs. Transformation: BPR is a process that contributes to organizational transformation (OT), however it is not synonymous with transformation. OT is defined as, "Profound, fundamental changes in thought and actions, which create an irreversible discontinuity in the experience of a system" (Adams 1984). OT is generally about the emergence of a new belief system and necessarily involves reframing, which is a discontinuous change in the organization's or group's shared meaning or culture. It also involves broad changes in other organizational dimensions besides the work processes: such as organizational structure, strategy, and business capabilities.

The Myth of Reengineering's Permanence: Davenport & Stoddard (1994) speculate that reengineering has peaked in the US in 1994 and would probably become integrated with much broader organizational phenomena: such as another synthesis of ideas that includes the precepts of reengineering; its integration into existing change methods; or its combination with quality and other process-oriented improvement approaches into an integrated process management approach.

What is the Relation between BPR & Information Technology?

Hammer considers information technology (IT) as the key enabler of BPR which he considers as "radical change." He prescribes the use of IT to challenge the assumptions inherent in the work processes that have existed since long before the advent of modern computer and communications technology. He argues that at the heart of reengineering is the notion of "discontinuous thinking -- or recognizing and breaking away from the outdated rules and fundamental assumptions underlying operations... These rules of work design are based on assumptions about technology, people, and organizational goals that no longer hold." He suggests the following "principles of reengineering": (a) Organize around outcomes, not tasks; (b) Have those who use the output of the process perform the process; (c) Subsume information processing work into the real work that produces the information; (d) Treat geographically dispersed resources as though they were centralized; (e) Link parallel activities instead of integrating their results; (f) Put the decision point where the work is performed, and build control into the process; and (g) Capture information once and at the source.

Davenport & Short argue that BPR requires taking a broader view of both IT and business activity, and of the relationships between them. IT should be viewed as more than an automating or mechanizing force: to fundamentally reshape the way business is done.

Business activities should be viewed as more than a collection of individual or even functional tasks: in a process view for maximizing effectiveness. IT and BPR have recursive relationship. IT capabilities should support business processes, and business processes should be in terms of the capabilities IT can provide. Davenport & Short refer to *this broadened, recursive view of IT and BPR as the new industrial engineering*.

Business processes represent a new approach to coordination across the firm; IT's promise -- and its ultimate impact -- is to be the most powerful tool for reducing the costs of coordination . Davenport & Short outline the following capabilities that reflect the roles that IT can play in BPR: Transactional, Geographical, Automatical, Analytical, Informational, Sequential, Knowledge Management, Tracking, and Disintermediation.

Teng et al. argue that the way related functions participate in a process - - i.e., the *functional coupling* of a process -- can be differentiated along two dimensions: *degree of mediation* and *degree of collaboration*. They define the *Degree of Mediation* of the process as the extent of sequential flow of input and output among participating functions. They define the Degree of Collaboration of the process is the extent of information exchange and mutual adjustment among functions when participating in the same process. In their framework, information technology is instrumental in Reducing the Degree of Mediation and Enhancing the Degree of Collaboration. Also, innovative uses of IT would inevitably lead many firms to develop *new, coordination-intensive structures*, enabling them to coordinate their activities in ways that were not possible before. Such coordination-intensive structures may raise the organization's capabilities and responsiveness, leading to potential strategic advantages.

***What is the Role of the IS Function in BPR?***

Although, BPR has its roots in IT management, it is primarily a Business Initiative that has broad consequences in terms of satisfying the needs of customers and the firm's other constituents . The IS group may need to play a behind-the-scenes advocacy role, convincing senior management of the power offered by IT and process redesign. It would also need to incorporate the skills of process measurement, analysis, and redesign. The CIGNA IS group had to develop a new set of basic values that reflected a change in focus from technology to a focus on business processes and results . The specific business divisions led the BPR initiatives; IS groups served as partners in enabling the radical changes.

Is there a BPR Methodology?

Davenport and Short prescribe a five-step approach to BPR:

*Develop the Business Vision and Process Objectives*: BPR is driven by a business vision which implies specific business objectives such as Cost Reduction, Time Reduction, Output Quality improvement, QWL (Quality of Work Life)/Learning/Empowerment.

*Identify the Processes to be Redesigned*: Most firms use the *High- Impact* approach which focuses on the most important processes or those that conflict most with the business vision. Lesser number of firms use the *Exhaustive* approach that attempts to identify all the processes within an organization and then prioritize them in order of redesign urgency.

*Understand and Measure the Existing Processes*: For avoiding the repeating of old mistakes and for providing a baseline for future improvements.

*Identify IT Levers*: Awareness of IT capabilities can and should influence process design.

*Design and Build a Prototype of the New Process*: The actual design should not be viewed as the end of the BPR process. Rather, it should be viewed as a prototype, with successive iterations. The metaphor of prototype aligns the BPR approach with quick delivery of results, and the involvement and satisfaction of customers.

BPR: All or Nothing?

BPR meant "breakthrough innovation focused on customer needs" . BPR was essentially driven by the senior management's strategic planning process that had concluded that the mix of business in its portfolio needed to change. It was viewed as a vehicle to realign strategy, operations, and systems to deliver significantly increased financial results. Caron et al. argue that the real life story of BPR represents a contrast to the general prescriptions of "radical" "all-or-nothing" organizational transformation. BPR started out as an experimental pilot. The knowledge from the success of this initiative was disseminated for implementing other BPR projects. The BPR initiative was sustained "from the bottom up, with learning transferred across." The prerequisite for BPR success was a corporate environment that promotes learning, especially learning from failure. Although, the process was initiated from the top, the ownership was moved down to the people who actually had to implement the changes and were affected by those changes. The BPR effort took into consideration the differences in management cultures in different countries. The BPR initiative started at the operational levels and was later moved to "higher forms" (strategic) of reengineering over time.

***Why BPR Projects Fail? What Can be Done about it?***

70% of the BPR projects fail. Biggest obstacles that reengineering faces are: (i) Lack of sustained management commitment and leadership; (ii) Unrealistic scope and expectations; and (iii) Resistance to Change.

Based on the BPR consultants' interviews, Bashein et al. outline the positive preconditions for BPR success as: Senior Management Commitment and Sponsorship; Realistic Expectations; Empowered and Collaborative Workers; Strategic Context of Growth and Expansion; Shared Vision; Sound Management Practices; Appropriate People Participating Full-Time ; and Sufficient Budget. They also identify negative preconditions related to BPR as: The Wrong Sponsor; A "Do It to Me" Attitude; Cost-Cutting Focus; and, Narrow Technical Focus. The negative preconditions relating to the Organization include: Unsound Financial Condition; Too Many Projects Under Way; Fear and Lack of Optimism; and, Animosity Toward and By IS and Human Resource (HR) Specialists. To turn around negative conditions, firms should: Do Something Smaller First; Conduct Personal Transformation; and Get IS and HR Involved.

King views the primary reason of BPR failure as overemphasis on the tactical aspects and the strategic dimensions being compromised. He notes that most failures of reengineering are attributable to the process being viewed and applied at a tactical, rather than strategic, levels. He discusses that there are important strategic dimensions to BPR, notably, Developing and Prioritizing Objectives; Defining the Process Structure and Assumptions; Identifying Trade-Offs Between Processes; Identifying New Product and Market Opportunities; Coordinating the Reengineering Effort; and, Developing a Human Resources Strategy. He concludes that the ultimate success of BPR depends on the people who do it and on how well they can be motivated to be creative and to apply their detailed knowledge to the redesign of business processes.

***Where is BPR Headed?***

Over the last few years, the reengineering concept has evolved from a "radical change" to account for the contextual realism, and to reconcile with more incremental process change methods such as TQM, towards a broader, yet more comprehensive process management concept .

Based upon a theoretical analysis and survey of literature relevant to reengineering, Kettinger & Grover outline some propositions to guide future inquiry into the phenomenon of BPR. Their propositions center around the concepts of knowledge management, employee empowerment, adoption of new IT's, and a shared vision. Earl et al. (1995) have proposed a "process alignment model" that comprises four lenses of enquiry: process, strategy, MIS (Management Information Systems, and change management and control, and used it for developing an inductive taxonomy of BPR strategies. Malhotra (1996) has developed the key emphasis on these issues based primarily on an integrative synthesis of the recent literature from organization theory, organization control, strategy, and MIS.

King (1994) believes that although the current fadism of BPR may end, however, process reengineering, in some form or known by some other name would be of enduring importance.

**PROJECT MANAGEMENT**

Project management is the discipline of organizing and managing resources (e.g. people) in a way that the project is completed within defined scope, quality, time and cost constraints. A project is a temporary and one-time endeavor undertaken to create a unique product or service, which brings about beneficial change or added value. This property of being a temporary and one-time undertaking contrasts with processes, or operations, which are permanent or semi-permanent ongoing functional work to create the same product or service over and over again. The management of these two systems is often very different and requires varying technical skills and philosophy, hence requiring the development of project managements.

The first challenge of project management is to make sure that a project is delivered within defined constraints. The second, more ambitious challenge is the optimized allocation and integration of inputs needed to meet pre-defined objectives. A project is a carefully defined set of activities that use resources (money, people, materials, energy, space, provisions, communication, etc.) to meet the pre-defined objectives.

***Elements of Project Management***

All projects have *three* basic elements: tasks, resources and time. These are interrelated and any change in one has an effect on the other two. This is one area where Microsoft Project excels. Whenever you make any changes, the affect of those changes will become instantly visible through Microsoft Project’s graphical presentation of your project.

***Secrets of Successful Project Management***

Managing software projects is difficult under the best circumstances. Unfortunately, many new project managers receive virtually no job training. Sometimes you must rely on coaching and survival tips from people who have already done their tour of duty in the project management trenches. Here are 20 such tips for success, which I’ve learned from both well-managed and challenged projects. Keep these suggestions in mind during your next project, recognizing that none of them is a silver bullet for your project management problems.

**Laying the Groundwork**

***Tip #1:*** Define project success criteria. At the beginning of the project, make sure the stakeholders share a common understanding of how they will determine whether this project is successful. Too often, meeting a predetermined schedule is the only apparent success factor, but there are certainly others. Some examples are increasing market share, reaching a specified sales volume or revenue, achieving specific customer satisfaction measures, retiring a high-maintenance legacy system, and achieving a particular transaction processing volume and correctness.

***Tip #2:*** Identify project drivers, constraints, and degrees of freedom. Every project needs to balance its functionality, staffing, budget, schedule, and quality objectives. Define each of these five project dimensions as either a constraint within which you must operate, a driver aligned with project success, or a degree of freedom that you can adjust within some stated bounds to succeed. For more details about this, see Chapter 2 of my *Creating a Software Engineering Culture* (Dorset House, 1996).

***Tip #3:*** Define product release criteria. Early in the project, decide what criteria will determine whether or not the product is ready for release. You might base release criteria on the number of high-priority defects still open, performance measurements, specific functionality being fully operational, or other indicators that the project has met its goals. Whatever criteria you choose should be realistic, measurable, documented, and aligned with what "quality" means to your customers.

***Tip #4:*** Negotiate commitments. Despite pressure to promise the impossible, never make a commitment you know you can’t keep. Engage in good-faith negotiations with customers and managers about what is realistically achievable. Any data you have from previous projects will help you make persuasive arguments, although there is no real defense against unreasonable people.

Planning the Work

***Tip #5:*** Write a plan. Some people believe the time spent writing a plan could be better spent writing code, but I don’t agree. The hard part isn’t writing the plan. The hard part is actually doing the planning—thinking, negotiating, balancing, talking, asking, and listening. The time you spend analyzing what it will take to solve the problem will reduce the number of surprises you have to cope with later in the project.

***Tip #6:*** Decompose tasks to inch-pebble granularity. Inch-pebbles are miniature milestones. Breaking large tasks into multiple small tasks helps you estimate them more accurately, reveals work activities you might not have thought of otherwise, and permits more accurate, fine-grained status tracking.

***Tip #7:*** Develop planning worksheets for common large tasks. If your team frequently undertakes certain common tasks, such as implementing a new object class, develop activity checklists and planning worksheets for these tasks. Each checklist should include all of the steps the large task might need. These checklists and worksheets will help each team member identify and estimate the effort associated with each instance of the large task he or she must tackle.

***Tip #8:*** Plan to do rework after a quality control activity. Almost all quality control activities, such as testing and technical reviews, find defects or other improvement opportunities. Your project schedule or work breakdown structure should include rework as a discrete task after every quality control activity. If you don’t actually have to do any rework, great; you’re ahead of schedule on that task. But don’t count on it.

***Tip #9:*** Plan time for process improvement. Your team members are already swamped with their current project assignments, but if you want the group to rise to a higher plane of software engineering capability, you’ll have to invest some time in process improvement. Set aside some time from your project schedule, because software project activities should include making process changes that will help your next project be even more successful. Don’t allocate 100% of your team members’ available time to project tasks and then wonder why they don’t make any progress on the improvement initiatives.

***Tip #10:*** Manage project risks. If you don’t identify and control risks , they will control you. Spend some time during project planning to brainstorm possible risk factors, evaluate their potential threat, and decide how you can mitigate or prevent them. For a concise tutorial on software risk management, see my article "Know Your Enemy: Software Risk Management".

***Estimating the Project***

***Tip #11:*** Estimate based on effort, not calendar time. People generally provide estimates in units of calendar time, but I prefer to estimate the amount of effort (in labor-hours) associated with a task, then translate the effort into a calendar-time estimate. This translation is based on estimates of how many effective hours I can spend on project tasks per day, any interruptions or emergency bug fix requests I might get, meetings, and all the other places into which time disappears.

***Tip #12:*** Don’t schedule people for more than 80%of their time. Tracking the average weekly hours that your team members actually spend working on their project assignments is a real eye-opener. The task-switching overhead associated with the many activities we are all asked to do reduces our effectiveness significantly. Don’t assume that just because someone spends 10 hours per week on a particular activity, he or she can do four of them at once; you’ll be lucky if he or she can handle three.

***Tip #13:*** Build training time into the schedule. Determine how much time your team members typically spend on training activities annually, and subtract that from the time available for them to be assigned to project tasks. You probably already subtract out average values for vacation time, sick time, and other assignments; treat training time the same way.

***Tip #14:*** Record estimates and how you derived them. When you prepare estimates for your work, write down those estimates and document how you arrived at each of them. Understanding the assumptions and approaches used to create an estimate will make them easier to defend and adjust when necessary, and it will help you improve your estimation process.

***Tip #15:*** Use estimation tools. Many commercial tools are available to help you estimate entire projects. With their large databases of actual project experience, these tools can give you a spectrum of possible schedule and staff allocation options. They’ll also help you stay out of the "impossible region," combinations of product size, team size, and schedule where no known project has been successful. A good tool to try is Estimate Pro from the Software Productivity Centre (www.spc.ca).

***Tip #16:*** Respect the learning curve. If you’re trying new processes, tools, or technologies for the first time on this project, recognize that you will pay a price in terms of a short-term productivity loss. Don’t expect to get the fabulous benefits of new software engineering approaches on the first try, so build extra time into the schedule to account for the inevitable learning curve.

***Tip #17:*** Plan contingency buffers. Things never go precisely as you plan on a project, so your budget and schedule should include some contingency buffers at the end of major phases to accommodate the unforeseen. Unfortunately, your manager or customer may view these buffers as padding, rather than the sensible acknowledgement of reality that they are. Point to unpleasant surprises on previous projects as a rationale for your foresight.

***Tracking Your Progress***

***Tip #18:*** Record actuals and estimates. If you don’t record the actual effort or time spent on each task and compare them to your estimates, you’ll never improve your estimating approach. Your estimates will forever remain guesses.

***Tip #19:*** Count tasks as complete only when they’re 100% complete. One benefit of using inch-pebbles for task planning is that you can classify each small task as either done or not done, which is more realistic than trying to estimate what percent of a large task is complete at any time. Don’t let people "round up" their task completion status; use explicit criteria to tell whether a step truly is completed.

***Tip #20:*** Track project status openly and honestly. Create a climate in which team members feel safe reporting project status accurately. Strive to run the project from a foundation of accurate, data-based facts, rather than from the misleading optimism that sometimes arises from fear of reporting bad news. Use project status information to take corrective actions when necessary and to celebrate when you can.

These tips won’t guarantee success, but they will help you get a solid handle on your project and ensure that you’re doing all you can to make it succeed in a crazy world.

***COST BENEFIT ANALYSIS***

Cost Benefit Analysis is an economic tool to aid social decision-making, and is typically used by governments to evaluate the desirability of a given intervention in markets. The aim is to gauge the efficiency of the intervention relative to the status quo. The costs and benefits of the impacts of an intervention are evaluated in terms of the public's *willingness to pay* for them (benefits) or willingness to pay to avoid them (costs). Inputs are typically measured in terms of opportunity costs - the value in their best alternative use. The guiding principle is to list all of the parties affected by an intervention, and place a monetary value of the effect it has on their welfare *as it would be valued by them*.

The process involves monetary value of initial and ongoing expenses vs. expected return. Constructing plausible measures of the costs and benefits of specific actions is often very difficult. In practice, analysts try to estimate costs and benefits either by using survey methods or by drawing inferences from market behaviour. For example, a product manager may compare manufacturing and marketing expenses to projected sales for a proposed product, and only decide to produce it if he expects the revenues to eventually recoup the costs. Cost-benefit analysis attempts to put all relevant costs and benefits on a common temporal footing. A discount rate is chosen, which is then used to compute all relevant future costs and benefits in present-value terms. Most commonly, the discount rate used for present-value calculations is an interest rate taken from financial markets. This can be very controversial - for example, a high discount rate implies a very low value on the welfare of future generations, which may have a huge impact on the desirability of interventions to help the environment, and so on. Empirical studies have suggested that in reality, people's discount rates *do* decline over time. Because CBA aims to measure the public's true willingness to pay, this feature is typically built into studies.

During cost-benefit analysis, monetary values may also be assigned to less tangible effects such as the various risks which could contribute to partial or total project failure; loss of reputation, market penetration, long-term enterprise strategy alignments, etc. This is especially true when governments use the technique, for instance to decide whether to introduce business regulation, build a new road or offer a new drug on the state healthcare. In this case, a value must be put on human life or the environment, often causing great controversy. The cost-benefit principle says, for example, that we should install a guardrail on a dangerous stretch of mountain road if the dollar cost of doing so is less than the implicit dollar value of the injuries, deaths, and property damage thus prevented .

Cost-benefit calculations typically involve using time value of money formula. This is usually done by converting the future expected streams of costs and benefits to a present value amount.

**PROCESS: DEFINITION- INTEGRATION OF PROCESSES**

A business process or business method is a collection of interrelated tasks, which solve a particular issue.

There are three types of business processes:

***Management processes***, the processes that govern the operation of a system. Typical management processes include "Corporate Governance" and "Strategic Management".

***Operational processes***, processes that constitute the core business and create the primary value stream. Typical operational processes are Purchasing, Manufacturing, Marketing, and Sales.

***Supporting processes***, which support the core processes. Examples include Accounting, Recruitment, IT-support.

A business process can be decomposed into several sub-processes, which have their own attributes, but also contribute to achieving the goal of the super-process. The analysis of business processes typically includes the mapping of processes and sub-processes down to activity level.

In the early 1990s, US corporations, and subsequently companies all over the world, started to adopt the concept of reengineering in an attempt to re-achieve the competitiveness that they had lost during the previous decade. A key characteristic of Business Process Reengineering (BPR) is the focus on business processes. Davenport defines a (business) process as

”a structured, measured set of activities designed to produce a specific output for a particular customer or market. It implies a strong emphasis on how work is done within an organization, in contrast to a product focus’s emphasis on what. A process is thus a specific ordering of work activities across time and space, with a beginning and an end, and clearly defined inputs and outputs: a structure for action. ... Taking a process approach implies adopting the customer’s point of view. Processes are the structure by which an organization does what is necessary to produce value for its customers.”

This definition contains certain characteristics a process must possess. These characteristics are achieved by a focus on the business logic of the process (how work is done), instead of taking a product perspective (what is done). Following Davenport's definition of a process we can conclude that a process must have clearly defined boundaries, input and output, that it consists of smaller parts, activities, which are ordered in time and space, that there must be a receiver of the process outcome- a customer - and that the transformation taking place within the process must add customer value.

Hammer & Champy’s definition can be considered as a subset of Davenport’s. They define a process as

”a collection of activities that takes one or more kinds of input and creates an output that is of value to the customer.”

As we can note, Hammer & Champy have a more transformation oriented perception, and put less emphasis on the structural component–process boundaries and the order of activities in time and space.

Rummler & Brache use a definition that clearly encompasses a focus on the organization’s external customers, when stating that

”a business process is a series of steps designed to produce a product or service. Most processes (...) are cross-functional, spanning the ‘white space’ between the boxes on the organization chart. Some processes result in a product or service that is received by an organization's external customer. We call these primary processes. Other processes produce products that are invisible to the external customer but essential to the effective management of the business. We call these support processes.”

The above definition distinguishes two types of processes, primary and support processes, depending on whether a process is directly involved in the creation of customer value, or concerned with the organization’s internal activities. In this sense, Rummler and Brache's definition follows Porter's value chain model, which also builds on a division of primary and secondary activities. According to Rummler and Brache, a typical characteristic of a successful process-based organization is the absence of secondary activities in the primary value flow that is created in the customer oriented primary processes. The characteristic of processes as spanning the white space on the organization chart indicates that processes are embedded in some form of organizational structure. Also, a process can be cross-functional, i.e. it ranges over several business functions.

Finally, let us consider the process definition of Johansson et al. They define a process as

”a set of linked activities that take an input and transform it to create an output. Ideally, the transformation that occurs in the process should add value to the input and create an output that is more useful and effective to the recipient either upstream or downstream.”

This definition also emphasizes the constitution of links between activities and the transformation that takes place within the process. Johansson et.al. also include the upstream part of the value chain as a possible recipient of the process output. Summarizing the four definitions above, we can compile the following list of characteristics for a business process.

Definability: It must have clearly defined boundaries, input and output.

Order: It must consist of activities that are ordered according to their position in time and space.

Customer: There must be a recipient of the process' outcome, a customer.

Value-adding: The transformation taking place within the process must add value to the recipient, either upstream or downstream.

Embeddedness: A process can not exist in itself, it must be embedded in an organizational structure.

Cross-functionality: A process regularly can, but not necessarily must, span several functions.

Frequently, a process owner, i.e. a person being responsible for the performance and continuous improvement of the process, is also considered as a prerequisite.