Processos de
negócios 1

Luiz Carlos Duclós
Valdinei Leandro de Santana

INFORMATION STRATEGIC CYCLE

putting IT where IT belongs

CHAMPAGNAT
EDITORA • PUCPR

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Translation and Techinical Revision
Anderson Luiz Ravanello
Masters in management at PUCPR Brazil
Ph.D candidate at UQAM
Technical analyst for high performance computing contracts with the gouvernement du Québec

Luiz Carlos Duclós
Valdinei Leandro de Santana

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EDITORA UNIVERSITÁRIA CHAMPAGNAT
Rua Imaculada Conceição, 1155 - Prédio da Administração - 3º andar
Câmpus Curitiba - CEP 80215-901 - Curitiba / PR
Tel. (41) 3271-1701 - Fax (41) 3271-1435
e-mail: editora.champagnat@pucpr.br – www.editorachampagnat.pucpr.br

To Nana, companion in struggles and several journeys. To Rita, Luciana and Ligia, partners for ebey occasion.

To Rô, my love and Bruno, my son, that abstained from family time so that I could dedicate to the book.

To our students, faithfull and sincere critics of endless versions of this book.

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INTRODUCTION

It is quite common to meet businessmen that are unhappy with the results of their investments in Information Technology (IT). There can be a lot of reasons for that. According to Drucker(1999), companies do invest a lot in IT, but, under a keen eye, the investments are made more towards the Technological T, with appropriate levels of information regarding its operational aspects, while the Informational I is relegated to a second sight. Information is a core necessity for the businessman to create the corporate strategy. Flexibility and simplicity on analyzing information will be fundamental for companies that want sustained competitive advantage and results optimization.

The challenge of effectively managing information *versus* investing in IT is the core subject of this book. As the whole subject is ample, there is no desire nor pretension in exhausting or uncovering magic formulae to solve it; analyzing the relation between IT offer and demand during the 80's, 90's and the years following, its possible to perceive changes that may shine a light upon how to prioritize investments in IT in order to achieve better results.

During the 80s, IT, an assembly of hardware, software and telecommunications, had a higher demand then the offer, and the solutions that it provided were insufficient to correspond to the organizational needs. Before the 80's the use of IT was restricted to the specialists and engineers locked away in the laboratories, far from the reach of most companies.

The decade of 1990 was very prosperous for IT. The majority of the components within IT solutions became electronic in detriment of mechanical ones, allowing a myriad of new possibilities that could be fully explored by those who could afford it. Telecommunications evolved to allow information to transverse the world in less then a second, IT being an enabler of the advent of global business. Even though IT was expensive during these years, many companies managed to solve information problems with the application of IT to improve the efficiency of its businesses processes.

With the dawn of the new millennium, or right before, the offer of IT became stronger then the demand required to improve the efficiency of the businesses, even though many have yet to notice this inversion. There are a lot of offerings of IT in the market. Suppliers knock at company's doors on a daily basis with of-the box solutions for every problem. In order to avoid the feeling that "IT exists to solve problems that were caused by IT", its necessary to understand TI as but one of the components of Information Systems. It is necessary to understand the problem, then find alternatives, analyze them on the lieu of business and, timely, implement the appropriate solution.

In the Information Strategic Cycle, strategy is created, operationalized, executed and monitored. The strategic information becomes managerial and transactional through the steps that are contained into the Information Strategic Cycle. This tool helps managers to promote IT strategic alignment, identify the impacts that IT causes upon the strategic management and promote the continuous improvement of the business processes sustained by IT.

During the Information Strategic Cycle, its necessary to justify and prioritize the investments made in IT, according to the 10 steps that compose the cycle.

1) Critical Thinking;
2) Fundaments of Strategy;
3) Strategy creation;
4) Strategy translation;
5) Current status modeling (AS-IS);
6) Corporate change;
7) Future status modelling (TO-BE);
8) Managerial analysis;
9) Business Case;
10) Corporate learning.

This logic sequence of steps is didactic and has been applied successfully in post-graduation and MBA courses to solve real life problems that existed within organizations. It represents as the information that is delivered to the strategic level is transformed in

managerial information and promotes changes that are needed for the survival and prosperity of the organization.

There can be no solution for an undefined problem. **Critical thinking** must be encouraged in order to prevent misuse of corporative money without a proper focus for investment. Managers must dish out solutions that don't generate value to the core business

A company's **strategic fundaments** are formed by the mission, vision, values and policies. Sometimes facts may hide in plain sight. Investments that are to be made in IT must be aligned with the company's strategic fundaments.

This book follows two different approaches for strategy formulation: The first approach organizes the strategic information as a process of Competitive intelligence, while the last considers strategy creation as a dynamic process without rigid rules for the strategic thinking to happen. Both coexist in the academy and the corporative environments.

Corporate strategy is a path that leads to the fulfillment of the corporate vision, and must be translated and understood by all the employees. Strategic maps are used as tools for translating strategy; strategic objectives are displayed in a cause-effect relation on these maps. Critical processes are displayed within the strategic maps and in the company's value chain.

Before solving problems, one must identify its root causes; in order to identify them, the current business process **(AS-IS)** is modeled displaying the actors involved with it. Displaying the problems and the causes it is possible to give a focus to the strategic changes needed.

Information technology is only part of solutions to information problems. IT impacts on the daily routine in the organization and causes **organizational changes.** These changes must be planned in order to lower resistances, considering, beyond technology, strategy, structure, business processes and people.

Well planned changes generate value to both products and services within the organization. It is possible to propose new or improved business processes (TO-BE) either with or without the use of information technology. Enterprise resource planning (ERP) might be used to support the increased necessity of business processes.

In order to control the process, the following step in the Information Strategic Cycle contributes to generate information that is needed under **managerial analysis**. Business Intelligence (BI) may be used to consolidate operational data into cockpits, warnings, multidimensional data cubes, data mines, managerial reports and statistics. Key Performance Indicators are used to measure the operational effectiveness and to generate feedback about strategic performance.

While using this book in post graduation courses, students generated a final report, built according a **business case.** Business cases are a justification for the investments that are needed in IT, represented through means of cashflow, IRR, NPV and payback. A business case is a professional way to justify these investments in an IT strategic project.

Finally it is possible to contemplate the **organizational learning.** An initiative or strategic project is a set of actions that promote organizational changes that aim both to improve corporate performance and to aid the company in reaching its objectives. At the end of the project, it is possible to generate learning data, leading to lessons learnt in the process of executing the information strategic cycle.

Each of the steps that compose the Information Strategic Cycle has been organized as a chapter of the book. It is recommended, didactically, the sequential reading of the chapters while the web site www.businesscase.com.br completes the book with practical examples that have been developed during post-graduation and MBA courses. There is also one example of a Business Case at the end of the book, wich can be used as a reference material during the studies.

The final considerations synthesize the Information Strategic Cycle as a method that directs IT investments. IT then is put where it belongs. This method explains that what generates competitive advantage isn't how much is spent in IT but how to properly direct these investments in order to promote strategic change that will aid the company's ultimate survival and prosperity.

1 CRITICAL THINKING

Houston, we've had a problem here.
Jack Swigert, Apollo XIII

Every organization has its own timing for implementing projects that involve strategic decisions. With the learning that occurs within the organizations, bonuses and rewards might be awarded to employees as they contribute to the company's goals. These goals are unfolded to each employee, which, in turn, receives a set of indicators that are linked to the corporate strategy. For example, a strategic goal that aims to "improve operational efficiency" might be translated to a specific manager as "reducing total production time" and again, translated to the operational staff as "lowering total setup time for the cutting machine from 15 to 10 minutes". Executing strategy is part of everybody's jobs.

1.1 Problem Solving Techniques

As the strategy happens through the organization, the need to improve performance might emerge, and, in order to achieve that, the Methods for Analysis and Solution of Problems (MASP) may direct the implementation of improvements. Several models for improvement cycles exist, most notably the PDCA (*plan, act, do, check*) and the DMAIC (*define, measure, analyse, improve, control*), which have a lot of common characteristics. Kallás and Coutinho (2005), quote Jorge Gerdau in a speech during the *Balanced Scorecard Latin America Summit* de 2003:

> If we consider the PDCA management model, we find out that, historically, the Brazilians have problems with the CHECK. We get annoyed by being questioned, when that should occur naturally. That is something that we should learn from the American people

DMAIC Cycle

Several decisions are taken emotionally within the organizations, but professional managers prefer to justify decisions rationally. DMAIC is a method for analyzing and solving problems that allows decisions to be

made over data and facts. Some tasks must be done in each of the DMAIC cycle steps, as follows:

Define:

- Define the problem;
- identify the customer and the customer needs.
- brainstorming for root cause identification.

Measure:

- create a plan for data collection;
- collect the data;
- calculate the process' sigma performance.

Analyze:

- analyze collected data;
- analyze the process;
- test and validate the data and the root causes.

Improve:

- *brainstorming* for solution alternatives;
- select the most appropriate solution.
- deploy a pilot-test;
- verify improvements.

Control:

- integrate the new solution to the management system;
- train the employees;
- guarantee that the root cause keeps blocked;
- document the lessons learnt.

PDCA Cycle

The PDCA cycle is also known as Stewhart or Deming's cycle. According to Campos (1994), the word method is derived from two greek radicals – "*metas"* and "*hodos"*, meaning, respectively, "result to be achieved" and "path". Therefore, the PDCA *method* is a path to achieve an expected result.

In a very similar way to the DMAIC cycle, the PDCA also requires the completion of tasks in every of its steps:

Plan:

- locate a problem;
- define an objective;
- create and action plan.

Do:

- execute the plan.

Check:

- verify the completion of the objective.

Act:

- take corrective actions in case of failure;
- padronize and train upon being successfull.

Brazilian companies that adopted to total quality control programs in the early 80's use the PDCA method. DMAIC method has been adopted by companies that opted for SIX SIGMA projects. Six Sigma projects use statistic methods that aim to reduce failures to 3,4 occurrences per million of attempts. It isn't possible to determinate which method is actually better.

Funnel Method

Solving information problems often requires methods of system analysis and and systems engineering. Fig 1 demonstrates the funnel method for information problem solving. It's a generic method that can be used for problems diverse then information ones. When this method is used towards solving information problems, the first three steps on the funnel refer to system analysis, while the last two parts refer to systems engineering (LAUDON; LAUDON, 1999).

At the **step 1**, it is necessary to understand what kind of problem is going to be faced. It can be a technology, business process, people or other organizational dimension problem. Many people within a given organization may diverge about a coincidental problem as they are affected in different ways by it. It is imperative to understand how each

person or group position their opinion about the issue, as the ideological conflict is necessary during the problem analysis.

During the **Step 2**, the problem and its causes must be analyzed. Why does the problem exists? This is a "detectivesque" task that takes investigation and evidence collection. The broader these collections, the better the problem will be understood: data can come from interviews, documentation, quantitative analysis and other sources. This step aims to uncover how the problem was originally created and which factors keep it happening.

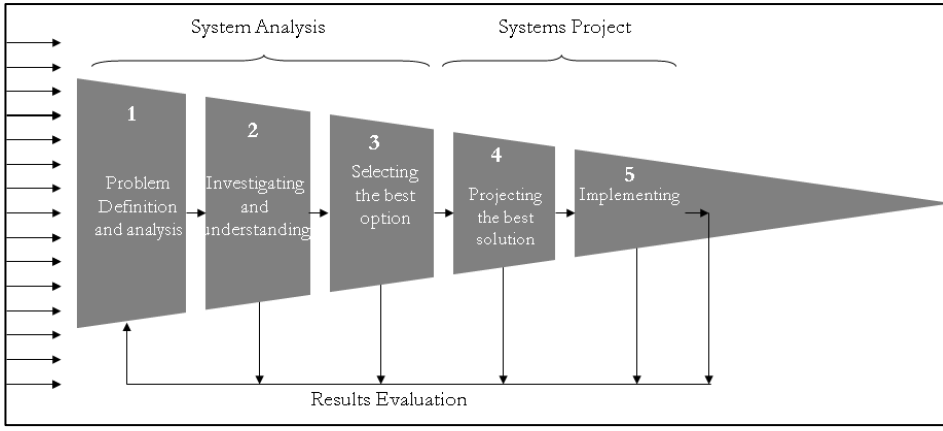

FIGURE 1 – Funnel Method
Source: LAUDON; LAUDON, 1999, p. 195.

During **Step** 3 some decisions are took in order to choose what can and what must be done. What must be done is related to the company's strategic goals. What can be done is related to the availability and viability of resources. Usually a company can't create new products and services immediately, or hire another team or plunge into different markets. All alternatives should be analyzed in order to select the most appropriate option.

The **Step 4** marks the beginning of the systems engineering process. Solutions must be planed and expressed as goals, scope, schedule, resources required and costs. There is an expressive challenge in this step that involves the language used during the application of IT. A common

vocabulary is needed in order for people to be able to share ideas and perceptions during the implementation of IT projects engineered this way.

The implementation of the problem's solution is done during the **step 5**. Any implementation of new information systems generates greater or smaller changes on the company's routine. Managing these changes and padronizing business processes are critical to the implementation of a system. A solution is efficient if it does well what it promised to do, efficacious if solves the problem and contributes towards the corporative goals and effective if it is simultaneously efficacious and efficient.

Not all problems in the corporate world can be solved directly; problems related to Information Systems are complex because they wrap up three dimensions in its existence: technology, organization and people. Complex problems have an infinite number of possible solutions and also have people that possess divergent perspectives. Its hard to find the best solution while respecting the scarcity of resources. Critical thinking is necessary to avoid the waste of precious time and resources.

AVE Method – ARIS *Value Engineering*

August-Wilhelm Scheer started the ARIS (*Architecture of Integrated Information Systems*) and AVE (*Value Engineering*) concepts at the Saarbrucken university at Germany. One of the objectives of AVE method is to use the business processes as a link between business managers and IT technicians. At Image 2 it is possible to see a resume of the AVE method.