Gest. Prod., São Carlos, v. 24, n. 3, p. 610-621, 2017
http://dx.doi.org/10.1590/0104-530X481-16

Corporate Strategic Planning and Information & Communication Technology Planning: a project based approach

Planejamento Estratégico Empresarial e Planejamento de Tecnologia de Informação e Comunicação: uma abordagem utilizando projetos

Orandi Mina Falsarella[1]
Celeste Aída Sirotheau Corrêa Jannuzzi[1]

Abstract: This paper discusses the importance of Information Systems (IS) and Information and Communication Technology (ICT) in Corporate Strategic Planning, and the importance of integrating these systems and technologies into the organization's business strategies. It is an empirical study based on a literature review of the subject, with the objective of presenting how the concept of projects contributes to the process of integrating the company's business strategy and ICT strategy. The proposal is built through the products arising from the Corporate Strategic Planning development, the projects needed to begin implementing the plan, and the relationship between the two as inputs for the preparation of Strategic Planning for Information and Communication Technology. As a result, we provide examples showing this integration process in a practical way, and its follow-up based on the Balanced Scorecard.

Keywords: Strategic Planning; Business; Information & Communication Technology; Projects.

Resumo: *O trabalho discorre sobre a importância dos Sistemas de Informação e das Tecnologias de Informação e Comunicação (TIC) no Planejamento Estratégico Empresarial e a relevância da integração desses sistemas e tecnologias às estratégias de negócio da organização. Trata-se de um estudo empírico fundamentado na literatura sobre o tema cujo objetivo é apresentar como o conceito projeto contribui para o processo de integração da estratégia de negócios da empresa com a estratégia da TIC. A proposta é construída através da relação dos produtos decorrentes do desenvolvimento do Planejamento Estratégico Empresarial, dos projetos necessários para iniciar a execução do plano e da relação desses como insumos para a elaboração do Planejamento Estratégico de Tecnologia de Informação e Comunicação. Como resultado, são apresentados exemplos que ilustram de forma prática esse processo de integração e seu acompanhamento com base no Balanced Scorecard.*

Palavras-chave: *Planejamento Estratégico; Negócios; Tecnologia de Informação e Comunicação; Projetos.*

1 Introduction

With the increasing development of Information and Communication Technologies (ICT), together with the effects of globalization and the consequent increased competition and reduced geographical boundaries, organizations are subject to all sorts of uncertainties and surprises that they have never faced before. It is thus essential that they seek strategies to survive in their competitive environment, and to this end they need a way to know or predict the unknown in order to plan for the future on a consistent, reliable basis instead of relying on intuition.

In this sense, the development of Strategic Business Planning, as well as the quality of the information obtained for this purpose, becomes a key element in this increasingly aggressive and competitive market. In this environment, innovation and timely response to market needs are determining factors for the survival of organizations. Therefore, every company needs to properly prepare to operate in the market, and information will provide the necessary knowledge: internally, about the company's strengths and weaknesses; and externally, about opportunities and threats. This information in turn allows the company to draw up a well-oriented strategic plan.

There is no doubt about the importance of information to Enterprise Strategic Planning (ESP), and there should thus be no doubt about the relevance of well structured Information Systems (IS), enabling collection, storage, retrieval, and dissemination of information across the organization.

[1] Centro de Economia e Administração – CEA, Pontifícia Universidade Católica de Campinas – PUC-Campinas, Campus I, Rodovia D. Pedro I, Km 136, CEP 13086-900, Campinas, SP, Brazil, e-mail: orandi@puc-campinas.edu.br; celeste.jannuzzi@puc-campinas.edu.br

Received Jan. 16, 2015 - Accepted Aug. 15, 2015
Financial support: The authors thank Pontifícia Universidade Católica de Campinas/Brazil for financial support.

These systems today are almost without exception computer-based, and they support decision-making and business functions at the operational, managerial, and strategic levels. However, it is worth noting that IS and Information& Communication Technologies (ICT) are not in themselves sufficient to foster the competitive conditions of an organization in its operating market.

Although ICTs can add value to organizational strategies, success will only be achieved if they are integrated into the organization's business strategies (Brumec & Vrcek, 2002). The integration of ICTs is defined as

> [...] an ongoing process of adjustment that organizations use to obtain the link between the objectives and business strategies and the objectives and strategies of the IT area, in order to gain competitive advantage [...] (Affeldt & Vanti, 2009, p. 204).

This process involves the development and reorganization of ICT to support business strategies (Chen et al., 2008).

In an organization, business strategies should be defined and oriented through Enterprise Strategic Planning (ESP). As a result of this planning—and considering the importance of ICTs within organizations—it becomes clear that the concomitant development of an Information & Communication Technology Strategic Plan (ICTSP) is essential. The existence of the ICTSP can bring competitive advantage to the organization and, based on the ESP, determine the Information Systems (IS) required for this, as well as changes and/or improvements to the existing IS for the purpose of supporting business strategies after their development.

The ICT strategy is composed of the Information Systems and Information & Communication Technologies, and defines the organization's requirements or demands for information and systems to support business strategies (Ward & Peppard, 2002). Being fully business based, the ICT strategy should define and prioritize investments, present the benefits expected from the use of ICTs, as well as highlight the interdependence and the necessary changes in the IS.

The ICTSP should represent the process of integration between it and the business strategies defined in the ESP, which turns out to be quite complex.

Given the importance of this issue, the literature proposes different models for integrating business and IT strategies, sometimes referred to as IT strategic alignment models.

A study by Affeldt & Vanti (2009) brings together models presented in the national and international literature, emphasizing those mentioned as references in the field. Thus, based on this study, the following models are highlighted:

(a) *Leavitt's Alignment Model* (Leavitt, 1965), whose development considers the interaction of four variables—tasks, actors, technology, and structure;

(b) *Rockart and Scott's Alignment Model* (Rockart & Scott, 1984), which takes as a basis for the balance of organizational functioning the interaction between the five elements—corporate culture and organizational structure; management processes; technology; individuals and their roles; and the organization's strategies—all of this influenced by external factors of social, political, economic, and technological characters;

(c) *Henderson and Venkatraman's Alignment Model* (Henderson & Venkatraman, 1993), whose concept includes the internal and external environment of the organization and proposes the integration of business strategies (business scope, distinctive competencies, and business management) and IT (technology scope, systemic competences, and IT management); as well as the functional interaction between infrastructure and organizational processes (administrative infrastructure, processes and skills) and infrastructure and IT processes (IT architecture, processes and skills);

(d) *Brodbeck and Hoppen's Alignment Model* (Brodbeck & Hoppen, 2003), in summary, considers that the strategic alignment (SA) between the business objectives and strategies and IT strategies is characterized by a multi-dimensional link that represents, dynamically, the reciprocity and the redirection between these elements, as well as the changes of state from present to future in the context of the internal and external environments of the organization. It is noteworthy that in their model Brodbeck and Hoppen recommend that the strategic objectives should be outlined through projects as explicated by Affeldt & Vanti (2009):

> In longer-term planning processes (3-5 years), the authors suggest that the strategic objectives should be described through projects, divided into short-term goals (up to one year). This would

> allow better operational control of goals and a more accurate adjustment. The range of the total strategic alignment would be identified when the firm's technology and information systems were providing all the information necessary for its strategic management model, allowing continuous adjustment of executed goals (Affeldt & Vanti, 2009, p. 216).

In its representation, the model is formed by the axes X, Y, and Z, in which the X and Y axes correspond to the formulation and implementation of planning, and the Z axis refers to time and "represents the dynamism of the various planning and alignment cycles" (Affeldt & Vanti, 2009, p. 215);

(e) Luftman's Strategic Alignment Maturity Model (Luftman, 2003) which, within a systemic view, advocates a gradual maturation (development levels) of the strategic alignment between the firm's business and IT, enabling a two-way interaction, i.e. "redirecting the firm's business based on Information Technology or remodeling the IT area to meet the business objectives" (Affeldt &Vanti, 2009, p. 217).

Over the years, the proposal of different strategic alignment models, which include the integration of Corporate Strategic Planning and Information Technologies, demonstrates the importance of the issue for organizations. However, it is possible to observe that little published research validates the models and/or describes how indeed they should be applied (Avison et al., 2004).

For organizations in general, the implementation of alignment models between business and IT proposed in the literature presents itself as a real challenge for managers, because of the great volume of variables involved in the process (Rezende, 2002).

> [...] the business world has been facing difficulties in the alignment and synergy of its plans when they involve and/or need IT and its resources. This activity is a constant challenge and has been consuming a lot of money in organizations concerned with this issue [...] (Rezende & Abreu, 2002, p. 42).

There is no doubt about the importance of the integration process between the ESP and ICTSP. And likewise it is understood that in practice this alignment is difficult to achieve, and that the theoretical models presented in the literature do not offer examples of their effective implementation in organizations (Turban et al., 1996; Rezende, 2002; Avison et al., 2004; Affeldt & Vanti, 2009). Although the conceptual presentation of Brodbeck and Hoppen's model provides suggestions on the adoption of projects in order to obtain greater control and more precise adjustments in the planning process in organizations (Affeldt & Vanti, 2009), it is observed that the proposal does not go into any detail about this development.

As a result of these considerations about the difficulties in applying the theoretical models to organizations, and the desire to contribute to studies on the subject, this work was developed with the aim of demonstrating how a project-based approach can drive and guide the process of integrating the firm's business strategy with its Information & Communication Technology (ICT) strategy, in order to support the strategic management and decision-making process.

This article is based on the literature on the subject, because bibliographic research contributes to reflective thinking that allows for discovering new facts and relationships in any area of knowledge (Lakatos & Marconi, 2007). In addition to this foundation, the article is grounded in an empirical study developed during the professional experience of the first author, whose positive results were obtained through the procedures now presented in this work.

This article describes the products (results obtained during the preparation of planning processes) arising from the development of the Enterprise Strategic Plan (ESP), and its relation to development projects aimed at initiating the implementation of plans to achieve the ESP's strategic objectives.

The text goes on to indicate the products arising from the development of Information and Communication Technology Strategic Planning (ICTSP), and the list of projects arising from ESP which may contribute to the development of ICTSP, especially for the creation of the Application Portfolio and Computational Infrastructure needs.

The project-based approach, applicable to the process of integrating the business and ICT strategies, is presented through the list of products arising from the development of the ESP, of the projects needed to start the execution of the business plan, and the relationship between these, which are inputs for the preparation of the ICTSP. As part of the approach the adoption of the Balanced Scorecard (BSC) is also suggested, whose measurement mechanisms, translated into indicators, display and evaluate the strategy in progress. Examples of this relationship are presented throughout the discussion.

2 ESP and its products

Explicitly or implicitly, every firm has a strategy to act in its market, but for the strategies to be truly competitive they need to be formulated though planning (Porter, 2003).

Planning is a step in the management process leading to the establishment of a coordinated set of actions, with a view to achieving stated objectives. Within the organization, it concerns the decision-making process, responsible for establishing the results to be achieved. It seeks to define, beforehand, what should be done, the reasons for how it should be done, and who should do what, where, and when (Rizzo & Falsarella, 2006). This set of actions contains the strategies to be adopted by the firm for its market performance.

In a firm, strategy is translated through administrative steps and approaches aimed at the competitive growth of business (Thompson et al., 2008). The strategy is a plan that coherently integrates the organization's goals, policies, and actions. When properly formulated, it seeks to allocate resources respecting the internal competencies and shortcomings, and contemplating the changing environments caused by intelligent opponents, which can be understood as competitors (Mintzberg & Quinn, 2001).

The strategies defined by the firm result from a systematic procedure developed from an examination of its internal and external environment, called strategic planning. Enterprise strategic planning (ESP) is the process though which it is decided how to implement the strategies (Anthony & Govindarajan, 2006). It is through ESP that an organization develops future estimates and forecasts that can be translated into targets to be followed and achieved by management at any organizational level.

It is important because it facilitates the decision-making process, guides the attitudes and activities for the organization's objectives, reduces the risk of useless expenses (expenses that diverge from the goals), and facilitates the control of the future and the day-to-day (Kwasnicka, 2004). ESP is a process that consists of the systematic analysis of the firm's strengths and weaknesses; and the opportunities and threats of the environment; in order to set objectives, strategies, and targets that enable increased business competitiveness (Rizzo & Falsarella, 2006).

It is developed through analysis of the internal and external environments, the survey of threats and opportunities, and the understanding of strengths and weaknesses, making it possible to trace the path that an organization seeks to follow (Rezende, 2002).

Strategic planning considers the objectives and strategies adopted, and seeks to develop programs for the effective and efficient enforcement of these strategies (Rezende 2002). The expected results of preparing an ESP should include ways to enable the institution to advance in order to be able to select market areas where it should or should not operate or continue to operate, supported by future vision, mission, goals, and objectives that will guide its strategic management (Montana & Charnov, 2008).

Based on the understandings outlined so far, it is possible to define that ESP is directly related to strategic management, and when developed it sets the future vision; the mission of the institution; which goals and objectives are to be achieved; what strategies should be used; which activities should be implemented; and what resources are needed (financial, material, and human) in order that the purposes of the organization be fully met.

Thus, the products resulting from the preparation of the ESP can be identified in Figure 1 and in the description following it:

- ✓ Vision—a strategic dream, shared and supposedly achievable. As the ESP is expected to take place in a period of time, usually a few years, the vision portrays how the institution would like to be seen at the end of that period;
- ✓ Mission—expresses clearly and briefly, via a simple statement, the following points:
  - the organization's identity—what is its broadest purpose;
  - its reason for existence—what is its more specific purpose, or what is its business, or on what kind of activity will it focus;
  - target market and performance area—who its customers are and where they are found.
- ✓ Strategic Objectives—should clearly translate the desires and the future position the institution wants to achieve. These are situations that are to be reached over a period and should be directly related to mission and vision. The strategic objectives can be corporate or departmental;

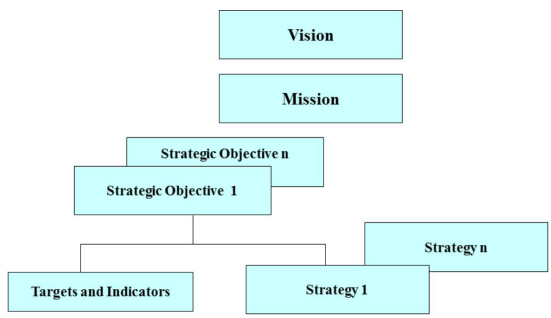

Figure 1. Preparation of Enterprise Strategic Planning – Products. Source: Authors.

- ✓ Targets and Indicators—targets indicate what to achieve with each strategic objective. They must be perfectly quantifiable and have clearly established deadlines. Indicators are the variables used in order to monitor whether the goals are being achieved or not;
- ✓ Strategies—seek to define courses of action indicating how the strategic objectives and goals can be achieved.

Once the ESP is approved the execution phase begins, which is the materialization of the plans. At this stage, the strategies are translated into projects as shown in Figure 2.

A project is a

> [...] temporary endeavor undertaken to create a unique product or service, different in some way from all other products and services. It has a defined beginning and end, uses resources, it is run by people and obeys cost, time and quality parameters [...] (Dinsmore & Silveira, 2011, p. 137).

Monteiro & Falsarella (2007) define projects as a set of activities focused around a common goal, generated by a demand internal or external to the organization (or both), requiring specific resources and having both a beginning and a foreseeable end, and entailing specific management actions.

A project is a temporary structure within the organization, i.e. to carry out a project a departmental structure is set up, which will be extinguished upon completion.

According to Kerzner & Ribeiro (2002, p. 17), a project is a "[...] development with an identifiable objective, which consumes resources and operates under the pressures of time, cost and quality."

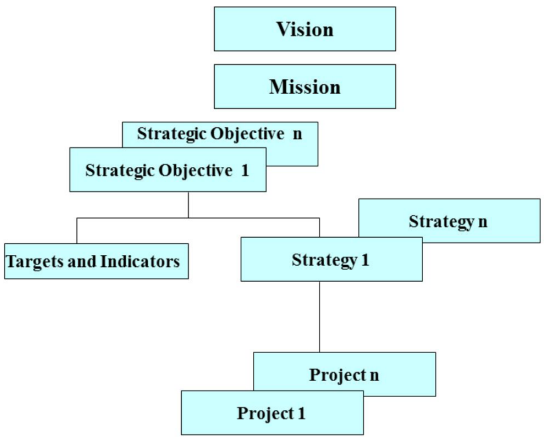

Figure 2. Translation of Strategies into Projects. Source: Authors.

A Guide to the Project Management Body of Knowledge, known as PMBOK, a book published by the Project Management Institute (PMI), defines design as "a temporary endeavor undertaken to create a product, service or only result" (PMI, 2004, p. 1). The temporary nature of projects means that they have a start date and completion date. The completion of the project is when either the goals are achieved or the project is abandoned. Each project results in a unique product or result (Monteiro & Falsarella, 2007).

In summary, it can be said that a project is a set of activities focused around a common goal, generated by an internal or external demand on the organization (or both), requiring specific resources and having a specific start and end time, entailing specific management actions (Monteiro & Falsarella, 2007).

When the projects related to the strategies of a particular strategic objective reach completion, it is expected that the goals and strategic objectives related thereto have been achieved.

3 ICTSP and its products

As has been previously mentioned, ICT should contribute to the achievement of the strategic objectives outlined in the ESP, by bringing advantages or competitive advantages to an institution ahead of its competitors. It is therefore necessary that the ICT area be involved with the business area and vice versa. This involvement contributes to the Information & Communication Technology Strategic Planning (ICTSP).

Companies that perform ICTSP expect to achieve four objectives, according to O'Brien (2010):

- ✓ Business alignment—ties IT investments to the entrepreneurial business vision;
- ✓ Competitive Advantage—creates strategic information systems;
- ✓ Resource Administration—manages hardware, software, and network resources effectively and efficiently;
- ✓ Technology architecture—develops an IT architecture for the company.

The ICTSP is a set of long-term goals that describe ICT infrastructure and key initiatives needed to achieve the organization's goals (Turban et al., 2007). The ICTSP must meet three objectives:

- ✓ To be aligned with the ESP;

- ✓ To provide an ICT architecture that allows users, applications, and databases to be integrated and operate in a network form without interruption;
- ✓ To efficiently allocate resources (human and financial) so that projects can be completed on time, within budget, and with the necessary requirements.

The process of Business Planning and ICT Planning has three major components (O'Brien & Marakas, 2007):

- ✓ Strategy development—develop business strategies to support the firm's business vision;
- ✓ Resource Management—develop strategies to manage or outsource the firm's IT resources, including HR that manages systems, hardware, software, databases, and network resources.
- ✓ IT architecture—make choices that reflect the IT architecture designed to support business initiatives, i.e. the portfolio of business information systems, the databases, the enterprise management systems, or other tools that support systems by means of a computing and communication platform.

Given these collocations, we can conclude that the main products resulting from the preparation of ICTSP can be identified in Figure 3 and in the description following it:

- ✓ Applications Portfolio—prioritized list of Information Systems (IS) that are considered strategic for integration into business strategies: both existing ones which may need improvement, and potential ones which require new developments or acquisitions;
- ✓ ICT Infrastructure—list of the computing and communication resources that will support the IS described in the application portfolio. This includes computers and peripherals (hardware), software (operating systems, DBMS, etc.), and equipment or programs that assist in the transmission of information to another local or remote computer resource;
- ✓ Human Resources—professionals in the ICT field (internal or external), or ICT users that will be allocated for implementation of projects arising from the needs of the applications portfolio and required ICT infrastructure;
- ✓ Financial Investments—all the financial resources needed to conduct and execute the ICTSP.

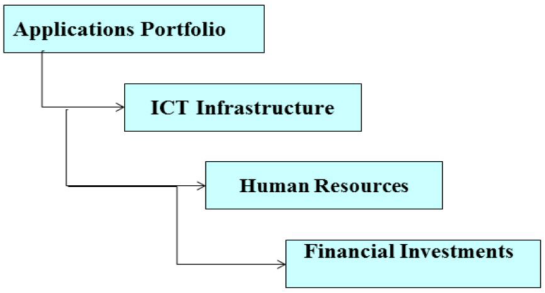

Figure 3. Preparation of Strategic ICT Planning – Products. Source: Authors.

4 Integrating business and ICT strategies – A project-based approach

Once the products generated in preparing the ESP are known, and drawing on the beginning of the execution phase (the materialization of the plans and translation of strategies into projects), it is possible to see how some of these projects may involve the ICT area. If this is the case, the execution of projects and the consequent generation of products are directly related to new Information Systems (IS), or the improvement of the existing ones; and to investment in ICT infrastructure (see Figure 4).

Within the scope of projects, it is important to identify the needs for IS in order to create and form the Applications Portfolio. The application and use of computing resources contributes to generate the need for ICT infrastructure.

Defining the Application Portfolio and the ICT infrastructure are inputs used to predict human resources (internal or third-party), and consequently the total financial investment needed to conduct the ICTSP. Thus, as the inputs to create the ICTSP come from the projects originated in the ESP, it can be stated that the ICTSP is fully integrated into the ESP and that all ICT investment is being sustained and justified by the ESP, as shown in Figure 5.

As an example of how the integration process occurs, some products generated in the ESP that can contribute to the development of the ICTSP of a hypothetical automotive firm will be described below, in Charts 1 to 3.

Chart 1 seeks to present an ESP composed of three strategic objectives. For each objective the goals to be achieved are presented, as are the strategies to be adopted in order to meet the strategic objectives.

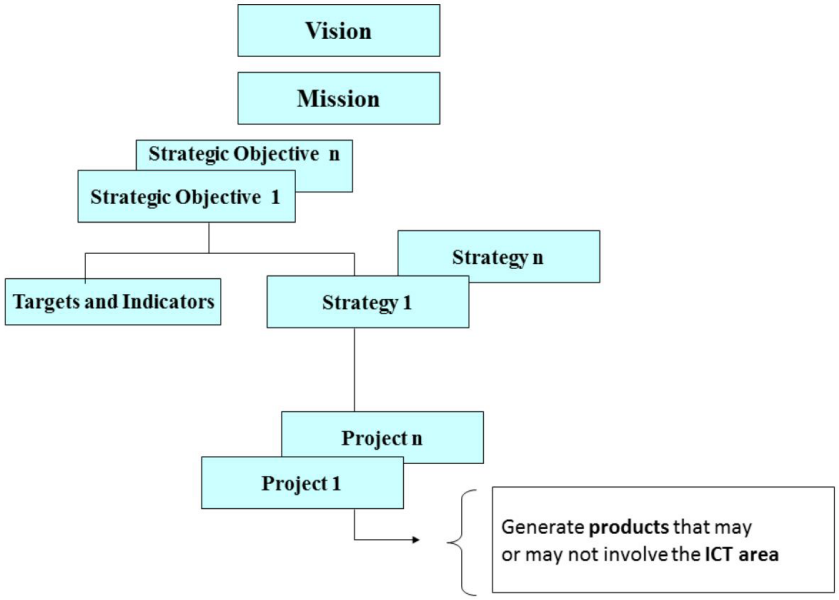

Figure 4. Projects that may or may not involve the ICT area. Source: Authors.

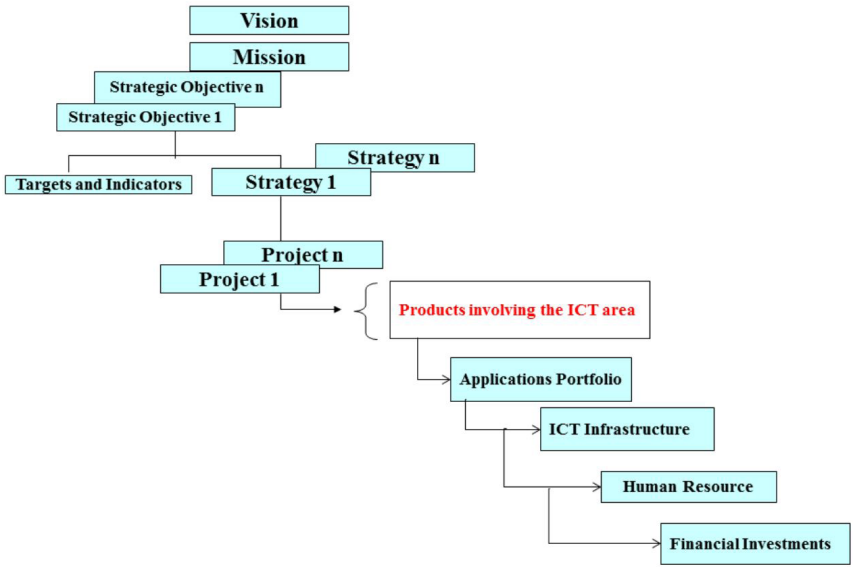

Figure 5. Integration between ESP and ICTSP. Source: Authors.

Chart 1. ESP Products.

Strategic Objectives	Targets	Strategies
Significantly increase vehicle sales.	Increase by 50% in two years and 70% in four years.	Increase the number of sellers; Expand the marketing of vehicles through the Corporate Portal; Improve relationships with customers to increase the exchange of vehicles.
Expand the number of transactions by the Motor Vehicle Service Sector.	Increase the scheduling of services in the first two years by 70%.	Make the sector more proactive by going to meet the customers instead of waiting for them to bring the vehicle to be serviced.
Improve customer service.	Increase satisfaction, as measured on a scale of 0 to 10, from 4 to 7 points.	Train telephone and technical staff.

Source: Authors.

Chart 2. List of Strategies and Projects.

Strategies	Projects
Expand the number of vendors.	1. Hire and train new salespeople; 2. Enhance physical space and install new workstations.
Expand the marketing of vehicles through the Corporate Portal.	3. Review the corporate portal and create a friendlier version that facilitates the virtual sales process.
Improve relationships with customers to increase the exchange of vehicles.	4. Install a Customer Relationship Management application to encourage loyalty.
Make the sector more proactive by going to the customers instead of waiting for them to bring the vehicle to be serviced.	5. Build an information system that allows customers to be contacted when their vehicle is due for scheduled services.
Traintelephone and technical staff.	6. Conduct training courses; 7. Create an application for measuring customer satisfaction.

Source: Authors.

Chart 3. List of ICTSP Projects and products.

Projects	Applications Portfolio	ICT Infrastructure
1. Hire and train new salespeople.	No integration.	No integration.
2. Enhance physical space and install new workstations.	No integration.	Evaluate the need to expand the number and network of computers.
3. Review the corporate portal and create a friendlier version that facilitates the virtual sales process.	Create improvements in the Corporate Portal.	Evaluate the need to expand the number and network of computers.
4. Install Customer Relationship Management application to encourage loyalty.	Create IS for Customer Relationship Management.	Evaluate the need to expand the number and network of computers.
5. Build an information system that allows customers to be contacted when their vehicle is due for scheduled services.	Create IS for Customer Relationship Management.	Assess the need to expand the number and computer network Check for sensor technology for measuring and transmitting kilometers driven to the dealership.
6. Conduct training courses.	No integration.	No integration.
7. Create application to measure customer satisfaction.	Create IS to measure customer satisfaction.	Evaluate the need to expand the number and network of computers.

Source: Authors.

Chart 2 presents the projects that can be executed for the purpose of achieving the objectives and goals of the ESP for each strategy.

In Chart 3 we enumerate the projects in order to visualize and list those that may or may not involve the ICT area. For example, Project **1** (Hire and train new salespeople) and Project **6** (Conduct training courses), do not at first involve the ICT area because they are a training program. As for Project **2** (larger physical space and new workstations), there is the need to purchase new computers, one for each new salesperson, as well as to expand network points, thus generating the need for investment in ICT infrastructure.

Similarly, Projects **3** (Review the corporate portal and create a friendlier version that facilitates the virtual sales process); **4** (Install Customer Relationship Management application to encourage loyalty); **5** (Build an information system that allows customers to be contacted when their vehicle is due for scheduled services); and **7** (Create application for measuring customer satisfaction) generate the need to create new information systems or improvements to existing ones, and should be entered into the Application Portfolio. Furthermore, the need for investment in ICT infrastructure to support them should also be assessed.

The procedures described show that after analysis of the projects resulting from the ESP, it is possible to extract from them the Applications Portfolio and the need for investment in ICT infrastructure. With these two products, it is necessary to estimate the need for human resources and investments in ICT to finalize the ICTSP. Thus, it is possible to conclude that each and every investment in ICT will in fact be integrated and supported by the ESP.

5 Monitoring the incorporation of the business strategy into the ICT Strategy

As the projects resulting from ESP are being executed, the process of integrating the company's business strategy into the ICT strategy can—and should—be evaluated and monitored in its development. To this end, the Balanced Scorecard (BSC), proposed by Kaplan & Norton (1992), is presented as the appropriate approach to this monitoring. According to the authors, the BSC is understood as:

> [...] a set of measures that gives top managers a fast but comprehensive view of the business. The balanced scorecard includes financial measures that tell the results of actions already taken. And it complements the financial measures with operational measures on customer satisfaction, internal processes, and the organization's innovation and improvement activities—operational measures that are the drivers of future financial performance (Kaplan & Norton, 1992, p. 71).

The BSC has been widely practiced in organizations because it allows them to "[...] translate the mission and strategy of the companies in a comprehensive set of performance measures which serve as a basis for a strategic management and measurement system" (Miranda, 2001, p. 229). Characterized as a comprehensive set of performance measurements, the BSC can consider the objectives, targets, projects, and strategies referred to in this study, n so that they can be evaluated and followed up in a conjugated form, by indicators defined in a context that represents the relationships among four distinct and complementary perspectives in the organization (Kaplan & Norton, 1992). They are:

- ✓ **The financial perspective**: evaluates whether the strategies used by the firm are contributing to improve the financial results with a focus on profitability;
- ✓ **The customer perspective**: allows leaders to identify customer segments and markets in which the business unit operates, assessing the degree of uptake, retention, and customer satisfaction;
- ✓ **The internal process perspective**: allows managers to identify critical business processes in which the company must achieve excellence, so as to meet the expectations of customers and shareholders;
- ✓ **The learning and growth perspective**: regards the competence and motivation of people, the capacity to improve processes and operational procedures, and the support of information systems.

These perspectives, while separate topics, appear closely related and complementary to each other. This relationship can be described through strategy maps, defined as communication tools that outline the steps that represent how to create value for the organization. They show, in a systematic way, a logical link between the strategic objectives - symbolized by the different steps on the map –displayed in the form of a chain of cause and effect (see Figure 6).

The process for integrating a company's business strategy and ICT strategies, driven by a project-based approach, is shown in the strategy map which outlines the relations and developments that define the added value of ICT to a business strategy, as illustrated in Chart 4.

In this chart, we see that ICT can add value to the business strategy and that this process is accomplished as the strategy "Increase the marketing of vehicles through the Corporate Portal" and the

Chart 4. Strategy Map: Business Strategy x ICT x BSC.

General objectives, goals, strategies, projects	Indicators	Perspectives
General Objective 1: Significantly increase the sales of vehicles.	Revenue Profitability	Financial
Goals: Increase by 50% in two years and 70% in four years.	Acceptance rate Number of clients that access the portal	Customers
Strategy: Increase the marketing of vehicles through the Corporate Portal.	Efficiency of sales process steps Business closing time	Internal Processes
Project: Review the corporate portal to create a friendlier version that facilitates the virtual sales process.	Availability Indicator Staff training	Learning and Growth

Source: Authors.

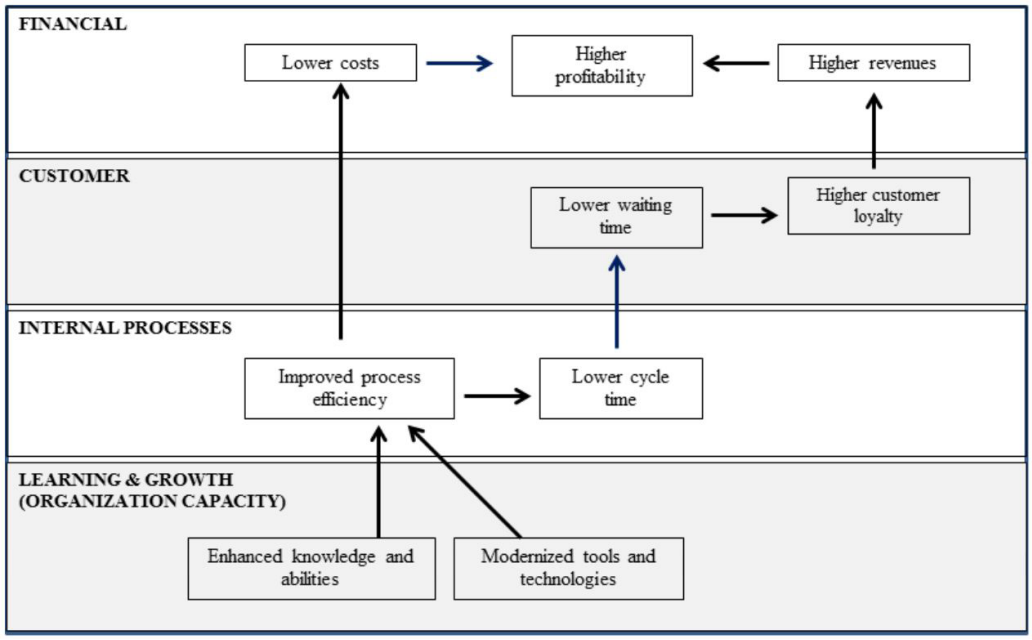

Figure 6. Strategic Mapping of the relationship between the perspectives in BSC. Source: Adapted from the Balanced Scorecard Institute (BSI, 2015, our translation).

project "Review the corporate portal to create a more friendly version that facilitates the virtual sales process" are carried out.

Thus, in the context of the strategy map, it is possible to see a cause and effect relationship, because the expansion of uptime of the portal service and the improvement of personnel training (Learning and Growth perspective) can increase the efficiency of the sales process and decrease business closing time (Internal Processes Perspective). Similarly, the success of these results, as previously described, may cause an amplification in the number of clients accessing the portal and increase the degree of acceptance of this new sales process (Customer Perspective), helping to increase the amount of revenue and profitability (Financial Perspective).

By extending the above example to all projects that require ICT and are part of a firm's Information & Communication Technology Strategic Planning (ICTSP), the monitoring of the indicators through a strategy map as shown in Chart 4 allows checking the extent to which ICT is adding value to business strategies.

6 Final considerations

The subject matter in this discussion, of course, is not new in the literature on Administration and Computing, but several studies on the subject clearly reveal its importance for academic research and its application in organizations. The integration of Enterprise Strategic Planning and Information & Communication Technology Strategic Planning is extremely significant for organizations to obtain competitive advantage, insofar as it contributes to more reasoned and precise coordination and control in the implementation of strategic goals and objectives outlined in the planning.

In the literature review, however, it is possible to see that although the concepts and indications of the elements that influence the process of integrating the company's business and ICT strategies are laid out, there is no sequential description of procedures that show how the use of projects contributes to this. Hence, explaining the process of integrating business and ICT strategies is the great contribution of the work, which demonstrates that this is possible by using the concept of projects.

The study presented in this work shows that the integration process begins when the strategies are transformed into projects. Thus, in the sequence, by analyzing each project it is possible to evaluate those related to ICT, which are thus inputs to the applications portfolio and/or ICT infrastructure. Hence, an integration process is characterized where each and every ICT investment to be made is being supported by some business strategy arising from the ESP. It is in this context that the BSC is presented as an extremely important methodological approach because it assists in the measurement and evaluation of the entire process, contributing to the evaluation

of the results. Thus, with respect to ICT projects, it can be verified which of the various perspectives add value to the business strategy.

The area of Information & Communication Technology of any organization is responsible for supporting the business processes with information and technologies, so that it can be competitive and develop its purposes successfully. However, for this to occur on a high note it is crucial that the ICT and the business areas move in the same direction.

References

Affeldt, F. B., & Vanti, A. A. (2009). Alinhamento estratégico de tecnologia da informação: uma análise de modelos e propostas para pesquisas futuras. *Revista de Gestão da Tecnologia e Sistemas de Informação*, 6(2), 203-226. http://dx.doi.org/10.4301/S1807-17752009000200004.

Anthony, R. N., & Govindarajan, V. (2006). *Management control systems* (12 ed.). Boston: McGraw-Hill/Irwin.

Avison, D., Jones, J., Powell, P., & Wilson, D. (2004). Using and validating the strategic alignment model. *Journal of Strategic Information Systems*, 13(3), 223-246. http://dx.doi.org/10.1016/j.jsis.2004.08.002.

Balanced Scorecard Institute – BSI. (2015). *Balanced scorecard basics*. Recuperado em 6 de outubro de 2015, de http://balancedscorecard.org/Resources/About-the-Balanced-Scorecard

Brodbeck, A., & Hoppen, N. (2003). Alinhamento estratégico entre os planos de negócio e de tecnologia de informação: um modelo operacional para implementação. *Revista de Administração Contemporânea - RAC*, 7(3), 9-33.

Brumec, J., & Vrcek, N. (2002). Strategic planning of information systems (SPIS)—a survey of methodology. *Journal of Computing and Information Technology - CIT*, 10(3), 225-231.

Chen, R., Sun, C., Helms, M. M., & (Kenny) Jih, W.-J. (2008). Aligning information technology and business strategy with a dynamic capabilities perspective. *International Journal of Information Management*, 28(5), 366-378. http://dx.doi.org/10.1016/j.ijinfomgt.2008.01.015.

Dinsmore, P. C., & Silveira, F. H., No. (2011). *Gerenciamento de projeto e o fator humano. Conquistando resultados através das pessoas* (2 ed.). Rio de Janeiro: Qualitymark.

Henderson, J. C., & Venkatraman, N. (1993). Strategic alignment: leveraging information technology for transforming organizations. *IBM Systems Journal*, 32(1), 4-16.

Kaplan, R. S., & Norton, D. P. (1992). *The Balanced Scorecard - Measures that drive performance* (pp. 71-79). Boston: Harvard Business Review. Recuperado em 6 de outubro de 2015, de http://www.csee.umbc.edu/~sweet/Ph.D/papers/BSC/BSC%20-%20Measures%20that%20drive%20performance.pdf

Kerzner, H., & Ribeiro, L. B. (2002). *Gestão de projetos: as melhores práticas* (2 ed.). Porto Alegre: The Bookman.

Kwasnicka, E. L. (2004). *Introdução a administração* (6 ed.). São Paulo: Atlas.

Lakatos, E. M., & Marconi, M. A. (2007). *Metodologia do trabalho científico* (7 ed.). São Paulo: Atlas.

Leavitt, H. J. (1965). Applied organizational change in industry: structural, technological, and humanistic approaches. In March, J. G. *Handbook of organizations* (Chap. 27, pp. 1144-1170). Chicago: Rand McNally & Co.

Luftman, J. (2003). Assessing IT/Business alignment. *Information Systems Management*, 20(4), 9-15 .

Mintzberg, H., & Quinn, J. B. (2001). *O processo da estratégia* (3 ed.). Porto Alegre: The Bookman.

Miranda, R. C. R. (2001). Balanced scorecard. In K. Tarapanoff (Org.). *Inteligência organizacional e competitiva* (Parte II, Cap. 10, pp. 227-239). Brasília: UnB.

Montana, P. J., & Charnov, B. H. (2008). *Management* (4 ed.). New York: Barron's.

Monteiro, N. A., & Falsarella, O. M. (2007). Um modelo de gestão da informação para aprendizagem organizacional em projetos empresariais. *Perspectivas em Ciência da Informação*, 12(2), 81-97.

O'Brien, J. A., & Marakas, G. M. (2007). *Introduction to information systems*. Boston: McGraw-Hill.

O'Brien, J.A. (2010). *Introduction to information systems: essentials for the internetworked e-business enterprise* (10 ed.). Boston: McGraw-Hill.

Porter, M. E. (2003). *Competitive Strategy. Techniques for analyzing industries and competitor*. New York: Simon & Schuster.

Project Management Institute – PMI. (2004). *A guide to the project management body of knowledge* (3 ed.). Newtown Square: PMI.

Rezende, D. A. (2002). *Tecnologia de informação integrada à inteligência empresarial: alinhamento estratégico e análise da prática nas organizações*. São Paulo: Atlas.

Rezende, D. A., & Abreu, A. F. (2002). Planejamento estratégico da tecnologia de informação alinhado ao planejamento estratégico de empresas. *Revista de Administração Mackenzie*, 3(2), 39-51.

Rizzo, G. A., & Falsarella, O. M. (2006). Estrutura informacional para monitoramento do planejamento estratégico apoiado no balance scorecard. *eGesta - Revista Eletrônica de Gestão de Negócios*, 2(2), 113-137.

Rockart, J. F., & Scott, M. M. S. (1984). Implications of changes in information technology for corporate strategy. *Interfaces*, 14(1), 84-95.

Thompson, A. A., Strickland Iii, A. J., & Gamble, J. E. (2008). *Administração estratégica* (15 ed.). São Paulo: McGraw-Hill.

Turban, E., Mclean, E., & Wetherbe, J. (1996). *Information technology for management: improving quality and productivity*. New York: John Wiley and Sons.

Turban, E., Ranier, R. K., Jr., & Potter, R. E. (2007). *Introdução a sistemas de Informação uma abordagem gerencial*. (D. Vieira, Trad.). Rio de Janeiro: Elsevier.

Ward, J., & Peppard, J. (2002). *Strategic planning for information systems* (3 ed.). New York: John Wiley & Sons.