

LOG206: E-Business

Spring 2018

Notes

Module 10: Analysis and Design

Introduction

In this module, we will explore approaches to the analysis and design of digital businesses. The focus will be on the analysis and design of business processes in order to transform them.

A business process is a building block of any kind of business. By definition, a business process is a series of repeatable steps that are critical for achieving some sort of a business goal. The key word here is repeatable – something that a business does on a regular basis.

In today's competitive market, companies need to continuously adapt and improve their business processes. Business process design (BPD) is the act of creating a new process or workflow from scratch. This is different from business process redesign, which as the name implies, means taking an already existing process and improving it.

How to do Business Process Design

In most cases, business process design is done when you are still starting out your business and need to define how you'll be doing certain things, as well as what the procedures are. Most businesses tend to do this implicitly. They do not actually do business process design. Meaning, they do not graph it out, structure it, and analyze it. Rather, for them, the process is something they are used to doing. A structured approach, on the other hand, means having your process mapped out and optimized for efficiency. To make this even simpler, let's say the "business process" in question is the act of making breakfast. You could do it according to memory, or you could have a process map with the exact steps.

Analysis for digital business

Analysis for digital business is concerned with understanding the business and user requirements. It involves use of analytical techniques to capture and summarize business and user requirements. Typical analysis activity can be broken down into:

- Understanding the current process
- Review of possible alternatives for implementing the digital business solution.

Process modelling

Process modelling is the activity of representing processes of an enterprise, so that the current process may be analyzed or improved. This involves establishing: the processes and their constituent sub-processes, the dependencies between processes, and the inputs (resources) needed and the output. In other words, business process modeling is the analytical representation or put simply an illustration of an organization's business processes. Modelling processes is a critical component for effective business process management.

Process modelling constitutes a technique for mapping out an organization's current processes, which can be especially helpful for understanding the "hows" of your company as well as identifying improvement possibilities.

It is important that you're aware of the fact that modelling your processes isn't your goal, it's actually a means to an end where the ultimate goal is process improvement.

Process mapping

Existing business processes often overlap between different functional areas of a business. So, before detailed activities are identified the analyst needs to identify where in the organization processes occur and who is responsible for them. Process mapping is the identification of location and responsibilities for processes within an organization. Process mapping is important for identifying potential users of a digital business system.

Since some of business processes will eventually involve the participation of more than one team/department in an organization, it is safe to say that business process modelling will quite often be cross-functional and rely on tasks and documentation from more than one department of an organization. They can even involve activities from external players, such as suppliers, which ups the complexity of it a notch.

Task analysis and task decomposition

Before designing and implementing a process, a more detailed breakdown is required. Task analysis is the identification of different tasks, their sequence, and how they are broken down. Curtis et al. (1992) provide a useful framework as follows:

- Business process are decomposed into activities
- Activities are further divided into tasks
- Tasks are finally divided into sub-tasks

Process dependencies

Process dependencies summarize the order in which activities occur according to the business rules that govern the processes. Normally, activities occur in a sequence and are serial; sometimes activities can occur simultaneously, and they are known as parallel.

Flow process charts

A simple flow chart is a good starting point for describing the sequence of activities of a workflow. Flow charts are simple such that they can easily be understood by non-technical staff. Using just a few words and some simple symbols, they show clearly what happens at each stage and how this affects other decisions and actions. Thus, they are effective in highlighting bottlenecks and inefficiencies. Each symbol in the chart refers to a particular operation within the overall process.

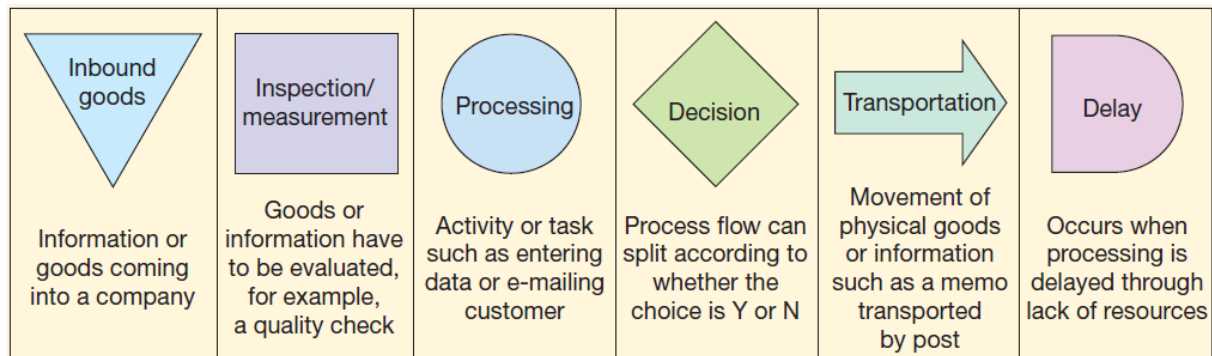


Figure 1: Symbols used for flow process charts

Effort duration analysis

Effort duration analysis is an approach that can be used to calculate the overall efficiency of a process when we have performed a detailed analysis. It is given by:

$$\text{Efficiency} = \frac{\Sigma(T(\text{effortontasks}))}{T(\text{totalprocesstime})}$$

This measure can be used to mark activities that add value to the customer rather than simply being administrative. See an example on the slides.

Business process improvement versus. Business process re-engineering

Ultimately, the goal of analyzing and designing processes is to make them better and more effective, adding value to both your internal and external customers as well as making your company's teams more efficient. This can be through business process improvement (BPI) or business process re-engineering' (BPR).

Business process re-engineering

This refers to the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, measures of performance, such as cost, quality, service, and speed. The goal is to optimize end-to-end processes and eliminate tasks that do not provide the customer with value. Therefore, BPR typically involves the analysis of

company workflows, finding processes that are sub-par or inefficient, and figuring out ways to get rid of them or change them.

BPR was implemented with considerable success by some high-profile organisations. For instance, Hallmark, a card company, completely re-engineered its new-product process; and Kodak's re-engineering of its black-and-white film manufacturing process cut the firm's response time to new orders in half.

BPR Example: Ford Motors

One of the most referenced business process reengineering examples is the case of Ford, an automobile manufacturing company. In the 1980s, the American automobile industry was in a depression, and in an attempt to cut costs, Ford decided to scrutinize some of their departments in an attempt to find inefficient processes. One of their findings was that the accounts payable department was not as efficient as it could be: their accounts payable division consisted of 500 people, as opposed to Mazda's (their partner) 5. While Mazda was a smaller company, Ford estimated that their department was still 5 times bigger than it should have been.

Accordingly, Ford management set themselves a quantifiable goal: to reduce the number of clerks working in accounts payable by a couple of hundred employees. Then, they launched a business process reengineering initiative to figure out why was the department so overstaffed. They analyzed the current system, and found out that it worked as follows:

- When the purchasing department would write a purchase order, they sent a copy to accounts payable.
- Then, the material control would receive the goods, and send a copy of the related document to accounts payable.
- At the same time, the vendor would send a receipt for the goods to accounts payable.

Then, the clerk at the accounts payable department would have to match the three orders, and if they matched, he or she would issue the payment. This, of course, took a lot of manpower in the department.

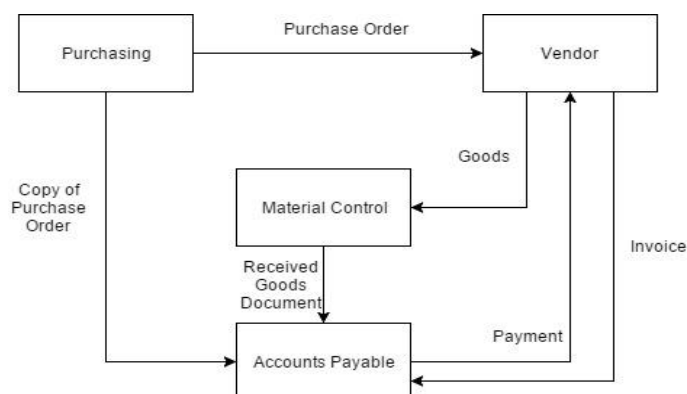


Figure 2: Ford's old material acquisition process

Through BPR, Ford completely recreated the process digitally.

- Purchasing issues an order and inputs it into an online database.
- Material control receives the goods and cross-references with the database to make sure it matches an order.
- If there's a match, material control accepts the order on the computer.

This way, the need for accounts payable clerks to match the orders was completely eliminated.

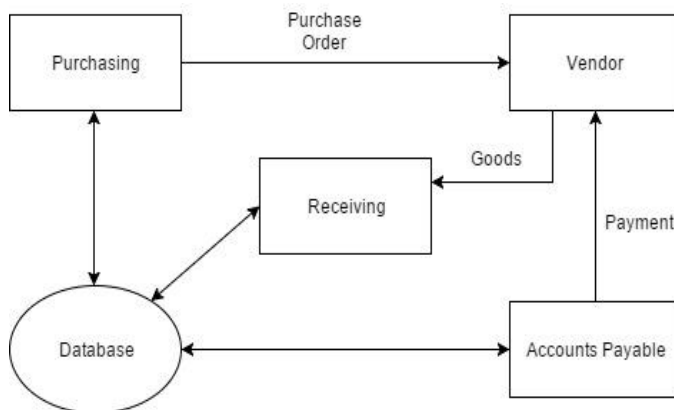


Figure 2: Ford's re-engineered material acquisition process

Business process improvement

Once you have your process designed, you might identify some possible ways to improve it. Maybe there is a step or two that is just a waste of resources or time? Or, if there's something that can be automated with technology? That might mean that you should start a business process improvement initiative. BPI refers to the optimizing existing processes, typically coupled with enhancements in information technology. It is less radical approach to organizational transformation. Care should be taken not to fall into the trap of simply using technology to automate sub-optimal processes.

Validating a new process model

Whichever method has been used to arrive at the process definition, we need to check that the process definition is realistic. Once new processes have been established they are sanity checked by performing a 'talk-through, walk-through and run-through'.

- Talk-through: Here, the design team will describe the proposed business process as a model in which different business objects interact
- Walk-through: Once the model has been adjusted, the walk-through stage involves more detail in the scenario and the design team will role-play the services the objects provide. In general, a walkthrough has one or two broad objectives: to gain feedback about the objects; and/or to familiarize the audience with the objects.
- Run-through: Finally, run-through stage is a quality check in which no on-the-spot debugging occurs – just the interactions between the objects as described.