Proposição de um Framework para a Construção de Casos de Negócios de Projetos de Tecnologia da Informação

Proposition of a Framework for Building Business Cases of Information Technology Projects

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Objetivo do estudo
O objetivo deste estudo é propor um framework abrangente, baseado no Business Model Canvas, para o desenvolvimento de casos de negócios de projetos de Tecnologia da Informação (TI).

Relevância/originalidade
A estrutura visa facilitar o alinhamento entre as partes interessadas de negócios e de TI, aprimorar os processos de tomada de decisão do projeto e melhorar a taxa de sucesso das iniciativas de TI nas organizações.

Metodologia/abordagem
A Design Science Research seguiu procedimentos que resultam na construção de um framework para resolução de um problema, composto por cinco etapas: Conscientização do Problema, Sugestões, Desenvolvimento, Avaliação e Conclusão. A técnica de análise de dados foi análise de conteúdo.

Principais resultados
A identificação dos principais problemas e dificuldades que as empresas encontram na criação de business cases para projetos de TI e a criação de um framework que sirva de guia para essas organizações.

Contribuições teóricas/metodológicas
A pesquisa realizada, com base no referencial teórico, permitiu relacionar conhecimentos sobre conceitos de Business Case a Projetos de Tecnologia da Informação, contribuindo para a formação de uma base teórica dos construtos.

Contribuições sociais/para a gestão
A implicação gerencial é a entrega de um framework que oriente e conduza a criação de business case para projetos de TI pelas áreas de negócio, consequentemente apoiando-as no diálogo com os setores de TI

Palavras-chave: Projeto, Tecnologia da Informação, Competitividade, Alinhamento Estratégico, Business Model Canvas

Proposition of a Framework for Building Business Cases of Information Technology Projects

Study purpose
The objective of this study is to propose a comprehensive framework, based on the Business Model Canvas for developing business cases of Information Technology (IT) projects.

Relevance / originality
The framework aims to facilitate the alignment between business and IT stakeholders, enhance project decision-making processes, and improve the success rate of IT initiatives within organizations.

Methodology / approach
The Design Science Research followed procedures that result in the construction of a framework to solve a problem, consisting of five steps: Awareness of Problem , Suggestions, Development, Evaluation and Conclusion.In all steps, the data analysis technique used was content analysis

Main results
The identification of the main problems and difficulties that companies encounter in the creation of business cases for IT projects and the creation of a framework that serves as a guide for those organizations.

Theoretical / methodological contributions
The managerial implication is the delivery of a framework that guides and leads the creation of a business case for IT projects by the business areas, consequently supporting them in the dialogue with the IT sectors.

Social / management contributions
The managerial implication is the delivery of a framework that guides and leads the creation of a business case for IT projects by the business areas, consequently supporting them in the dialogue with the IT sectors

Keywords: Project, Information Technology, Competitiveness, Strategic Alignment, Business Model Canvas

Proposition of a Framework for Building Business Cases of Information Technology Projects

1. INTRODUCTION

According to Sehnem et al. (2021), companies have increasingly sought answers on how to adapt to rapid changes in the market constantly facing questions regarding their own survival within this context of broad change and unpredictability, which it is possible to highlight the recent COVID-19 pandemic, requiring from these organizations a quick response to complex and difficult-to-solve problems.

Porter (1985) explains that the core of the real generation of competitive advantage of organizations lies in the value that the company creates and delivers to its customers. Kotler (1998) defines added value delivered to the consumer as the result of the difference between the total expected value (set of benefits) and the total cost to the customer, denominated as the consumer's profit in the exchange transaction.

As a tool to gain performance in the execution of value chain activities, companies are increasingly seeking support from the information technology (IT) sector to provide technologies that support the performance and quality of their processes, seeking solutions based, for example, on infrastructure, information systems, and artificial intelligence (Ciborra, 1997; Sabherwal; Hirschheim & Goles, 2001), thus enhancing the strength of value creation by organizations through an increasingly performative and automated value chain, contributing also to enable new operational strategies. (Laurindo et al., 2001; Reich; Benbasat, 1996; Teo & King, 1997).

Due to this high relevance and importance that the IT sector must contribute to this enhancement of activities in the value chain of organizations, a link needs to be created between the IT sector and the business areas. By contextualizing this fact to a current and modern bias, projects related to digital transformation can be taken as an example, in which the business areas need to be connected and in communication with the IT areas for the correct understanding, mapping, and service of their business processes and necessities about what needs to be transformed through digitalization. According to the Dell Technologies Digital Transformation Index 2020, around 87.5% of companies installed in Brazil carried out some initiative aimed at digital transformation in 2020. The number was above the world average of 80%.

However, when there is a certain technology problem to be solved (request, demand, project, incident) the IT needs to be demanded and this is not always an easy task, because, in addition to aligning strategies, they also need to be aligned with competencies of the professionals participating in the projects with a need for interlocution and interpretation of needs between the business areas and the information technology areas (Laurindo et al., 2001). When demanding the Technology sector, the business areas are looking for support in their own organizational value chain where the Technology sector serves this entire chain as support in the creation of value for the final customer.

Luftman (2000) argues that the alignment between business and IT refers to the application of IT, appropriately and at the right time in harmony with the strategies, objectives, and needs of the business. Thus, this alignment comprises: on the one hand, IT must be in harmony with the business and, on the other, the business can or must be aligned with IT (Joia & Souza, 2009).

In this way, alignment between the organization's business areas is necessary, this being through a requesting area (the financial one for example) and the serving or executing area (IT in the present context). This alignment among different business units aims to support the

organization's strategy, and this synergy is a fundamental factor for the successful execution of the strategy. (Kaplan & Norton, 2006).

Business Cases have been used for decades in the business context for business rationalization, structuring, and feasibility analysis. Its objective is to materialize, whether in a structured document, verbal argument, or presentation, the main dimensions of the proposed business such as aspects related to the market, competitors, customers, partners, and finance, with the aim of identifying and clarifying the context of the problem, being it a project or new business. A business case becomes an investment proposal in a project or initiative that promises to produce an adequately significant return to justify its outlays (Kurucz et al., 2008). A business case becomes an investment proposal in a project or initiative according to TOTVs (2021), one of the largest technology companies in Brazil, business cases are effective in expressing the needs of the business area to its stakeholders and other areas of the company, being a great ally for the organizations' digital transformation projects.

The objective of this study is to propose a comprehensive framework, based on the Business Model Canvas for developing business cases of Information Technology (IT) projects. The framework aims to facilitate the alignment between business and IT stakeholders, enhance project decision-making processes, and improve the success rate of IT initiatives within organizations. The managerial implication is the delivery of a framework that guides and leads the creation of a business case for IT projects by the business areas, consequently supporting them in the dialogue with the IT sectors.

2 – THEORETICAL FOUNDATION

2. 1 Information Technology and Competitiveness

According to Laudon and Laudon (2007), Information Technology is a set of resources characterized as non-human dedicated to the processing, storage, and communication of information, which are organized in a system capable of performing a certain set of tasks.

The concept of information technology is broader than technology itself or the simple "modernization of information." According to Keen (1993) information technology also involves human, administrative, and operational aspects not being summarized by purely technical issues. However, Alter (1992) distinguishes between information technology and information system defining IT to express only technical aspects and information systems to express the relationships that involve the flows of work, information, and people. In addition, Henderson and Venkatraman (2004) define information technology as both aspects related to information, processes, and technologies.

For Luftman et al. (1993), the definition of information technology is broader, including information systems, the use of hardware and software, telecommunications, automation, and multimedia resources, used by organizations to provide data, information, and knowledge, addressing all technological resources and organizational processes that favor the management of information by organizations. For the basic conceptualization of information technology in this paper, it will be used Luftman's concept as a base, conceptualizing IT as the use of hardware and software to improve information management by organizations.

It is possible to observe that the definitions of information technology are centered on the use of technology for information management in organizations, not being solely and exclusively referenced only to technical aspects, bringing processes and people as a fundamental part of its conceptualization because without the correct application and cooperation of people no technology becomes valid within organizations. According to Rezende (2007), the human factor, despite not being part of the basic conceptualization of

information technology, is a crucial factor because, without the human factor, IT would not have functionality or utility within organizations.

Organizations have increasingly sought the use of IT in their primary and secondary processes (which will be discussed in more depth in the sequence of this paper), due to its high power to gain performance and productivity. Faced with this, organizations have also changed their way of planning their future strategies with information technology as one of their main tool and strategic bases (Albertin, 1999). Thus, it is possible to observe how IT has become a crucial factor within organizations.

Crane and Bodie (1996) state that organizations are transforming themselves in an increasingly unpredictable way due to the increasing necessity to fight for competition linked by current information technologies and the growing decline in processing costs, becoming increasingly accessible for most companies. Until the mid-1990s, processing costs were characterized as an impeding factor for most companies, but after the 2000s these costs have become increasingly smaller directly favoring the acquisition of this technology by organizations and consequently favoring the power of the fight for competitiveness.

According to Porter (1985), any company involves numerous technologies and everything it does involves some type of technology employed. For the present day, this statement could not be truer. Currently, it is impossible to analyze a company and not see any type of technology employed in it, this one being more or less accentuated. The use of information technology has become vital for organizations, a context related to an organizational environment that is increasingly digitized in its operational processes. When Porter (1985) points out that any of the technologies employed in a prey can have a significant impact on competition, it is understood how relevant this also becomes for the current context where there is a great choice of tools and platforms for the most diverse and varied uses, such as financial platforms, ERP (Business Management Systems), accounting platforms, digital marketing, and customer service management platforms with increasingly affordable costs.

2.2 Strategic Alignment

According to Kaplan and Norton (2004), an organization's strategy defines how it creates value for its shareholders and customers. Peter Drucker (1994) states that more important than doing things “well” is doing things “right”. This is an important conceptual basis for clarifying the concept of strategy within organizations where leaders and managers need to constantly align and plan their actions to create value for their customers. As stated by Drucker, the job of defining and doing the right things is what one tries to accomplish through organizational strategy.

Porter (1980) brings the concept of competitiveness to the center of strategy, and he defines competitive strategy as “the set of offensive or defensive actions to create a defensible position in an industry or strategic group to face the five competitive forces and, thus, obtain a return over the higher investment for the company.”

Integrating information technology resources into corporate business has become an increasingly important strategic issue for organizations, and this is a problem that has been consuming a lot of energy and financial resources. In this sense, the need for timely information and personalized IT knowledge in organizations is emerging, to effectively assist their decision-making processes and their business management in the current highly competitive, globalizing, and turbulent market (Rezende & Abreu, 2002).

The requirement for dynamism in business activities has undergone sharp transformations and gains of complexity, arising from a dynamic market and in constant search for competitive advantage. This requirement makes companies prioritize the IT sectors to be

aligned with their strategies, regarding the prioritization and execution of IT projects aimed at contributing to the achievement of the organizational strategy (Henderson & Venkatraman, 2004).

According to Luftman and Brier (1999), the strategic alignment of information technology is a key concept for the executives of organizations that competes with the application of IT tools at the right time and in an appropriate way ensuring that the organization's strategic actions are executed and performed with the highest possible quality.

Zviran (1990) defends the construction of a link for alignment between the IT and business areas correlating the strategic objectives of the IT sector with the organizational strategic objectives, thus resulting in a strategic link between the areas.

So, the continuous development and evolution of IT offer organizations the opportunity to achieve extraordinary performance and gain a competitive advantage by effectively aligning information resources with the corporate strategies of the business units. Organizations that do not assume a leadership position run the risk of being overtaken by their competitors (KAPLAN; NORTON, 2006).

Bittencourt (2003) states that IT is a relevant element in decision-making in the business world. According to him, the business environment has been undergoing greater and more complex changes in accordance with the demands of the globalized world and technological innovations and their respective solutions and impacts for the treatment of information. Bittencourt also adds that, in practice, it has been found that not all organizations' needs are easily met by the solutions of technology that are currently on the market, much less in their entirety.

Demanding the IT sector in an increasingly digital context has become a frequent process for organizations. Within the competition and market, IT has supported the operations of organizations by providing assorted services for the improvement of the activities from the value chain. According to Beal (2004), the main benefit that information technology brings to organizations is its ability to improve the quality and availability of essential information and knowledge for the company. Through information systems, IT offers organizations unprecedented opportunities to improve internal processes and support services.

This alignment between the IT sector and the business areas, or the union and service of a support chain to a primary chain will be the subject that will be discussed in the following topics. It will be analyzed how the technology sector as a support activity can contribute to the service and support the main chain of the organization.

3 - RESEARCH METHODOLOGY

This paper aimed at building an artifact (framework) to solve an organizational problem. Through the study of several research methods, the Design Science Research was chosen as the ideal methodology due to its characteristics and proposals. According to Dresch, Lacerda and Antunes (2015), Design Science Research “is a method that supports and operationalizes the conduct of research when the objective to be achieved is an artifact or a prescription” (2015, p. 67). This is an oriented method to solve problems based on understanding it, as well as building and evaluating artifacts that can solve problems. DSR (Design Science Research) is also characterized by reducing the gap between theory and practice, which is one of the main objectives of this study. In order to fulfill the objective of this research, the method proposed by Freitas Junior et al., (2015) was considered, they suggest that the DSR must follow a series of procedures that result in the construction and presentation of a solution or improvement of some kind of problem, consisting of five steps. The steps of the method are in chart 1.

Chart 1 - Research design with the steps of Design Science Research

Process Steps Freitas et. al (2015)	Data Collect	Data Analysis
1- Awareness of Problem	Interviews with questionnaires based on Literature review	Analysis of the content
2 - Suggestions	Semi-structured interviews	
3 - Development	Focal Group	
4 - Evaluation	Focal Group	
5 - Conclusion	Analysis of the results of the previous steps	

Source: the authors

In all steps, the data analysis technique used was content analysis, this type of analysis aims to infer conclusions about the content of messages uttered by someone with the aim of enriching the exploratory attempt, increasing the possibility of discoveries occurring on the part of the researcher or evidence for the verification of hypotheses, which can be either in the form of questions or tentative statements (Bardin, 1995). The sections presented below explore each of the stages of this study.

3.1 First step "Awareness of Problem"

The first step is problem awareness, where the researcher identifies and understands the problem it wants to study and solve, as well as define what performance is required for the system under study (Hevner et al., 2004; Vaishnavi; Kuechler; Petter, 2004). In this stage a literature review was carried out, and from there the theoretical basis was formed that allowed the general awareness of the problem. In this first phase of the research, in addition to the literature review, an interview script was created considering the objectives of the study and its theoretical pillars. An interview script was prepared in a semi-structured form with open questions (electronic questionnaire through Google Forms platform), to collect the necessary information to achieve the research objectives, which was applied to twenty professionals belonging to the areas of technology and business.

The interview script was presented in a semi-structured way with open questions (form), to collect the necessary information to achieve the research objectives. A total of twenty professionals from information technology and business areas participated during the period from June to July 2022, thus corresponding to 2 months duration. The researcher selected the research participants, with the aim of mixing knowledge, areas of activity, and markets.

3.2 Second step "Suggestion"

The second step of suggestion, according to Manson (2006), refers to activities that allow the development of artifact alternatives for solving problems. In this stage (Suggestion) based on the theoretical basis and the results of the interviews and their suggestions, sketches of the artifact were made. As a result of this phase, an outline of the framework was prepared in canvas format consisting of thirteen elements, being this version 0 (Suggestion) of the artifact.

3.3 Third step "Development"

In the third step, the researcher will build one or more artifacts. The techniques used vary, depending on the artifact to be built (Freitas Junior *et al.*, 2015). In this stage

(Development), the two representations (versions) of the artifact were developed, proceeding from its suggested version (0). After having defined in the suggestion stage that the framework to be conceived in a canvas model would be the way to present a resolution to the problem encountered, an attempt was made to accommodate the elements that were suggested as viable solutions within the contexts and experiences from the professionals who were interviewed. Version 1 was conceived after discussions held with a focus group of specialists on version 0 of the artifact, this group was composed of both IT professionals and business areas. After the dynamics of the focus group and the researcher's analyses, version 1 was stipulated, which in summary is the evolution of version 0 added to the contributions of the participants from the focus group.

3.4 Fourth step "Evaluation"

In the fourth step, once built, the artifact must be evaluated according to the criteria that are contained, explicitly or implicitly, in the proposal. Considering the functioning of the artifact in the context for which it was designed, as well as evaluating whether the proposed solutions could be achieved (MANSON, 2006).

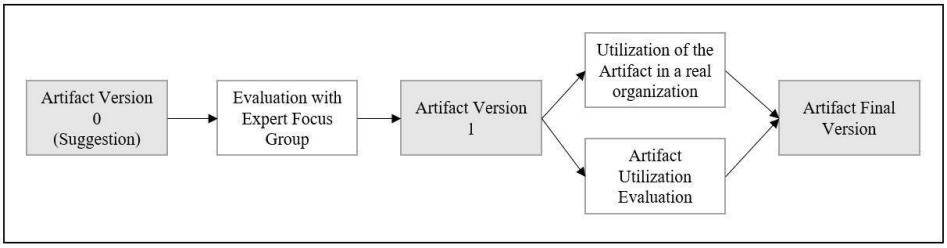
In this stage the financial sector of a real organization used the framework (in its version 1) in a real need related to the need for an IT project, thus using the artifact to create a business case for the proposed project, which was sent to the information technology area for evaluation. After this practical use of the artifact, a new meeting with a focus group of specialists was held, this was when the group compared the proposed descriptions and the results achieved to finally conclude the performance of the artifact and move on to the last part of the DSR method.

3.5 Fifth step "Conclusion"

The fifth concluding step consists of formalizing the process and explaining its results both for the academic context and for the professional context, to allow one to understand the success, scope and functioning of the proposed artifact and how its practice changes the context (Dresch, Lacerda & Antunes, 2015). In this stage consisted of gathering all the proposed artifact models, analyzing the evolutionary processes, and explaining the reason for having reached the last version. At this stage, it was also sought to explain a little more about the application of the artifact in the context in which it should be used, as well as an attempt was made to bring a little explanation about the logic used in the composition of what was suggested.

Figure 1 shows the development stages of the method along with the designed versions of the artifact.

Figure 1 – DSR x Artifact Versions



Source: the authors

4 - Results Analysis

4.1 Awareness of Problem

The initial flow of the research comprised the literature review, and from there the theoretical basis was formed that allowed the awareness of the problem. In this first phase of the research, an interview script was prepared, which was constructed considering the objectives of the study and its theoretical pillars.

Regarding the interviews, participants emphasized the need for a simpler and more practical solution for creating business cases, with 100% of them being familiar with the concept of a business case. They also stressed the importance of clear communication of project scope, timeline, and costs.

The research also showed that 65% of the participants do not use a specific tool for creating business cases for IT projects. In response, the proposal for a canvas model for business case development proved to be promising, meeting organizations' desire for a simpler and more modern approach.

The concepts of Porter's Value Chain, Return on Investment (ROI), and Payback were considered relevant by the participants and were suggested as crucial elements to be included in the proposed tool. They highlighted that these concepts can contribute to better visibility of processes within organizations and promote more efficient communication.

Another important insight was the inclusion of information about past projects and relevant historical data in the tool, as this data is fundamental for building effective business cases.

Overall, the field research showed that creating business cases for IT projects using a specific tool is seen as relevant and beneficial by organizations. The proposal of a canvas model that includes concepts from Porter's Value Chain, ROI, Payback, and other suggestions from participants proves to be a viable solution to assist organizations in creating IT business cases.

The quotes from the participants reinforce the significance of the framework proposal:

"Creating a specific tool for elaborating business cases for IT projects is a real necessity in our company." - Project Manager.

"I consider Porter's Value Chain concept very relevant as it helps to better understand the flow of processes in our company." - Business Analyst.

"I find it essential to consider Return on Investment (ROI) and Payback Time in creating IT business cases." - Director of Technology.

Thus, the proposed "Business to IT Model Canvas" is a response to the needs and suggestions of the interviewed professionals, aiming to provide a practical, comprehensive, and market-aligned tool for creating business cases for IT projects.

4.2 Suggestion

Based on the results of the interviews, the theoretical framework, and allied to the discussions with the advisor, the process of planning the artifact proposition began starting from the initial idea of creating a tool capable of helping and facilitating the process of creating business cases focused on IT projects. This was the starting point to begin the elaboration of the outline of the framework. In this way, it was sought to consider the result of the field research through all the insights conceived and suggestions from the researcher and his advisors based on their professional and academic experiences.

Each element stipulated for the suggested version of the framework has a function and an origin that can be based on previous experiences of the researcher and his advisors, theoretical basis or insights conceived during the interviews. Figure 2 below shows the materialization of the artifact's suggestion version.

Figure 2 – Version 0 of the artifact and identification of the origin of its elements

Source: the Authors

To facilitate the understanding of the elements and their origins, they are identified according to their numbering and origin as follows: green (theoretical basis), blue (interviews), and orange (researcher suggestion).

As a result of this phase, a table was prepared in which 13 elements belonging to a canvas model were listed for the creation of a business case for information technology projects, which were: Problem Description, User Summary, Sponsor, Client Area, Area Executor, Impacted Processes, Involved Processes, Bad Risks, Good Risks, Description of Costs, Relevant Past Projects, OKR`s reached and Payback Plan. This (suggestion) version was named as Version 0 (zero) of the artifact.

4.3 Development

To facilitate the understanding of the elements and their origins, they are identified according to their numbering and origin as follows: green (theoretical basis), blue (interviews), and orange (researcher suggestion).

As a result of this phase, a table was prepared in which 13 elements belonging to a canvas model were listed for the creation of a business case for information technology projects, which were: Problem Description, User Summary, Sponsor, Client Area, Area Executor, Impacted Processes, Involved Processes, Bad Risks, Good Risks, Description of Costs, Relevant Past Projects, OKR`s reached and Payback Plan. This (suggestion) version was named as Version 0 (zero) of the artifact.

In the third stage (Development), the two representations (versions) of the artifact were developed, based on its suggested version (0). After having defined in the suggestion phase that the framework to be conceived in a canvas model would be the way to present a resolution to the problem encountered, an attempt was made to accommodate the elements that were suggested as workable solutions within the contexts and experiences of the professionals interviewed.

Version 1 was conceived after discussions with a focus group of experts on version 0 of the artifact, made up of professionals from IT and business areas. After the dynamics of the focus group and the researcher's analyses, version 1 was stipulated, which in summary is the evolution of version 0 added to the contributions of the focus group participants.

Based on the suggested version of the framework, a virtual meeting was held via the Teams platform with four specialist professionals, two from the business areas and two from the information technology area, with the objective of forwarding the suggestion of the version artifact for evaluation of the group (focus group).

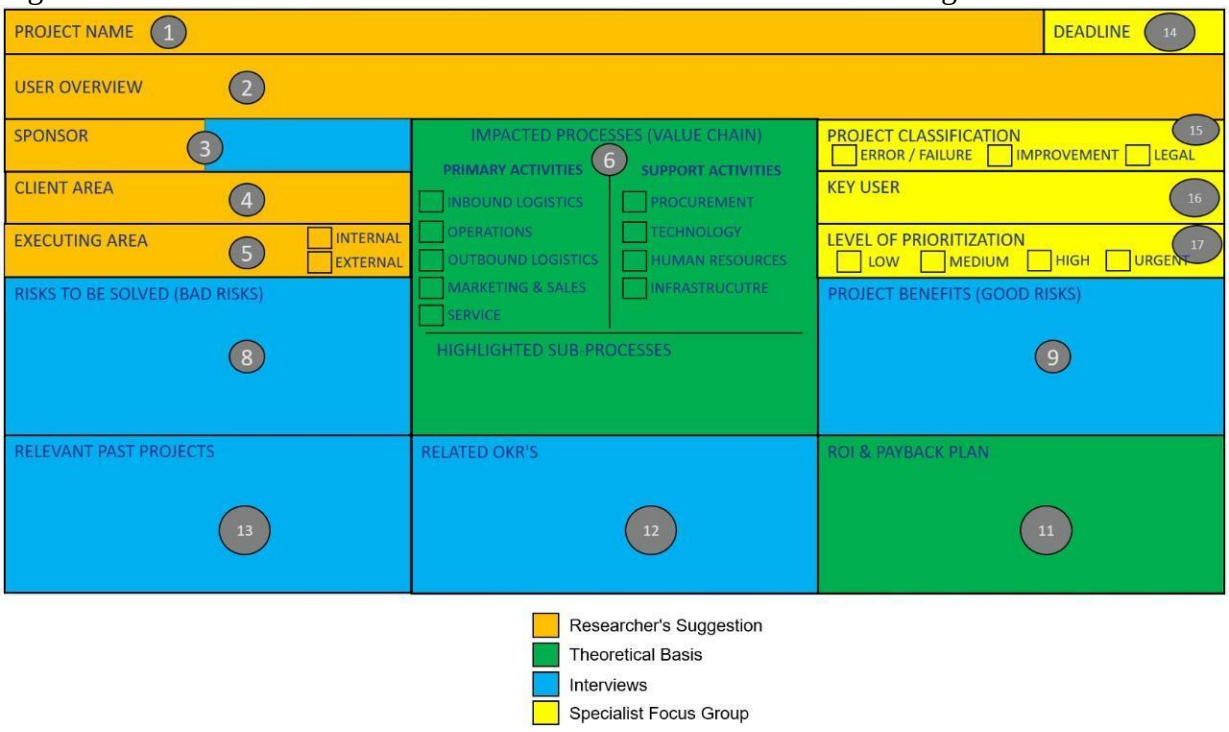
The professionals participating in the focus group were individually invited by the researcher, it was soughing a group of specialists who could represent both user areas of the proposed artifact being composed of the business areas, which are characterized as requesting areas of IT projects, and by the information technology areas themselves consequently called IT project executing areas.

After presenting the objectives, concepts, results of the interview stage and their insights, the suggested version of the artifact was presented to the group (see figure 18), thus opening a brainstorming session on the artifact in general and its thirteen elements.

As a result of the contributions of the focus group, a very complete formulation for the artifact was obtained when compared to its initial version (0) of suggestion. Six (6) elements of the artifact underwent changes related to their nomenclature and objectives, four (4) new elements were added, and two (2) elements of the suggestion version were removed, as shown in Table 17. However, five (5) elements did not change in relation to version 0 of the artifact, which were: "2 - User overview", "3 - Sponsor", "4 - Client Area", "12 – Related OKR`s" and "13 – Relevant Past Projects".

In figure 3 below it is possible to see version 1 of the artifact, which was conceived because of suggestions from the focus group. Regarding the origin of the elements, they are marked as: green (theoretical basis), blue (interviews), orange (suggestion by the researcher), and yellow (suggestions by the specialists from the focus group).

Figure 3 – Version 1 of the artifact and identification of the origin of its elements



Source: The authors

4.4 Evaluation

The evaluation of this artifact was conducted through its practical application within an organization, which is a manufacturer and retailer in the jewelry business. At this stage, the financial sector of the organization used the framework (in its version 1) in a real need related to the need for an IT project. After this practical use of the artifact, a new meeting with a focus group of specialists was held, where the group in turn compared the proposed descriptions and the results achieved to finally conclude on the performance of the artifact and move on to the last part of the DSR method.

After designing version 1 of the artifact based on suggestions from the focus group of specialists, two (2) members of this same focus group were invited to use and evaluate the framework in practice within their current organization.The participants' acting company is a global company, retailer, world leader in jewelry manufacturing, also one of the largest jewelry retailers in the world. Both evaluators were in Brazil, one representative of the business area (Specialist A) and the other representative of the IT area (Specialist B). In figure 4 below is the business case created by the organization's accountant, which was a project for creating financial cloud reports in the company's ERP.

Figure 4 – Business case created on real organization for evaluation

PROJECT NAME CREATION OF CLOUD-BASED INVENTORY REPORTS		DEADLINE 10/01/2022
USER OVERVIEW THE ACCOUNTING AREA NEEDS AUTOMATIC REPOSITORIES OF STOCK MOVEMENTS AND BALANCES TO BE SAVED IN THE CLOUD TO BE CAPTURED BY THE COMPANY'S BI TOOL, WITH THE OBJECTIVE OF AUTOMATING THE ANALYSIS PROCESS OF STOCK MOVEMENTS AND BALANCES BETWEEN THE DIFFERENT SYSTEMS OF THE COMPANY.		
SPONSOR (ACCOUNTING COORDINATOR)	IMPACTED PROCESSES (VALUE CHAIN) PRIMARY ACTIVITIES: ☐ INBOUND LOGISTICS; ☐ OPERATIONS; ☐ OUTBOUND LOGISTICS; ☒ MARKETING & SALES; ☐ SERVICE SUPPORT ACTIVITIES: ☐ PROCUREMENT; ☒ TECHNOLOGY; ☐ HUMAN RESOURCES; ☐ INFRASTRUCUTRE	PROJECT CLASSIFICATION ☐ ERROR / FAILURE ☒ IMPROVEMENT ☐ LEGAL
CLIENT AREA ACCOUNTING		KEY USER SPECIALIST A
EXECUTING AREA LINX UX SUPPORT ☐ INTERNAL ☒ EXTERNAL		LEVEL OF PRIORITIZATION ☐ LOW ☐ MEDIUM ☒ HIGH ☐ URGENT
RISKS TO BE SOLVED (BAD RISKS) DIVERGENCES BETWEEN STOCK BALANCES THAT MAKE IT IMPOSSIBLE TO IDENTIFY THE REAL STOCK BALANCE, WHICH IMPACTS THE MERCHANDISING, FP&A AND ACCOUNTING AREAS.	HIGHLIGHTED SUB-PROCESSES - CONTRACT ANALYSIS - LAYOUT DEFINITION - BI TEST	PROJECT BENEFITS (GOOD RISKS) AUTOMATING THE ANALYSIS OF STOCK MOVEMENTS AND BALANCES SO THAT THE USER CAN SPEND HIS TIME ON THE SOLUTION AND NOT ON IDENTIFYING DIVERGENCES.
RELEVANT PAST PROJECTS THE PROJECT TO ANALYZE AND COMPARE THE STOCK MOVEMENTS BETWEEN THE COMPANY'S DIFFERENT SYSTEMS IN ORDER TO IDENTIFY THE FACTORS CAUSING THE DIVERGENCES.	RELATED OKR'S - PROCESS OPTIMIZATION - ERROR IDENTIFICATION	ROI & PAYBACK PLAN PROJECT WITH AN INVESTMENT OF R$ 8,000.00 WITH PAYBACK IN 3 MONTHS.

Source: the author

The evaluation focus group meeting started with the conversation and delimitations of how the experience of using the framework was, and the participating specialists were invited to report the experience of using the artifact within the organization.

When questioned by the researcher regarding the effectiveness of the artifact, both specialists reported that it is a useful tool for creating business cases for IT projects. Specialist A (requester) reported that it was an easy-to-understand tool, and he did not find problems filling it out, he also reported that the tool helped him to reflect more comprehensively on the needs and impacts of the project in the organization.

“The tool helps us in the process of mapping needs thinking beyond the basics. This certainly helps us to avoid so much back and forth that we usually have until the project is understood and its scope closed.” (Specialist A, Accountant of the organization)

In turn, Expert B reported that the framework is extremely useful to assist the IT area in understanding the business needs in relation to the requested project contributing to the understanding, planning, and future management of the project that will be executed.

"With no doubt, the tool helps a lot in capturing the needs of the business. Much better than forms, it facilitates understanding." (Specialist B, IT Project Analyst of the organization).

Therefore, it was concluded that the framework is a powerful tool to help organizations to create business cases for information technology projects being a simple, easy-to-use tool that, in addition to structuring the request model and structure of IT, also helps in the strategic alignment between the areas of business and information technology.

4.5 Conclusion

As a result of the contributions from the evaluation group, once again a truly relevant formulation for the artifact can be obtained. Six (6) elements of the artifact underwent changes related to their nomenclature and objectives, one (1) new element was added, and 1 (one) element was removed. This time, eight (8 elements) did not change in relation to version 1 of the artifact which represents an evolution of acceptance when compared to the previous version.

The framework in its last version was composed of a total of fifteen elements, which can be seen in chart 2 which already contains the description at the level of use of the framework. The numbers of the elements have also been rearranged again in ascending sequential order.

Chart 2 – Elements of the final version of the framework

Element	Description
1	***Project Name:*** No Complexity! Just the title or name of the project in question;
2	***Requirement Overview:*** Description of Need. Suggestion: I (NAME), while (FUNCTION), want (NEED) so that (OBJECTIVE)
3	***Key-user***: Who is the main contact person and owner of the necessities of the project?
4	***Client Area***: Sector of the company that will benefit from the project
5	**Deadline:** What is the deadline for the project delivery?
6	***Sponsor/Area***: Who is responsible for bearing the costs of the Project?
7	***Project Classification:*** Project type classification (Error/Failure, Improvement, or legal demand)
8	***Impacted Systems***: What are the systems impacted (internal and/or external) with the Project?
9	***Level of Prioritization***: What is the priority of the project compared to projects that are already in process?
10	***Pains to be Solved***: What pains will the project solve?
11	***Impacted processes (VALUE CHAIN)***: What processes will the project impact?
12	***Related Organizational Goals***: What organizational goals will the Project benefit from?
13	***Relevant Past Projects***: What projects have we already done that can serve as support?

14	***Risks related to Project non-execution***: What are the consequences of not executing the project?
15	***Expected Savings after Delivery***: How much will I save after project delivery?

Source: the authors

The final version of the artifact was named "*Business to IT Model Canvas*", as it is a canvas model with the aim of helping organizations create business cases for information technology projects. Through its 3 versions, the artifact underwent 12 changes in its elements, 4 exclusions, and 5 inclusions, as can be seen in chart 3.

Chart 3 – Element changes vs. Artifact versions

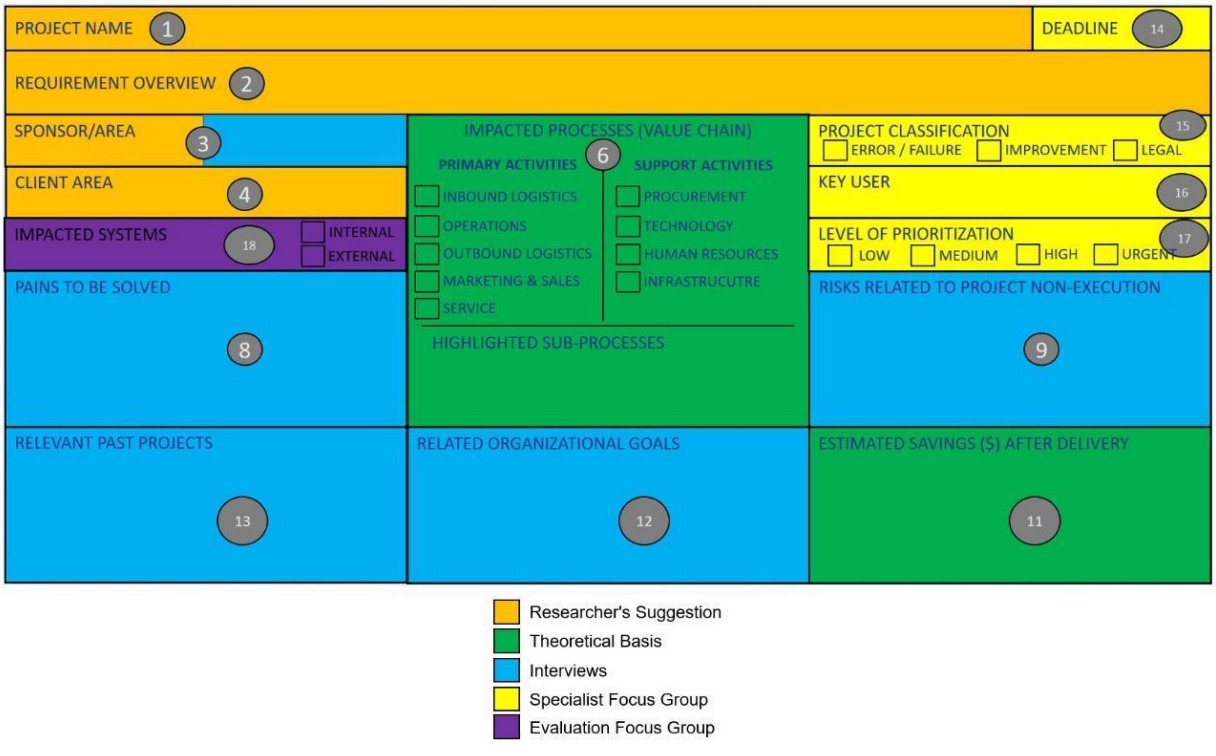
Artifact version	Included elements	Changed elements	Removed elements	Total number of elements
0 - Suggestion	13	0	0	13
1 - Development	4	6	2	15
Final - Evaluation	1	6	1	15

Source: the authors

The artifact in its final version, or "*Business to IT Model Canvas*" can be used on a printed sheet of paper, in A4 or A2 formats, or also through a software of creation of presentations, such as Microsoft Power Point for example, thus characterized by an easy-to-use framework that can be used by any person or organization interested in building business cases for information technology projects.

In figure 5 the final version of the artifact can be seen. In the figure, elements originating from the theoretical basis are indicated in green, elements originating from the interview stage in blue, orange from the suggestion of the researcher, in yellow those from the suggestions of the focus group of specialists and in purple those from the artifact evaluation focus group.

Figure 5 – Final Version of the artifact and identification of the origin of its elements



Source: the authors.

6 FINAL CONSIDERATIONS

The present study meets the Design Science paradigm, which is fundamentally a prescription-oriented paradigm. Design Science Research (DSR) seeks to create innovations of pragmatic relevance applicable to the complex context of organizations (Hevner et al., 2004). This chapter presents the main contributions of this research, as well as its limitations and suggested topics for the development of future research.

During the study, it became evident that there is an intention and consequent need for organizations to create business cases for IT projects and not just business cases focused on business models, thus denoting an imminent opportunity to aid in the development of this process. To facilitate and propose a tool for the development of these business cases, the researcher created an artifact (framework) that serves as a guide for these organizations in the creation of specific business cases for IT projects. This is even one of the main contributions of this dissertation, since there was not, as far as it was researched, a work that contemplated the specific systematization of this process between business and IT regarding specific business cases for information technology projects.

This research was conducted based on the theoretical framework that allowed obtaining knowledge about concepts and elements which the researcher and his advisors consider fundamental to compose the final artifact, such as Value Chain, Strategic Alignment, ROI, and Payback. Throughout the elaboration of the research, it was stated that the theme Creation of Business Cases for Information Technology Projects does not have specific literature, however, by expanding the discussions initiated in this dissertation and from the results obtained, it is intended to contribute to the formation of a theoretical basis that will serve as a basis to compose a debate about the target objective of this paper.

Another element addressed in this dissertation, and which is significant for this topic in the organizational environment, was the identification of the main problems and difficulties that companies encounter in the creation of business cases for IT projects. In addition, during the data collection stages, the theoretical basis and key elements suggested by the researcher and their advisors for the composition of the artifact could be validated. According to the reports obtained, the suggested theoretical bases have full adherence and acceptance in the context of the proposed solution through the use of the framework that was conceived.

The present study intended to have its use focused on helping to create specific business cases for IT projects, which can be used by any person and/or organization that is interested in carrying out this task. In this way, this work intends to contribute to this research theme by suggesting a theoretical basis, at the same time, bringing a useful application of the generated framework, thus providing a theoretical-practical foundation for the conduction and application of the creation process of these business cases to the context of IT projects.

Given the complexity and scope that information technology projects can have, the framework conceived can be used as a guide for the elaboration of these business cases, and through its elements it has the mission of structuring the essential factors that both areas (business and IT) consider crucial for this stage of project conception. During the research, each of the elements present in the framework could be validated, thus resulting in a tool that can practically meet the needs of organizations and facilitate the understanding of IT areas in relation to business needs.

In addition, the framework seeks to provide, in essence, a practical solution to foster alignment between the business and IT areas, contributing to the organization's IT projects being conceived in a structure that favors the understanding of the needs, responsibilities,

processes, goals, and costs between both parties, resulting in a practical alignment between the applicant and the executor of the projects in question.

In the framework, there is no indication or formal instruction on how the elements must be filled in, nor the time that is needed to be spent on each one of them. Since it is a tool with the purpose of being simple and at the same time comprehensive with regard to the great uniqueness of information technology projects, its use and completion can be carried out in the way that its user considers most interesting for their current context, with no rules or concrete strategies for its use, only needing to respect the central purpose of each of its elements.

Regarding the theorical contributions, the research carried out, based on the theoretical framework, allowed relating knowledge about Business Case concepts to Information Technology Projects, contributing to the formation of a theoretical basis of the constructs. Regarding management contributions, during the validation conducted with experts, the importance of using the framework was highlighted so that both areas could build a greater understanding of the needs and complexities of the projects. The use of the framework also served to guide the thinking structure of the business areas so that they can exercise the construction of requirements and objectives to be better absorbed and understood by the IT areas, contributing to better execution and technical quality of the project, thus resulting in higher quality in the execution and result of the proposed projects.

REFERENCES

Albertin, A. L. (1999). Administração de informática: funções e fatores críticos de sucesso. 2. ed. São Paulo: Atlas.

Alter, S. (1992). Information Systems: a management perspective. Addison-Wesley Publishing Co. Massachusetts.

Bardin, L. (1995). Análise de conteúdo, Lisboa: Edições 70

Beal, A. (2004). Gestão estratégica da informação. São Paulo: Atlas.

Bittencourt, Luiz Fernando Bahia. (2003). Soluções em Tecnologia da Informação: sucesso na implantação depende da gestão do projeto e da administração da mudança. Revista FAE Business.

C. Kurucz, Elizabeth & A. Colbert , Barry & Wheeler, David. (2008). The Business Case for Corporate Social Responsibility. The Oxford Handbook of Corporate Social Responsibility.

Ciborra, Claudio U. (1997). Deconstructing the concept of strategic alignment. Scandinavian Journal of Information Systems: Vol. 9.

Crane, D. B., Bodie, Z. (1996). Form follows function: the transformation of banking. Harvard Business Review.

Dresch, A.; Lacerda, D. P.; Antunes Júnior, J. A. V. (2015). Design Science Research: Método de Pesquisa para Avanço da Ciência e Tecnologia. Porto Alegre: Bookman.

Drucker, P. (1994). The theory of business. Harvard Business Review.

Fernando J.B. Laurindo, Hideyuki Morita, Tamio Shimizu. (2001). Modelos para Estruturar e Avaliar Alternativas de Decisão em Tecnologia da Informação. Depto. de Engenharia de Produção da Escola Politécnica da USP.

Freitas, José Carlos da Silva Junior et al. (2015). Design research: aplicações práticas e lições aprendidas. Revista de Administração FACES Journal.

Henderson, J.C. & Venkatraman, N. (2004). Strategic Alignment: Leveraging Information Technology For Transforming Organizations. IBM Systems Journal.

Hevner, A. R.; March, S. T.; Park J.; Ram, S. (2004). Design Science In Information Systems Research. MIS Quarterly.

Joia, Luiz Antonio & de Souza, José G.A. (2009). Articulando modelos de alinhamento estratégico de Tecnologia da Informação. FGV.

Kaplan, Robert & Norton, Dadiv. (2004). Mapas Estratégicos – Convertendo os ativos intengíveis em resultados tangíveis. Harvard Business Scholl Publishing Corporation.

Kaplan, Robert & Norton, Dadiv. (2006). Alinhamento, usando o Balanced Scorecard para criar estratégia corporativa. Harvard Business Scholl Publishing Corporation.

Keen, P.G.W. (1993). Information Technology And The Management Theory: The Fusion Map. IBM Systems Journal.

Kotler, Philip. A. (1998). Generic Concept of Marketing. Marketing Management.

Laudon, Kenneth C.; Laudon, Jane P. (2007). Sistemas de informação gerenciais. 7. ed. São Paulo: Pearson.

Luftman, J. (2000). Assessing business-IT alignment maturity. Communications of AIS.

Luftman, J., Papp, R., & Brier, T. (1999). Enablers and Inhibitors of Business-IT Alignment. Communications of the Association for Information Systems.

Luftman, J.N.; Lewis, P.R. & Oldach, S.H. (1993). Transforming The Enterprise: The Alignment Of Business And Information Technology Strategies.” IBM Systems Journal.

Manson, N. J. (2006). Is operations research really research? Orion, 22(2), 155-180.

Porter, M. E. (1985). Competitive Advantage. Elsevier Editora Ltda.

Porter, M. E. (1980). Competitive strategy. New York: The Free Press.

Reich, Blaize and Benbasat, Izak. (1996). Measuring the Linkage Between Business and Information Technology Objectives. MIS Quarterly.

Rezende, Denis A.; Abreu, Aline França. (2002). Modelo de Alinhamento Estratégico da Tecnologia da Informação ao Negócio Empresarial. ENEGEP.

Rezende, Denis Alcides. (2007). Sistemas de informações organizacionais. 2. ed. São Paulo: Atlas.

Sabherwal, R., Hirschheim, R., & Goles, T. (2001). The dynamics of alignment: Insights from a punctuated equilibrium model. Organization science, 12(2), 179-197.

Sehnem, Simone; Dal Magro, Cristian Baú; Mazzioni, Sady; Filho, Joveci; Lunkes, Rejane; Zanella, Alan Carlos. (2021). Capacidade de adaptação das empresas em um cenário de crise. RGO Revista Gestão Organizacional.

Teo, T.S. & King, W. R. (1997). Integration between Business Planning and Information Systems Planning: An Evolutionary-Contingency Perspective, Journal of Management Information Systems.

Vaishnavi, V.; Kuechler, B.& Petter, S. (2004) Design Science Research in information systems. n. 1, p. 1–62, 2012.

Zviran, M. (1990). ISSPSS: A Decision Support System for Information Systems Strategic Planning. Information & Management.