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RESEARCH MODEL CANVAS: APPLICATION IN ACADEMIC RESEARCH PLANNING

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ABSTRACT

This article deals with the planning of academic research and its structural nuances, as a fundamental part for the development of scientific research, in the achievement of its objectives and in obtaining valid and reliable results. It inquires about its conventional form of construction and presentation through the textual document and aims to propose a new instrument for the planning of academic research. It discusses Design Thinking, Business Model Generation and Project Model Canvas, as project planning and management methodologies applied in other areas of knowledge that have as a common characteristic their conciseness, etymological basis and visual format of presentation. It is structured in the methodology of the 4 (four) poles: epistemological, theoretical, morphological and technical. Finally, it presents the proposal of the Research Model Canvas as an innovative instrument for the planning of academic research, developed in a robust but concise way, based on the quadripolar methodology, in a document of single sheet or screen called academic research canva and its history of application in graduate courses and in a Research Group of the Federal University of Ceará.

Keywords: Scientific Methodology. Academic Research Planning. Reseach Model Canvas.

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INTRODUCTION

Scientific research is a structured process, guided by methods and techniques, which seeks to find answers to specific questions, whose proper planning is essential to ensure that it is successful and produces reliable, carefully validated results. The planning of scientific research is, therefore, a fundamental step that defines the structure and direction of the study to be carried out. Good planning not only guides the researcher in the execution of the work, but also ensures that the objectives of the research are achieved effectively.

Although there are no fixed rules about the elaboration of a project, a structure is generally followed that begins with the definition of a problem and its delimitation, followed by the formulation of hypotheses, definition of objectives, justification, theoretical framework and methodology, described and presented in the form of a textual document. But would the running text be the only valid and effective way to structure the planning of a research?

Based on *Design Science*, pragmatic philosophy, abductive thinking, *Visual Thinking theory,* and modern neuroscience precepts, innovative project planning tools applicable to various areas of knowledge have emerged since the 1980s, among which we can highlight *Design Thinking*, the *Business Model Canvas*, and the *Project Model Canvas.* Whose proposal is to present, in a concise and systematic way, all the elements of project planning in a single *canva*, screen or sheet. Following this line of reasoning , this article aims to propose a new alternative for the planning of academic research, the *Canva Research Model*. Instrument that has been applied and validated in graduate courses in Education and Administration at the Federal University of Ceará (UFC) and in the Research Group on Evaluation & Management (GPAGE).

This article is structured in the methodology of the 4 (four) poles of De Bruyne, Herman and De Schoutheete (1991), having as epistemological basis the conception of scientific and technical knowledge, applied rationalism and the rational materialism of Gaston Bachelard (1978; 1996; 2000). Presenting Design Science as a theoretical basis (Simon, 1969; Walls *et al.*,1992; March; Smith, 995; Hevner et al.; 2004; Peffers et al.; 2007; Gregor; Hevner, 2013), the Theory of Systemic Structural Evaluation (Lima, 2008) and the Academic Research Planning and its possibilities (Gil, 2002; 2010; 2023; Araújo; Pepper; Costa, 2015). As a morphological base, it exposes in detail the new project planning tools: *Design Thinking* (Brown, 2020), *Business Model Canvas* (Osterwalder; Pigneur, 2011) and *Project Model Canvas* (Finocchio Júnior, 2020), as well as their histories

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and their own epistemological and theoretical foundations. And, finally, as a technical basis, it presents the *Research Model Canvas*, as an instrument for planning academic research, its structure and application history.

EPISTEMOLOGICAL BASIS: GASTON BACHELARD

Scientific or academic research presents a diversity of strategies for the development and treatment of the phenomenon, process, structure or objective under study. Depending on their field of application, the different areas of scientific and technical knowledge favor certain strategies over others.

However, regardless of the *locus* of academic research, epistemology, as a theory of techno-scientific knowledge, needs to be addressed among its initial procedures. In this article, a conception of scientific and technical knowledge is adopted based on the thought of Gaston Bachelard (1978; 1996; 2000), of his applied rationalism and rational materialism, according to which "[...] there is neither absolute realism nor rationalism" (Bachelard, 1978, p. 91), and rationalism must be applied to a practice, and to realism a rational perspective must be added. Uniting the two epistemological conceptions, it is observed the need to use multiple methods of investigation, combining procedures of both rationalism and empiricism so that the objects under study can be known more consistently.

Since the act of knowing is associated with an interaction between the researcher and the object to be researched, one interfering with the other, it is not possible to have a single set of methods universally applied to any situation. In this sense, and understanding that: "[...] all scientific thinking must change in the face of a new experience", Bachelard (1978, p. 158) presents the notion of project: "[...] to ensure the approach to the scientific object [...] with the successive use of various methods" (Lima, 2008, p. 118). Each research demands a different project to be developed based on epistemological, theoretical, morphological and technical bases (De Bruyne; Herman; De Schoutheete, 1991).

Bachelard (1996; 2000) also highlights the importance of epistemological vigilance on the part of the researcher as a condition for him not to be attached to ideas, opinions or prejudices of various natures that block the revelation of reality and the emergence of new ideas (Lima, 2008). If he is arrested, the researcher will have come across what Bachelard called an epistemological obstacle.

Scientific progress will only occur if the researcher is vigilant in perceiving the moment when the processes, techniques, procedures, tools and instruments are no longer

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sufficient to explain his object of investigation and undertake changes in the way of knowing it; by undertaking the change, in the thought of Bachelard (1996; 2000), the researcher will have made an epistemological rupture**.**

The theoretical, morphological and technical proposals of this article consider the important concept of epistemological recurrence proposed by Bachelard (1978), since history cannot be understood as an isolated sequence of facts, since the past is interconnected with the present and justifies it (Lima, 2008). Thus, to understand the stage in which academic research is, its past must be considered and how it is reflected in the present and in the future.

THEORETICAL BASIS: *DESIGN SCIENCE*, THEORY OF SYSTEMIC STRUCTURAL ASSESSMENT-AND ACADEMIC RESEARCH PLANNING

The theoretical base or pole is the stage of concepts, the *locus* of abstract elaboration of solutions to the problems under challenge in academia. For the purposes of this study, the following theoretical matrices will be addressed within the abductive method and in Pierce's pragmatism (Cavalcanti; Filatro, 2016): *Design Science*; Structural-Systemic Evaluation Theory applied to academic research; and academic research planning.

DESIGN SCIENCE

The term *Design Science* began to be used in research in the 1960s by authors Fuller (1965) and Gregory (1966). But it was only from 1981 with the publication of "*The Sciences of Artificial*" by Herbert Alexander Simon that the *design* of artifacts and non-natural systems began to take on the *corpus* of science.

As stated by Hevner *et al.* (2004 p. 75): "*Design Science* is an approach to research in which the creation and evaluation of artifacts are the basis of scientific research". This approach focuses on creating practical solutions to real-world problems, applying *design principles* to develop new technologies and processes. According to Peffers *et al.* (2007 p.53): "*Design Science* focuses on the creation of artifacts with the intention of solving real-world problems".

Unlike traditional research, the *Design Science* approach does not only focus on understanding the problem but also on creating practical solutions to that problem. Research in *Design Science* involves the creation of artifacts or systems that are then evaluated in a hands-on environment, with an iterative process of construction, evaluation,

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and refinement (March; Smith, 1995). This means that the research process in *Design Science* is action-oriented, with an incremental approach, as highlighted by Walls *et al.* (1992, p. 37): "The *Design Science* approach provides a framework for the systematic development of practical and usable solutions to real-world problems."

Herbert A. Simon, one of the forerunners of the artificial sciences, defended the idea that the development of technologies, processes, and artifacts can be seen as a design process, with a set of steps ranging from the identification of the problem to the evaluation of the solution. According to Simon (1969, p 33): "The sciences of the artificial are an attempt to understand, in a general way, how human nature produces the things we call 'objects of art'". In this sense, *Design Science* can be seen as a practical application of artificial sciences, with the aim of creating solutions to real-world problems, as stated by Gregor and Hevner (2013, p. 334): " *Design Science* is a valuable approach to creating innovative solutions to complex problems in several areas, including software engineering and business administration".

THEORY OF SYSTEMIC STRUCTURAL EVALUATION-APPLIED TO ACADEMIC RESEARCH

The conception of a structural-systemic theory for evaluation (Lima, 2008) is based on Bachelardian thought and represents the basis for the proposition and application of a project on the *canvas* model in academic research and based on the *Design Science* of Simon (1969) and Walls *et al.* (1992), March and Smith (1995), Hevner *et al.* (2004), Peffers *et al.* (2007) and Gregor and Hevner (2013).

The theory of structural-systemic evaluation, in Lima's (2008) approach, needs to comprise a multiple, quantitative and qualitative project, in tune with contemporary epistemology, especially in line with Bachelard (1978; 1996; 2000), and with the complementarity of context analyses that were not deeply thought out by this French philosopher and epistemologist, but which favor the discontinued progress of science. such as *Design Science*.

The theory of structural-systemic evaluation requires the mapping of the essential macrostructures of evaluation, here applied to academic research. These macrostructures are aligned with the 4 (four) poles of the methodology of De Bruyne, Herman and De Schoutheete (1991): epistemology; theory; morphology and technique. These methodological poles guide the structures of academic research for the proposition of the

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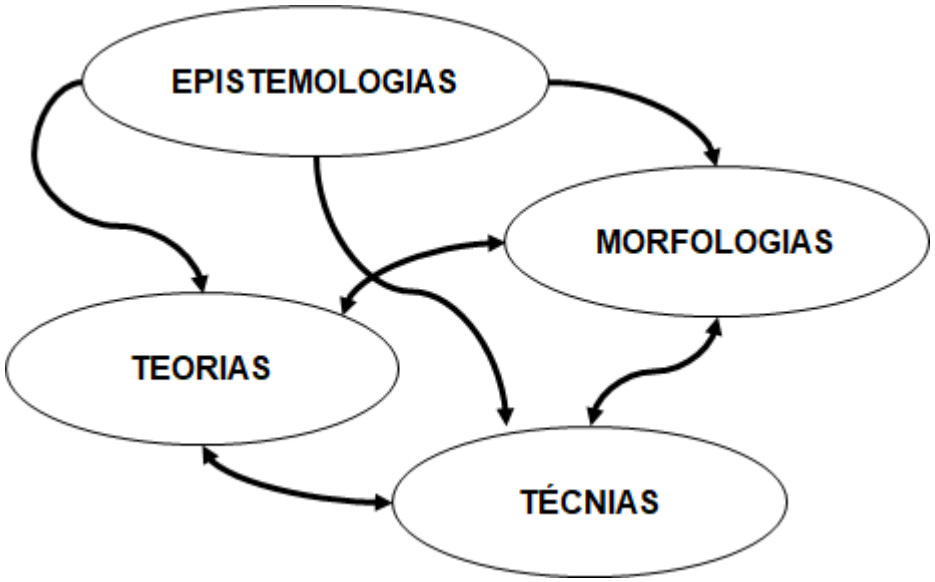
research model canvas, as shown in Figure 1, below.

Figure 1 – Theory of Structural-Systemic Assessment and the Essential Structures of the *Research Model Canvas*



Source: Adapted from Lima (2008); and De Bruyne, Herman and De Schoutheete (1991).

The 4 (four) poles that complete the methodological field and ensure the scientific character of research practices are defined as follows by De Bruyne; Herman; From Schoutheete (1977):

> The epistemological pole performs a function of critical surveillance. [...] It has in its orbit a range of discursive processes, of very general methods that impregnate the researcher's approaches with their logic.
> [...] It is a pole considered as an internal engine, in some way obligatory, of the researcher's investigation who, consciously or not, poses epistemological questions because they can help him to solve his practical problems and to elaborate valid theoretical solutions [...].
> The theoretical pole guides the elaboration of hypotheses and the construction of concepts. It is the place of the systematic formulation of scientific objects.
> [...] It is the place of elaboration of scientific languages, it determines the movement of conceptualization [...].
> The technical center controls the collection of data, strives to verify them in order to be able to confront them with the theory that gave rise to them. It requires precision in the finding, but alone, it does not guarantee its accuracy.
> The morphological pole is the instance that announces the rules of structuring, of formulation of the scientific object, imposes on it a certain figure, a certain order among its elements. It allows placing a space of causation in a network where scientific objects are constructed, either as models/copies, or as simulacra of real problems [...] (De Bruyne; Herman; De Schoutheete, 1977, p. 35-44).

These methodological poles, macrostructures or essential structures of scientific research need to be integrated into the academic research planning process, which is what will be addressed in the following topic.

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ACADEMIC RESEARCH PLANNING

Planning is the first of the 3 (three) stages of an academic research (planning, execution and dissemination), whose product is the research project (Gil, 2010). Proper planning is critical to ensure that the research is successful and produces reliable and methodologically validated results. According to Gil (2010, p. 19), it is: "an essential activity that enables the organization of thought and the systematization of the actions to be carried out". Although there are no fixed rules about the elaboration of a project, this important genre of academic discourse must clearly present the following elements: the theme and its delimitation; the formulation of the problem; the definition of general and specific objectives; the justification of the project; the construction of hypotheses; the theoretical framework that will provide an epistemological basis for the objectives outlined; the methodology that will allow the achievement of the objectives and a schedule that demonstrates the temporal organization of the research activities (Gil, 2010). In the case of the quadripolar method, such elements are structured in a harmonious way in the four poles already explained in the topic above.

In order to further optimize the process, some researchers use planning tools that enable a visual synthesis of the elements of the research project, such as mind maps, organizational charts, spreadsheets, and synoptic, coherence, and congruence tables. Others even propose and validate their tools in disciplines and research groups, as can be seen in the case of the research guiding framework (QNP) developed by Professor Júlio Araújo and applied in the discipline of Reading and Production of Academic Texts (LPTA) of the Letters course at the Federal University of Ceará (Araújo; Pepper; Costa, 2015). As well as the *Research Model Canvas,* developed by Professor Marcos Antonio Martins Lima and applied in postgraduate courses in Education and Administration at the Federal University of Ceará and in the Research Group on Educational Evaluation and Management (GPAGE), which will be described in detail in the technical basis of this article.

BASE MORFOLÓGICA: DESIGN THINKING, BUSINESS MODEL GENERATION E PROJECT MODEL CANVAS

This section of the article includes the morphologies or models that based the creation of the *Research Model Canvas* and are of wide application in the field of Education, Administration, Economics and other Social Sciences and Humanities, especially for the planning and management of projects and academic or organizational

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studies.

The constructs referenced here from *Design Science* are: *Design Thinking*, Business *Model Generation* and Project *Model Canvas*.

DESIGN THINKING

The conception of ***design*** as a way of thinking and solving problems dates back to the beginning of the twentieth century and has its epistemological basis in the pragmatism of John Dewey (Buchanan, 1992; Rylander, 2009), in Herbert Simon's classic treatise on the complexity and nature of object phenomena (Hatchuel, 2001; Nitzsche, 2012) and in the abductive method or thought of Charles Sanders Pierce (Cavalcanti; Filatro, 2016).

The term *Design Thinking*, which in a literal translation into Portuguese means 'drawing of thought' or even 'design thinking', was coined by Rolf Faste, designer and professor of *Design* at Stanford University, in the 1970s, strongly influenced by the work of Robert McKim, professor in the Department of Engineering at Stanford University and author of the book *Experiences in Visual Thinking,* in which he added aspects and methods of the theory of visual thinking to the ability to solve problems (Dam; Siang, 2022). However, Peter Rowe is credited with pioneering the use of the term in design literature, when he published a homonymous work entirely dedicated to the theme, more precisely in 1987 with the publication of the book entitled: *'Design Thinking'* published by MIT Press (Desconsi, 2012).

However, the term *Design Thinking* gained great prominence after being incorporated as an innovation tool in the organizational field in the early 1990s by David Kelley, Stanford professor and then CEO of IDEO, an American design and creative solutions company that for more than 40 years has been collecting successful cases around the world. It became even more popular from 2010 onwards with the publication of the book: *Design think*: a powerful methodology to decree the end of old ideas, by Tim Brow, current CEO of IDEO, where he presents *Design Thinking* as a systematic path that leads to innovative solutions based on a deep understanding of people's needs (Brown, 2020).

The approach has 5 (five) steps: empathy (with the user), definition (of the problem), idealization (thinking of potential solutions), prototyping (of the solution chosen as the most viable) and testing (of the prototype created by the user). Brown (2020) recommends that all stages of the process be visually schematized, drawn, and redrawn as many times as

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necessary. According to the author "[...] being visual allows us to analyze a problem differently than just relying on words and numbers" (Brown, 2020, p. 255).

Taking into account the multidisciplinary perspective of *Design Thinking* and its consequent application in different areas of knowledge, including education and academic research (Brown, 2020; Silva; Castro Filho, 2023), not only as a hermetic approach, but as part of a culture of visual thinking (Mckim, 1980; Brown, 2020), we can consider these precepts perfectly applicable to the planning of academic writing (Castro Filho, 2023).

Although *Design Thinking* is the most popular and used for various purposes, it is important to highlight that there are other approaches and tools based on design as a way of thinking, solving problems, and visualizing data and projects. Below we will see two more important models.

BUSINESS MODEL GENERATION

The concept of *Business Model Generation*, presented by Alexander Osterwalder and Yves Pigneur in their book of the same name, represents an innovative approach to the creation and development of business models. According to these authors: "[...] a business model describes the logic of how an organization creates, delivers, and captures value" (Osterwalder; Pigneur, 2011, p. 14). This definition underscores the importance of understanding not only what a company offers, but also how it interacts with its customers, partners, and resources to drive sustainable value.

The *Business Model Canvas*, a product of the *Business Model Generation* concept, originated from Alexander Osterwalder's doctoral thesis, defended at the University of Lausanne, Switzerland, in 2004. Later, between 2009 and 2010, it was perfected and published as a book by Osterwalder and Pigneur in partnership with more than 470 people in 45 countries, whom the authors call co-creators.

It is a visual tool arranged on a single screen (canva) that allows entrepreneurs and managers to visualize, analyze and innovate their business models, as well as aspirants and neophytes to plan their future business in a simpler and more effective way. The authors believe that a business model can be better described with 9 basic components, which show the logic of how an organization intends to generate value, as can be seen in figure 2 below: (Osterwalder; Pigneur, 2011).

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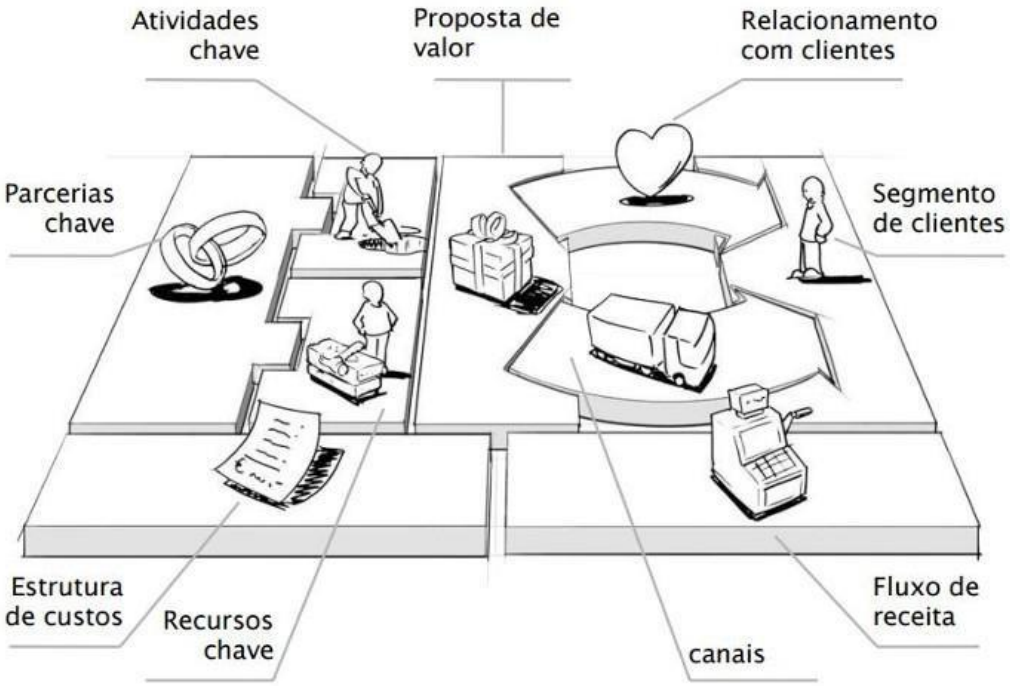
Figura 2 – *Business Model Canva*



Source: adapted from Osterwalder and Pigneur (2011, p. 18).

The authors emphasize the importance of visual thinking in strategic planning, classifying it as: "[...] indispensable for working with a business model" (Osterwalder; Pigneur, 2011, p. 148) and defining it as follows:

> By visual thinking, what we mean is using visual tools such as figures, sketches, diagrams, and *post-its* to construct and discuss meanings. Since business models are complex concepts, composed of several components and the interrelationship between them, it is difficult to really understand a model without a design (Osterwalder; Pigneur, 2011, p. 148).

Corroborating, Dan Roam (2013, p.12) emphasizes that: "[...] Visual thinking is a way of seeing and understanding the world around us, using images to solve problems and communicate ideas more effectively." From such definitions we conclude that visual thinking constitutes a powerful approach in the construction of data visualization tools in various contexts and applications, in facilitating teamwork and in promoting collaboration.

PROJECT MODEL CANVAS

The *Project Model Canvas* is a visualization tool created by José Finocchio Junior, author of the book: *Project Model Canvas*: project management without bureaucracy, published in 2013, and revised and updated in 2020. The methodology is inspired by the *Business Model Canvas*, neuroscience concepts, *DesingThinking,* and the author's own

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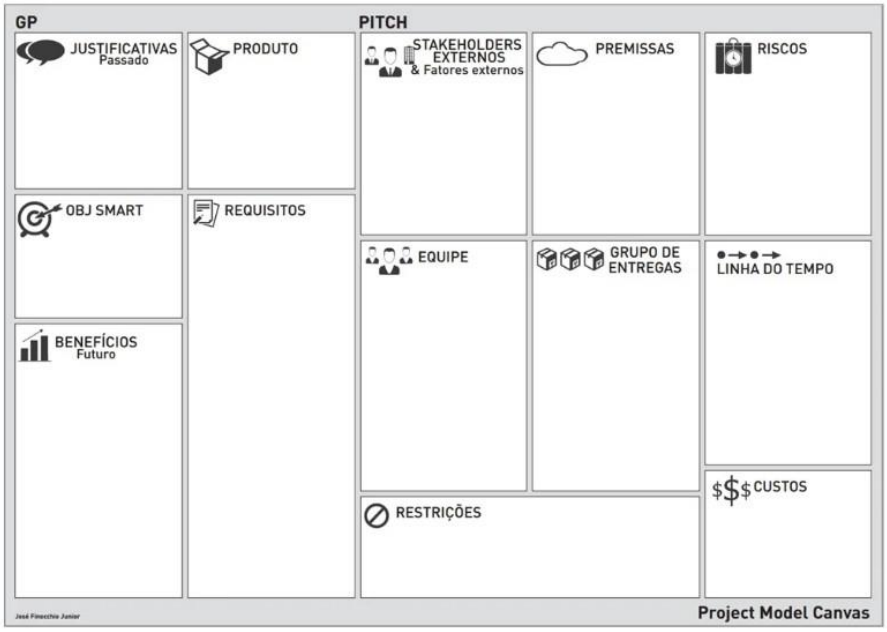
experience as a professor and consultant specializing in project management (Finocchio Júnior, 2020).

As for its structure, it consists of a *canva* composed of five stages, each headed by a fundamental question: why? What? Who? How? When and how much? Composed of 13 blocks: Past Justifications, OBJ SMART, future benefits, product, requirements, external stakeholders and external suppliers, team, assumptions, delivery group, constraints, risks, timeline, costs. As can be seen in figure 3 below (Finocchio Júnior, 2020).

Figura 3 - *Project Model Canvas*



Source: adapted from Finocchio Júnior (2020, p. 47).

It is possible, through this tool, to conceive, integrate, solve and communicate with those involved in the project, as well as to revisit and re-edit it as many times as necessary. It is important to note that it is advisable to do it in a team with representatives from all sectors of the organization, with at least one person who knows the concepts and connections in project management.

Regarding its conception, based on neuroscience, the author states that:

> No one can have a project in their heads, but only project models. A project mental model is formed by concepts such as resources, stakeholders, deliverables, risks, and the relationships between these concepts [..] what I propose here is that we try to make the mental models of projects explicit in a faster way and that we make visible something that usually remains hidden. (Finocchio Júnior, 2020, p.11).

Thus, the proposal of the *Project Model Canvas:* "[..] consists of a friendlier way of

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conceiving a project plan that quickly brings out our mental model" (Finocchio Júnior, 2020, p.18). Based on this conception, we reaffirm the importance of visual thinking , as well as of mental project models for the construction of project management tools and their applicability in academic research, as will be addressed in detail in the technical basis of this article.

TECHNICAL BASIS: RESEARCH MODEL CANVAS PROJECT

In this section, the history of some of the main experiences with the application of the *Research Model Canvas* in academic research at the Federal University of Ceará (UFC) will be presented, in the activities of research supervision in graduate studies, specifically at the master's and doctoral levels in the fields of Education and Administration.

This application considers the quadripolar methodology of De Bruyne, Herman and De Schoutheete (1991) as a methodological research strategy.

APPLICATION HISTORY

The application of the *Research Model Canvas project* considers the quadripolar methodology of De Bruyne, Herman and De Schoutheete (1991) as a research strategy, through its poles as being the macrostructures of Lima's (2008) structural-systemic evaluation theory applied to academic research.

Gouveia (2022) presents a survey on the experiences with master's and doctoral supervision with the quadripolar methodology, concluding that of the 52 master's (32) and doctoral (20) works in the period from 2006 to 2019, the Federal University of Ceará (UFC) covered 28.85% (n=15), standing out as the higher education institution with the highest applicability of the methodology in monographic works in relation to the total of 15 (fifteen) mapped institutions.

These orientations were carried out in the graduate programs in Education (PPGE) and in Administration and Controllership (PPAC PROFISIONAL) in the academic units Faced (Faculty of Education) and Feaac (Faculty of Economics, Administration, Actuarial and Accounting) of UFC.

These productions were mostly the result of research carried out under the scope of action of the GPAGE (Research Group in Evaluation & Management) associated with the PPGE and PPAC PROF programs of UFC and which has existed since 2007 as a research group duly registered with the CNPq (National Council for Scientific and Technological

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Development) which is an agency linked to the MCTI (Ministry of Science, Technology and Innovations) of the Federal Government of Brazil.

The experiences with the quadripolar methodology of De Bruyne, Herman, and De Schoutheete (1991) and the connection with innovative approaches and agile and active methodologies applied in teaching and academic research made GPAGE integrate this methodology with the methodologies and technologies of *design think* (Brown, 2020), *model canvas* (Osterwalder, 2011) and the *project model canvas* (Finocchio Júnior, 2013).

This integration gave rise to the proposal of the *Research Model Canvas project* in 2019 for application in applied research in seminars of the disciplines Epistemologies of Evaluation and Evaluation & Management of Educational Programs of the PPGE, and also in the discipline Development of Competencies of the PPAC PROF.

This proposal will be presented in the next topic.

RESEARCH MODEL CANVAS PROJECT PROPOSAL

The *Research Model Canvas* project is a tool applied from a *template file* in *Microsoft Excel Software* that aims to offer, in a *canva*, an A4 sheet of paper, with the essential planning of the academic and/or organizational research to be carried out.

The structures from a more detailed detail of the macrostructures (Figure 1, previous) are shown in Figure 4, below.

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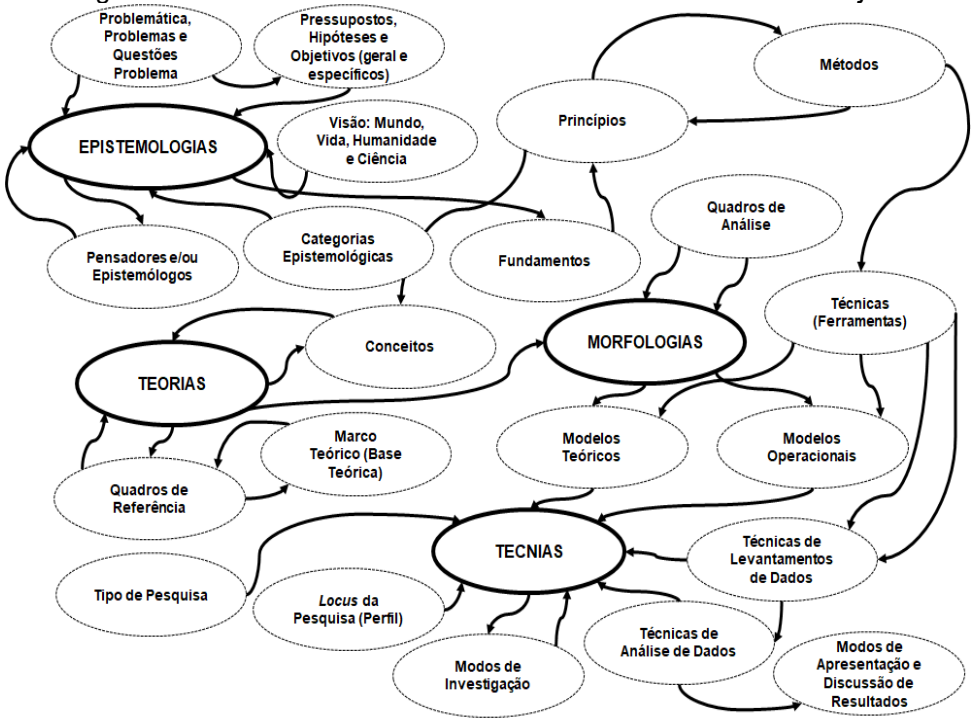
Figure 4 – Essential Structures of the *Research Model Canvas Project*



Source: Adapted from Lima (2008); and De Bruyne, Herman and De Schoutheete (1991).

These essential structures correspond to the aspects and factors relevant to the composition of an academic research and that consists of the themes and contents addressed in the good practice of conventional scientific methodology.

The model was applied in 10 (ten) classes of disciplines in the graduate program PPGE and PPAC PROF, but also with 15 (fifteen) master's and doctoral supervisions linked to GPAGE/UFC research.

The *Research Model Canvas technique*, in a format generated in *Microsoft Excel Software*, is shown in Figure 5 below.

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Figure 5 – Research Model Canvas Project Tool

TÍTULO DA PESQUISA:		EQUIPE:	
POLO EPISTEMOLÓGICO	POLO TEÓRICO	POLO MORFOLÓGICO	POLO TÉCNICO
Pensadores/Epistemólogos	Base Teórica/Teorias Consideradas	Modelos Teóricos/Conceituais	Tipo de Pesquisa
Categorias Epistemológicas			Locus da Pesquisa/Perfil
Questões Problema, Pressupostos ou Hipóteses	Teóricos e/ou Escolas Teóricas	Modelos Operacionais e Aplicados	Técnicas de Levantamento e Análise de Dados
Objetivos (Geral e Específicos)			Modos de Apresentação e Discussão de Resultados

Source: Adapted from Lima (2008); and De Bruyne, Herman and De Schoutheete (1991).

The macrostructures consist of aspects and definitions to be described in each field of the tool (Figure 4, above).

In the epistemological pole, the fields are as follows: thinkers/epistemologists; epistemological categories; problem issues, assumptions and hypotheses; and general and specific objectives of the research to be carried out.

The "Thinkers/epistemologists" field should include which thinkers or epistemologists of the sciences and their specific works have a vision of the world, life and science consistent with the objectives of the research to be carried out (Japiassu; Marcondes, 1996; File; Marinelli, 2010).

In the "Epistemological categories" field, there should be records, entries or expressions that represent the main themes or subjects to be addressed by academic research. This field must also include the principles, foundations and scientific methods of approach (inductive, deductive, hypothetical-deductive, abductive, dialectical, phenomenological, etc.) and procedures (historical, comparative, statistical, structuralist, positivist, functionalist, experimental, quasi-experimental, etc.) (Gil, 2002; 2023; Deer; Bervian, 1996; Lakatos; Marconi, 2003; Vergara, 2003).

For the field "Problem issues, assumptions and hypotheses", the record to be made refers to the problematic of the phenomena, objects or processes to be investigated, situating the problem in a specific guiding question and in an interrogative way, or an

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affirmative as a presupposition to be considered or even, depending on the research approach, whether quantitative, qualitative or mixed, the hypotheses to be confirmed or disproved at the end of the research to be carried out.

The "General and specific objectives" field is the target of intentions, of what is sought to be achieved with the research to be carried out (Gil, 2002; 2023; Deer; Bervian, 1996; Lakatos; Marconi, 2003; Vergara, 2003).

In the theoretical pole, the fields that appear in the *Research Model Canvas Project* are the following: theoretical basis/theories considered and theoretical and/or theoretical schools

The field "Theoretical basis/theories considered" should receive the frames of reference and the theoretical framework with the list of concepts and theories to be considered in the research to be considered in harmony and integration with the epistemological pole.

In the field "Theoreticians and/or theoretical schools", the names of the theorists or theoretical matrices that will make up the scope of the research should be listed.

In the morphological pole of the model, the fields are as follows: theoretical/conceptual models and operational and applied models.

The field "Theoretical/conceptual models" should aggregate the names of the theoretical and conceptual models to be used with the citation of the works of authors of these theoretical models.

If the research is organizational or more practical, the "Operational and applied models" field will need to receive the names of the operational and applied models to be adopted with the citation of the works of authors of these models closest to the reality of the phenomena, processes or objects to be researched.

In the technical center of the fields are the following: type of research; *locus* of research/profile; data collection and analysis techniques; and modes of presentation and discussion of results (Gil, 2002; 2023; Deer; Bervian, 1996; Lakatos; Marconi, 2003; Vergara, 2003).

The "Type of research" field should include the characteristic typology of the research to be carried out, considering the following or other classifications: research as to nature (basic and pure; or applied); research as to objectives (exploratory; descriptive; and/or explanatory); research as to the approach to the problem (quantitative, qualitative, quanti-quali or quali-quanti); and research as to the intervention procedures (bibliographic,

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documentary; survey; experimental; case study; *ex-post-facto*; action research; participant research; *grounded Theory* or theory based on/on data; etc. (Gil, 2002; 2023; Deer; Bervian, 1996; Lakatos; Marconi, 2003; Vergara, 2003).

The "Locus of the survey/profile" field must absorb information about the research environment, its territory of application, its characteristics of the respondents, the organization or place of conduction, etc. (Monteiro *et al*., 2024; Medeiros *et al*., 2022).

The field "Data collection and analysis techniques" encompasses 2 (two) aspects that are also relevant to the research to be carried out (Gil, 2002; 2023; Deer; Bervian, 1996; Lakatos; Marconi, 2003; Vergara, 2003).

The first is the process of collecting and searching for data to elucidate the phenomenon, process or fact that the researcher wants to unravel. The instruments of this first stage are the following: questionnaire; form; observation, focus group; interview; images and photography (Bauer; Gaskell, 2002).

After collecting the data, the researcher must organize, analyze and interpret them in order to solve the research problem to be performed. The second aspect of the tool's field is associated with data analysis techniques, of which the following examples can be found: descriptive statistics; inferential statistics; content analysis; and discourse analysis (Minayo, 2007; Bardin, 1995; Monteiro *et al*., 2024; Medeiros *et al*., 2022).

In the field "Modes of presentation and discussion of results", it is necessary to include the techniques or ways that will allow the presentation and discussion of the results, aiming at reflection and/or explanation of what the research proposed to obtain (Monteiro *et al*., 2024; Medeiros *et al*., 2022).

These modes of presentation or discussion of results need to interconnect, compare and/or evaluate the data analyzed and transformed into information and knowledge that help to solve the problem proposed in the research.

The *Research Model Canvas* project disseminated here should be a tool applied in academic research and also in organizational studies, especially in the fields of social, applied sciences and humanities.

ADDITIONAL CONSIDERATIONS

The *Research Model Canvas* project applied to academic and/or organizational research becomes a planning tool that allows the systemic view of the study to be carried out within the 4 (four) poles of the methodological strategy of De Bruyne, Herman and De

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Schoutheete (1991).

The central objective of this study was fully achieved, as the proposition of an innovative instrument for the planning of academic and organizational research is now disseminated in academia and can be built from the guidelines of this article.

It discusses *Design Thinking*, *Business Model Generation* and *Project Model Canvas*, as project planning and management methodologies applied in other areas of knowledge that have as a common characteristic their conciseness, etymological basis and visual format of presentation. It is structured in the methodology of the 4 (four) poles: epistemological, theoretical, morphological and technical. Finally, it presents the proposal of the *Research Model Canvas* as an innovative instrument for the planning of academic research, developed in a robust but concise way, based on the quadripolar methodology, in a document of single sheet or screen called *academic research canva* and its history of application in graduate courses and in a Research Group of the Federal University of Ceará.

Epistemologically grounded in Gaston Bachelard (1978; 1996; 2000), theoretically in *Design Science*, in the Theory of Structural-Systemic Evaluation of Evaluation (Lima, 2008) and in the concepts and applications of research planning by academics who are part of the discipline of scientific methodology or scientific work, the *Research Model Canvas* also adds theoretical innovations when it connects these different sources in tune with the abductive methodelement.

Morphologically, the *Research Model Canvas* is referenced in models generated from the theory of *Design Science* when applied in the planning and management of projects and academic or organizational studies within the fields of Administration, Economics and other Social Sciences and Humanities. The constructs adopted in the construction of *the Research Model Canvas* were the following: *Design Thinking*, Business *Model Generation* and Project *Model Canvas*.

Technically, the *Research Model Canvas* is a planning tool, so it is an instrument for practical application, but it allows solving problems in research when it adopts the methodological strategy of De Bruyne, Herman and De Schoutheete (1991).

The practical experiences with the *Research Model Canvas* were fully successful with academic and organizational research at the Federal University of Ceará (UFC), in activities of supervision of studies in graduate studies, specifically at the master's and doctoral levels in the fields of Education and Administration with the Research Group on

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Evaluation & Management (GPAGE).

It is expected that the proposal of the *Research Model Canvas* will be an example for the emergence of new technologies in scientific research in Education, Administration and related areas, in addition to being open to improvements as a research tool in continuous progress as Bachelard teaches us.

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