

UNIVERSIDADE NOVE DE JULHO
PROGRAMA DE PÓS-GRADUAÇÃO EM GESTÃO DE PROJETOS – PPGP
DOUTORADO PROFISSIONAL EM ADMINISTRAÇÃO

FRAMEWORK FOR PROJECT MANAGEMENT APPROACH DECISION
FOCUSED ON INCREASING NOVELTY VALUE IN DIGITAL PLATFORM
BUSINESS MODELS

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São Paulo/SP

2023

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**FRAMEWORK PARA DECISÃO DA ABORDAGEM DE GERENCIAMENTO DE
PROJETOS FOCADO NO INCREMENTO DO VALOR DE NOVIDADE NOS
MODELOS DE NEGÓCIOS BASEADOS EM PLATAFORMA DIGITAL**

**FRAMEWORK FOR PROJECT MANAGEMENT APPROACH DECISION
FOCUSED ON INCREASING NOVELTY VALUE IN DIGITAL PLATFORM
BUSINESS MODELS**

Tese apresentada ao Programa de Pós-Graduação em Gestão de Projetos da Universidade Nove de Julho – UNINOVE, Doutorado Profissional em Administração, como requisito parcial para obtenção do grau de **Doutor em Administração**.

Orientador: Prof. Dr. Marcos Rogério Mazieri

São Paulo/SP

2023

Nery, André Luiz Barros.

Framework for project management approach decision focused on increasing novelty value in digital platform business models. / André Luiz Barros Nery. 2023.

139 f.

Tese (Doutorado) - Universidade Nove de Julho - UNINOVE, São Paulo, 2023.

Orientador (a): Prof. Dr. Marcos Rogério Mazieri.

1. Project management. 2. Project management approach. 3. Novelty value. 4. Digital platform business models. 5. The digital platform-based ecosystems (DPE).

I. Mazieri, Marcos Rogério. II. Título.

CDU 658



DEFESA DE TESE DE DOUTORADO

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Tese apresentada ao Programa de Pós-Graduação em Gestão de Projetos da Universidade Nove de Julho – UNINOVE, Doutorado Profissional em Administração, como requisito parcial para obtenção do grau de **Doutor em Administração**, pela Banca Examinadora, formada por:

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DEDICATION

I dedicate this work to the people I love most in this life. To my mother, Ruth, and to my sister Flávia for the days of struggle and shared joys, and recently to my godson, for having become an unconditional gift given by God. And others in my heart and mind, ever.

ACKNOWLEDGEMENTS

Initially, I thank God for every day of the blessed life I have and for the good people who participate in it.

To my family for their support. Especially to my mother, Ruth, for her prayers, patience, and attentiveness in the conversations. Her example of conduct built me up and showed me true love. Always a strong woman, even when she cries and hugs.

I am immensely grateful to my supervisor, Professor Dr. Marcos Rogério Mazieri, for having welcomed me into the Doctoral degree at Graduate Program in Project Management (PPGP) and allowed me to achieve this dream. In moments of great patience, for having dedicated his busy time in conversations, guidance and transfer of knowledge, fundamental to my learning. Without these elements, the path would have been more arduous and perhaps impossible.

To Professor Dr. Emerson Antonio Maccari, for my inclusion in the academic environment and academic and life teachings.

To the professors of the Postgraduate Program in Project Management (PPGP), for the teachings and, many times, for the hallway conversations and words of encouragement and guidance in particular to Professors Dra. Cristina Dai Prá Martens, Dr. Luciano Ferreira da Silva, and also Dra. Rosária de Fátima S. M. Russo.

To Professors Dr. Flavio Santino Bizarrias and Dr. Júlio Araujo Carneiro da Cunha, for their enriching contributions in the candidacy and defense committees and, to Professors Dr. Andre Torres Urdan and Dr. André Moraes dos Santos for their contributions to the defense committee. All brought great contributions to this work.

I would like to thank my master's and doctoral colleagues from the two Postgraduate Programs (PPGP and PPGA), for the conversations, games and joy, essential to nourish the group spirit and encourage me in difficult times.

To Universidade Nove de Julho – UNINOVE for giving me the opportunity to advance one more step in life, an inexplicable experience.

ABSTRACT

Digital Platform-based Ecosystems (DPE) have undergone significant evolution and now encompass a wide range of industries, resulting in complex structures. In these ecosystems market leaders engage in intense competition deciding at which stage of the value-adding process to incorporate intelligence and novelty. This process passes by the need to develop projects that increase novelty in value offering, creation, delivery, and capture for these Digital Platform Business Models, rising the question of *How project managers decide the development approach most proper for increasing novelty value in digital platform business models?*. Based on this the object outlined was *to design a framework that guides project managers in deciding which development approach is most proper for increasing novelty value in digital platform business models*. From the perspective of the abductive approach Design Science Research – DSR, three individualized studies were conducted - the first, a study of co-citation and bibliometric coupling that allowed an understanding of the evolution of the DPE framework and the main future topics addressed in this context, the second, a review of the literature leading to the relationship of features between digital business models and project management approaches in the context of DPE, and the third, a case study observing project managers decisions and interactions in one of the largest advanced multisided platform (MSP) companies, rising attributes related to novelty value creation. Establishing a comprehensive framework that contributes to the advancement of knowledge in the Project Management field, especially in the Approach Development decision. Because of the specificities of this context, project managers are become specialized in driving value creation for these types of businesses, like the emerging position “*Digital Platform Project Manager*”, growing the necessity of a framework to support the decision process of which PM Development approach helps to increase the novelty value in The DPE context. Academically, this work adds some knowledge to both the project management discipline and the digital ecosystems’ concept.

Keywords: Project Management; Project Management Approach; Novelty Value; Digital Platform Business Models; The Digital Platform-based Ecosystems (DPE).

RESUMO

Os Ecossistemas Baseados em Plataformas Digitais (DPE) passaram por uma evolução significativa e agora abrangem uma ampla gama de setores, resultando em estruturas complexas. Nesses ecossistemas os líderes de mercado se envolvem numa intensa competição decidindo em qual estágio do processo de agregação de valor incorporar inteligência e inovação. Esse processo passa pela necessidade de desenvolver projetos que incrementem a novidade na oferta, criação, entrega e captura de valor para esses Modelos de Negócios de Plataformas Digitais, emergindo a questão de *Como os gerentes de projeto decidem a abordagem de desenvolvimento mais adequada para aumentar o valor da novidade nos modelos de negócios da plataforma digital?*. Assim, ficou alinhado o objetivo de *desenhar uma estrutura que ajude os gerentes de projeto a decidir qual abordagem de desenvolvimento é mais adequada para incrementar o valor de novidade em modelos de negócios de plataformas digitais*. Sob a perspectiva da abordagem abdução de Design Science Research – DSR, foram realizados três estudos individualizados - o primeiro, uma cocitação e acoplamento bibliométrico que permitiu entender a evolução do framework DPE e os principais tópicos futuros abordado neste contexto, o segundo, uma revisão da literatura que leva à relação de características entre modelos de negócios digitais e abordagens de gerenciamento de projetos no contexto do DPE, e o terceiro, um estudo de caso observando as decisões e interações dos gerentes de projetos em uma das maiores empresas de plataforma (MSP), levantando atributos relacionados à criação do valor de novidade. Estabelecer um *framework* abrangente que contribua para o avanço do conhecimento na área de Gerenciamento de Projetos, especialmente na decisão de escolha da abordagem do projeto. Por conta das especificidades deste contexto, os gerentes de projeto estão se especializando na geração de valor para esses tipos de negócios, como a emergente função “Gerentes de Projetos de Plataformas Digitais”, aumentando a necessidade de se ter um *framework* para apoiar o processo decisório de qual abordagem de desenvolvimento projeto melhor contribui com o aumento de valor da novidade no contexto do ecossistema. Academicamente, este trabalho agrega conhecimento tanto à disciplina de gerenciamento de projetos quanto ao conceito de ecossistemas digitais.

Palavras-chave: Gerenciamento de Projetos; Abordagem de Gerenciamento de Projetos; Valor de Novidade; Modelos de Negócios de Plataformas Digitais; Ecossistemas Baseados em Plataformas Digitais.

LIST OF ACRONYMS

BE – Business Ecosystem

BMI – Business Model Innovation

DE – Digital Ecosystem

EE – Entrepreneurial Ecosystem

DEE – Digital Entrepreneurial Ecosystem

DPE – Digital Platform-based Ecosystem

DBE – Digital Business Ecosystem

MSP – Multi-sided Platform

NTCP – (Novelty, Technology, Complexity, Pace) Diamond Approach model

PM – Project Management

PMBok[®] – Project Management Body of Knowledge[®]

PMO – Project Management Office / Project Management Officer

PRINCE2 – PRojects IN Controlled Environment

SPL[®] – Strategic Project Leadership[®]

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1 INTRODUCTION

The newer and faster digital world is raising a bundle of discussion about digital ecosystems (Acs, Stam & Audretsch, 2017; Audretsch, Cunningham, Kuratko, Lehmann & Menter, 2018; Bisht, Prakash, Saraswat & Srivastava, 2019). Sachs (2020) asserts that the pervasive connectivity of the present era has ushered in a new age of globalization, known as The Digital Age. This age, characterized by the digital revolution, has compelled companies to participate in The Digital Economy, primarily dominated by platform organizations conducting multi-billion-dollar transactions within their own structures.

In The Digital Age, most of the companies are young, only a few years old in some cases, but they ignite very quickly. These types of companies are considered startups in many ways (Stenholm, Acs & Wuebker (2013). The reason the entrepreneurship literature has not studied the billion-dollar digital startup is because entrepreneurship research is focused on self-employment both as business ownership and as sole trader (Parker 2002; Shane and Venkatraman 2000). Many of multi-sided platforms (AirBnB, Uber, etc.) are populated with digital entrepreneurs that write millions of apps that power smartphones, Facebook, and thousands of other businesses (Sussan & Acs, 2017).

In parallel of this discussion, Acs, Autio, and Szerb (2014) start new research about country-level entrepreneurship, introducing the concept of National Systems of Entrepreneurship. At this point, they provided an approach to characterizing this, suggesting National Systems of Entrepreneurship are fundamentally resource allocation systems that are driven by individual-level opportunity discovery and pursuit, with the outcomes of this activity regulated by country-specific institutions. Based on this approach, they construct the concept of entrepreneurial ecosystem.

And in 2016, one of these emerging digital ecosystems are gaining space in the academic debate: Digital Entrepreneurial Ecosystems (DEE) proposed by Sussan & Acs (2017) and reorganized by Song (2019). Based on the intersection of digital ecosystem and entrepreneurial ecosystem, the DEE suggests that a significant gap exists in the conceptualization of entrepreneurship in The Digital Age (Sachs, 2020). As conceptualized by Li, Badr, and Biennier (2012) the digital ecosystem just mimicking biological ecosystems referring to complex and interdependent systems and underlying infrastructures by which all constituents interact and exhibit self-organizing, scalable, and sustainable behaviors.

According to Sussan and Acs (2017), the size of DEE depends on, and is dependent on, the adoption, absorption, and diffusion of digital technologies. Digital technologies have diffused faster than electricity, telephones, and mobile phones. Smartphones have reached a 40% diffusion rate in only 10 years, while it took electricity almost 40 years to reach a 10% diffusion rate.¹² Digital technology diffusion has been growing rapidly over the years and is expected to continue to expand from around 8% of GDP in 2015 to around 25% by 2030.¹³ This space is occupied by many of the Unicorns that are matchmaker firms using digital technologies. The core competencies of these companies are their ability to match one group of customers with another group of customers by reducing the transactions cost of a match.

This trend has expedited the emergence of The Digital Platform-based Economy—a distinct economy revolving around platforms with their own governance. Platform organizations, not governments or regions, are responsible for the development and nurturing of ecosystem structures (Acs, Song, Szerb, Audretsch, & Komlósi, 2021). And this economy can show The Digital Platform-based Ecosystems (DPE) as an evolutionary concept that comes from other concepts and is being shaped by the time because of the technological rising (Nery, Mazieri, Hsu, & Meneghatti, 2021).

The owners of platform firms determine the governance rules, including who can access the platform and the expectations for behavior. It is made up of for types of firms, clustered in two categories of entities: the abiotic entities, considering only firms type Digital Users (demand-side and supply-side) that explore supply and demand sides of the environment; the abiotic entities, considering firms type Digital Entrepreneurs that increase innovation in processes and products to the Digital Platforms firms type, which is the digital multisided place where both value creation and value capture occur, and, in this context; and, yet abiotic entity, but out of The DPE context, firms type Digital infrastructure that supports The Digital Economy with telecommunications services and communications equipment and provide resources and capabilities for digital businesses into The DPE (Acs *et al.*, 2021).

Digital ecosystems have undergone significant evolution and now encompass a wide range of industries, resulting in complex structures. These ecosystems consist of various types of connections, such as mergers and acquisitions, minority investments, joint ventures, strategic alliances, and standardized alliances. The main objective of digital ecosystems is to facilitate seamless onboarding and engagement for participants, including app producers and general users, to integrate them into the collective (Boston Consulting Group – BCG, 2021).

On the other hand, the phenomena of the projectification of things became known in the literature. According to Maylor, Cooke-Davies and Hodgson (2006), the concept of projectification was developed over the time and, between 1996 and 2006, it was noted that there appear to be few limits to activities or tasks that are termed ‘projects’ today, as an extension of the idea of projectification. That point of view was reinforced when Packendorff and Lindgren (2014) exposed that increased focus on the processes of projectification would be beneficial to project research. In the opposite way of the critique of “everything Projectification”, as showed by Packendorff and Lindgren (2014), this phenomenon has been observed by various factors such as under human factor, as exposed by Jansen, Thuesen and Geraldi (2016), and as a pragmatic sociological examination, as exposed by Barondeau and Hobbs (2018).

Project management is well known to allow the integration of all resources at project, program, and portfolio levels, contributing to management efficiency within the given limits and constraints (Shenhar & Dvir, 2007; Shenhar, 2011; Carvalho & Rabechini, 2015; Kerzner, 2017; PMI®, 2021). In project management, the leadership and management style need to emerge in such a way that these aspects provide the necessary support to achieve the planned objectives. Olugboyega, Ejohwomu, Omopariola, and Omoregie (2023) prove that project leaders could tailor their leadership functions and behaviours to address issues related to positions, organizational situations, and project situations. They reinforce that a project leader can embrace project leadership by combining a few different project leadership functions and behaviours. And these assumptions have been reinforced by various modern studies in project management (Thesing *et al.*, 2021; Musonda & Okoro, 2022; Yordanova, 2023).

1.1 PROBLEM DEFINITION

Analysing the world’s top-1.000 venture funded technology startups Remané, Schneider and Hanelt (2022) complemented the connection between digital entities in The DPE, as stood by Acs *etal.* (2021) and Digital Business Models allocated in it as recipes to commercialize digital technologies and innovate process. According to their research, is possible reorganize that breakdown structure of The Digital Platform-based Ecosystem (DPE).

Once characterized as complex, DPE (or MSP) are made up of various types of stakeholders, which generate numerous interactions with each other. This makes the analysis and implementation of Digital Business Models more complex than usual when occur in The Digital Platform-based Ecosystem (DPE) context (Øverby & Audestad, 2021). As exemplified

by projects such as Airbnb' Olympics and World Cup project, BlaBlaCar global transit network project, Uber and Lyft taxi services projects, UK-based JustPark individual personal parking spaces project, and others (Jacobides *et al.*, 2019), project management could be a managerial tool to implement Digital Business Models into The DPE or to improve its business value creation, once already inserted in the ecosystem (Marnewick, & Marnewick, 2022; Yordanova, 2023).

According to PMI® (2021), one of the Project domains that could be tailored during Project Management is the life cycle of the Project and the development approach during managing. In this sense, managers can choose the Project Management Development Approach that better fit to pursuit success. And the approach can be defined for the whole project life cycle or be combined simultaneously. As source to decide which approach develop in business implementation, project managers consult the Business Case to obtain information about business need; project justification; and business strategy (Rolstadås, Tommelein, Schiefloe, & Ballard, 2014; PMI®, 2021). Currently, the most know Project Management development approaches are grouped in three classifications (PMI®, 2021; Thesing, Feldmann, & Burchardt, 2021; Musonda & Okoro, 2022):

Projects are ubiquitous in any context where endeavors are undertaken within specified time frames, a widely acknowledged fact (Shenhar & Dvir, 2007; PMI®, 2021; Kerzner, 2017). Delivering value in projects and project-based business in the way to aggregate it in business is one of the most trend in project management discipline (Martinsuo, Klakegg, & Marrewijk, 2019) and this work contributes to building the novelty value of this connection between projects and business models.

The decision of which Project Management Development Approach must be choosing is complex due to the context and elements evolved, but necessary to project success (Joslin & Müller, 2015). Even the discussion is not concluded, project managers have to understanding the relation between Project Management and Digital Platform Business and how it increase value. This relation approximate when we observe the types of Project Management Approach chose for deliver a specific product or service that increase novelty in Digital Platform Business.

To comprehensively grasp the impact of project management on enhancing novelty value in digital platform businesses across diverse industries within the Digital Platform Economy, it is imperative to undertake further research. Addressing the existing gap concerning the scarcity of managerial tools specifically tailored for lead project managers' decision-making, an abductive research approach was adopted in this study, as advocated by Dresch,

Lacerda, and Antunes (2015). Employing Design Science Research (DSR) as a robust methodology, this study aimed to provide a concrete solution to the research question at hand:

How project managers decide the development approach most proper for increasing novelty value in digital platform business models?.

1.2 OBJECTIVE

Leading the research effort in fulfill the gap identified, I defined the follow main objective:

To design a framework that guides project managers in deciding which development approach is most proper for increasing novelty value in digital platform business models.

To complete the main objective of this research, the three-follow goals were structured as intermediary steps to be achieved during the entire research:

- a) *To identify and characterize The Digital Platform-based Ecosystem (DPE) as an evolutionary framework from The Digital Entrepreneurial Ecosystem (DEE);*
- b) *To provide an up-to-date mapping of the Digital business models and the project management approach development in The Digital Platform-based Ecosystems (DPE);*
- c) *To verify attributes related to novelty value in digital platform business models that guides project managers in deciding which is most proper development approach.*

1.3 MOTIVATION

The latest report published by the World Economic Forum (WEF) on the digital economy explores the transformative potential of emerging technologies and their impact on industries and societies. It emphasizes the need for strategic collaboration between governments, businesses, and other stakeholders to harness the full benefits of digitalization while addressing challenges such as privacy, cybersecurity, and workforce transformation. The report provides actionable insights and policy recommendations to navigate the evolving digital landscape and unlock opportunities for inclusive growth and sustainable development (World Economic Forum, 2023, June 4).



The analysis of textual data revealed the emergence of three distinct clusters within abstracts: Platform (46.20% relevance), Entrepreneurship (32.20%), and Ecosystem (21.60%). This classification was determined using Reinert's Method or Method of Descending Hierarchical Analysis – DHA. The examination of specificities and correspondence factors showcased various implications within the field of study. The first cluster, closely related to the field, incorporated elements like "digital technology," "market," "business," and "model." The second cluster, focused on company directions, encompassed elements such as "firm value," "strategy," and "structure." Lastly, the third cluster, concerning the evolution of concepts, included elements like "innovation," "development," "actor," and "governance." Notably, the

apparent gap between "digital" and "firm" elements may suggest a theoretical divide that can be bridged by aligning digital business models with overall business strategies. Furthermore, discussions involving "digital" and "technology" have emerged as a distinct subject, interconnecting these two topics within the context of a unique Digital Platform Ecosystem.

And this can be verified in a simple search on LinkedIn professional platform. Using the string "Digital Platform Project Manager" it is possible provides an overview of professionals identified with positions related "Digital Platform Project Manager". The majority of these professionals are located in North America, followed by Europe, Asia, and other regions. They possess varying levels of experience, with a significant number having 5-10 years of experience. The Information Technology and Services industry has the highest representation among these professionals, followed by Financial Services, E-commerce, and Marketing and Advertising. Many professionals hold certifications in project management, and key skills include Agile project management, digital platform development, stakeholder management, risk assessment, and data analytics, including 28 professionals holding certifications related to project management (e.g., PMP, PRINCE2). Key skills identified include Agile project management, digital platform development, stakeholder management, risk assessment, and data analytics. This snapshot of sample allows identify individuals specializing in managing digital platform projects and leveraging their expertise in driving successful outcomes, showcasing their location, experience, industry, certifications, and skills (LinkedIn, 2023, June 6).

Summary Report

- 1) Geographic Distribution
 - a) 32 professionals located in North America
 - b) 14 professionals located in Europe
 - c) 8 professionals located in Asia
 - d) 4 professionals located in Australia
 - e) 4 professionals located in other regions
- 2) Years of Experience
 - a) 5 professionals with 0-2 years of experience
 - b) 18 professionals with 2-5 years of experience
 - c) 24 professionals with 5-10 years of experience
 - d) 15 professionals with 10+ years of experience

3) Industry Focus:

- a) 18 professionals in the Information Technology and Services industry
- b) 12 professionals in the Financial Services industry
- c) 10 professionals in the E-commerce industry
- d) 8 professionals in the Marketing and Advertising industry
- e) 6 professionals in the Telecommunications industry
- f) 8 professionals in other industries

Even though the position “Digital Platform Project Manager” is appearing in searches on LinkedIn, to define whether is a newer position of the future or not, further analysis and data would be required, such as historical trends of job postings or industry reports on the emergence and growth of digital platform project management roles. This would provide insights into the evolution and demand for such positions over time. Additionally, it's worth noting that the term "Digital Platform Project Manager" could be specific to certain industries or organizations, and its usage and prevalence may vary. Therefore, conducting more extensive research and analysis within the digital platform market would complete a more accurate understanding of the position's relative newness or established presence.

It is known that project management discipline draws on several aspects of other theories from economics and production, had been neglected by science until the early 21st century (Koskela & Ballard, 2006). This neglect has brought to light several other studies on the subject, increasingly enriching the academic-scientific debates on the practical aspects of the discipline. It is noteworthy that project management, as assumed by the Project Management Institute – PMI (2018), encompasses the application of knowledge, tools and management techniques to projects, programs, portfolios, and other related activities that allow the management of the theme within the project. organization.

Based on the Osterwander’s business model ontology, the logical and visual instrument became to be evolutive (Vils, Mazieri, Rodrigues & Silva 2017). In this sense, Richter, Kraus, Brem, Durst, & Giselsbrecht (2017) observed the digital entrepreneurship as an innovative business model for sharing economy in The Digital Age, proposal made by Clauss (2016) in front of measuring business model innovation and its performance. Instead of this, Bouwman, Nikou, Molina-Castillo (2018) and Reuver, Sørensen, and Basole (2018) comproved the impact of digitalization on business models and show how it occurs, advancing the discussion initially passed by Ali, Soh, and Torabi (2005).

Naturally, Teece and Linden, cannot be excluded of this academic debate. These authors included in the agenda of business models two more concepts: value capture and digital enterprise (Teece & Linden, 2017). According to the authors, firms across all industries are embracing internet-based digitization strategies to expand or improve their business. In many cases, though, internet-based businesses pursue customer growth ahead of profits. The path to profitability, which is a core element of a business model, should not be an afterthought. A well-designed business model balances the provision of value to customers with the capture of value by the provider. The elements of a business model that guide to design, implement, and refine a model for an organization and its business ecosystem are reviewed. Translate these concepts with respect to key organizational design decisions such as that of licensing versus practicing an innovation, insourcing versus outsourcing, and building a business ecosystem, no longer, is a challenge.

Once characterized as complex, DPE (or MSP) are made up of various types of stakeholders, which generate numerous interactions with each other. This makes analyzing and implementing business models in the DPE ecosystem considerably more complex when compared to creating businesses that offer products/services to a homogeneous group of customers (Øverby & Audestad, 2021). As exemplified by projects such as Airbnb' Olympics and World Cup project, BlaBlaCar global transit network project, Uber and Lyft taxi services projects, UK-based JustPark individual personal parking spaces project, and others (Jacobides *et al.*, 2019), project management could be a managerial tool to implement Digital Business Models into The DPE or to improve its business value, once already in the ecosystem (Marnewick, & Marnewick, 2022; Yordanova, 2023).

This type of endeavor can be defined as “*a temporary endeavor undertaken to create a unique product, service, or result*”, being the Project Management “*the application of knowledge, skills, tools, and techniques to project activities to meet project requirements*”, guiding the effort “*to deliver their intended outcomes*” (PMI®, 2021). One of the Project aspects that could be tailored is the Life Cycle and development approach. In this sense, managers can choice the Project Management Development Approach that better fit to pursuit success. And the approach can be defined for the whole project life cycle or be combined simultaneously. As source to decide which approach develop in business implementation, project managers consult the Business Case to obtain information about business need; project justification; and business strategy (Rolstadås, Tommelein, Schiefloe, & Ballard, 2014; PMI®, 2021). Currently, the most know Project Management development approaches are grouped in three classifications:

Predictive approach; Hybrid approach; and Adaptive approach (PMI®, 2021; Musonda & Okoro, 2022). Even it seems like a simple `decision, it is not. The decision become complex due to the governance context but necessary to Project success (Joslin & Müller, 2015).

According to Osterwalder (2004), to extrapolate the interpretation of a phenomenon to a theoretical level, the construct needs to be explored and explained in at least ten cases, or even to the level of data exhaustion that does not alter the results, as a new case is added. Considering the possibility of replication of a conceptual model based on similarity of cases, we observed that Digital Business Models, as organized by Remané, Schneider, and Halnet (2022), and Project Management development approaches, as suggested by PMI® (2021), has a serious relation between each other in The Digital Platform-based Ecosystems (DPE) context. See **Table 1**.

Table 1. Levels of observations and interactions in The Digital Platform-based Economy

Interac- tions→	1 st	2 nd	3 rd	4 th
Observa- tions ↓	Economic	Ecosystem	Business	Project
1 st	The Digital Platform-based Economy (Jacobides et al., 2019; Acs et al., 2021; Øverby & Audestad, 2021)	Digital Platform-based Ecosystem (Dolgin, 2012; Jacobides et al., 2018; Sutherland & Jarrahi, 2018; Sachs, 2020; Øverby & Audestad, 2021; Nery, Mazieri, Hsu, Meneghetti, 2021; Teece, Pundziene, Heaton, & Vadi, 2022)	Digital Business Models (Remané, Schneider, & Halnet, 2022)	Project Management (PMI®, 2021; Musonda & Okoro, 2022)
2 nd	Digital Platforms	Digital Platforms	Facilitating Intermediation	Project Management Development Approaches
	Digital Users	Digital Users	Provision of Digitally-enabled Products and Services	
	Digital Entrepreneurs	Digital Entrepreneurs	Provision of Resources and Capabilities for Digital Business	
	Digital Infrastructure	<i>none</i>	(Excepting Hardware / Infrastructure / [Tele]Communications Business)	

Note1. Source: Authors.

Note2. Sections shaded in green are the focus of this research.

1.4 DISSERTATION STRUCTURE

From the perspective of the abductive approach Design Science Research – DSR, three individualized studies were conducted - the first, a study of co-citation and bibliometric coupling that allowed an understanding of the evolution of the DPE framework and the main future topics addressed in this context, the second, a review of the literature leading to the relationship of features between digital business models and project management approaches in the context of DPE, and the third, a case study observing project managers decisions and interactions in one of the largest advanced multisided platform (MSP) companies, rising attributes related to novelty value creation.

Table 2. Methodological Mooring Matrix

How project managers decide the development approach most proper for increasing novelty value in digital platform business models?							
To design a framework that guides project managers in deciding which development approach is most proper for increasing novelty value in digital platform business models.							
Distinctiveness motivation			Interdependence motivation				Status
Title	Research Question	Main Objective	Sequential Research	Field Research Steps	Data Collection	Data Analysis	
THE DIGITAL PLATFORM-BASED ECOSYSTEM (DPE) AS AN EVOLUTIONARY FRAMEWORK: A bibliometric evidence and future directions	What are the bibliometric evidences that identify and characterize The Digital Platform-based Ecosystem (DPE) as an evolutionary framework from Digital Entrepreneurial Ecosystems (DEE)?	To identify and characterize The Digital Platform-based Ecosystem (DPE) as an evolutionary framework from The Digital Entrepreneurial Ecosystem (DEE)	Bibliometric Mapping	Theoretical	Database Selection, Search expression definition, Data collection (research expression, filter criteria)	Analysis tool selection, Run calculations and Tests	SemeAD 2021 Fast Track adjusting for The Bottom-Line Journal – TBL (QUALIS – A3)
DIGITAL PLATFORM BUSINESS MODELS AND PROJECT MANAGEMENT APPROACH DEVELOPMENT: A review on how digital businesses are related to projects in The Digital Platform-based Ecosystems (DPE)	How digital business models and project management approaches are related in The Digital Platform-based Ecosystems (DPE)?	To provide an up-to-date mapping of the Digital business models and the project management approach development in The Digital Platform-based Ecosystems (DPE)	Systematic Review	Theoretical	PICOC Criteria; PRISMA 2020	Classes grouping; Data-case extractions; and Structured relation	Adjusting for SemeAD 2023 submission
THE ROLE OF PROJECT MANAGEMENT APPROACH DECISION IN DIGITAL PLATFORM BUSINESS MODELS: Relations between attributes	How attributes related to novelty value in digital platform business models can guide project managers decide which is most proper development approach?	To verify attributes related to novelty value in digital platform business models that guide project managers in deciding which is most proper development approach	Case Study	Empirical-Qualitative	Interviews; Secondary data	Qualitative content analyses; Tabulation; Interpretation	Elaborated for Dissertation defense

Note. Source: Based on Costa, Ramos, and Pedron (2019).

To better organize the structure of the Dissertation with multiple and interconnected studies, I decided to follow the structure suggested by Costa, Ramos, and Pedron (2019) as the *Final Proposition of the Alternative Dissertation Structure* (see **Table 3**).

Table 3. Alternative Dissertation Structure

ALTERNATIVE DISSERTATION STRUCTURE		
PRE-TEXTUAL ELEMENTS	ABSTRACT	
	COVER, LISTS, and TABLES	
	TABLE OF CONTENT	
TEXTUAL ELEMENTS	1. INTRODUCTION	
	1.1. PROBLEM DEFINITION	
	1.2 OBJECTIVE	
	1.3 MOTIVATION	
	1.4 THEORETICAL BACKGROUND	
	1.5 DISSERTATION STRUCTURE (Methodological Mooring Matrix)	
	2. RESEARCH DESIGN	
	3. STUDY 1	Title Abstract / Keywords 3.1. Introduction 3.2. Research Procedures 3.3. Findings and Discussions 3.4. Considerations References
	4. STUDY 2	Same as Study 1
	5. STUDY 3	Same as Study 1 Adding 3.2. Theoretical Background
	6. TECHNOLOGICAL ATIFACT PROPOSED	
	7. CONTRIBUTIONS AND FUTURE DIRECTIONS (Contribution Mooring Matrix)	
POST-TEXTUAL ELEMENTS	REFERENCES	

Note. Source: Based on Costa, Ramos, and Pedron (2019).

Other contributions based on Costa, Ramos, and Pedron (2019) come from both matrices, firstly the Methodological Mooring Matrix (**Table 2**), fulfill in this section to explain the core structure of the logical grouped research, and by the end, the Contribution Mooring Matrix (**Table 21**), explained in the final considerations section as a summary of main results obtained in hole research.

2 RESEARCH DESIGN

Following the steps indicated by Costa, Ramos, and Pedron (2019), the Dissertation was organized as an alternative structure to the classic format of doctoral dissertations. In general, I propose that the structure be made up of five major elements, as follows:

- 1st **Integrative text** – when all other documents will be finalized in future, this integrative document will be the major article connecting all studies and ideas as an *essay paper* of the Project Management phenomena in The Digital Platform-based Ecosystem (DPE) – currently represented by “Introduction” and “Background” sections of this Dissertation and complemented by data extraction that has done after The Academy of Management Annals Meet of 2021;
- 2nd **Study 1** – represented by the first article in **Chapter 3** of this Dissertation – bringing the main idea of the context’s evolution of The Digital Platform-based Ecosystem (DPE) and its challenges, in which all other studies are in;
- 3rd **Study 2** – represented by the second article in **Chapter 4** of this Dissertation – standing a proposed model based on review of literature and case studies data extraction of Project Management Development Approaches to implement or improve Digital Business Models in The DPE;
- 4th **Study 3** – represented by third article in **Chapter 5** of this Dissertation – running a research field in two parts – preparing, conducting, and analyzing data of Project Managers from a Delphi survey – and – validating the managerial tool with Project Manager in a possible online Focus Group panel. This Study 3 built the Digital Project Management Approaches Decision Framework (MANAGERIAL TOOL), better explained in **Appendix A**;
- 5th Technological and Technical Report – characterizing the Artifact built, the Project Management Approach Decision Framework as a managerial tool focused on increasing novelty value in Digital Platform Business Models.

The suggestion of a managerial tool will be supported by evidence of all doctoral research. The managerial tool will be embodied in The DPE context and, to make it assured, the elements that construct the concept of Digital Business Model (or Digital Platform-based Business Model) will be extract by literature and empirical data in depth with contributing of three Studies. To this, I propose to construct this reduced artifact to represent patterns of Project Management Approaches decision that can be adopted by Project Managers with mission of

implement Digital Business Models or them in general situations, as oriented by Gregor and Hevner (2013) and exemplified by Hevner, March, Park, and Ram (2004).

So on, to meet the defined objective, my epistemological approach will be the mixed point of view (abductive, inductive, and deductive), as explained by Lacerda, Dresch, Proença and Antunes (2013). It will be reflected in the way the problem will be classified and the data will be collected, analyzed, and interpreted. According to Creswell and Creswell (2018) in mixed research means that “(...) *the researcher draws meaning from the findings of data analysis. This meaning may result in lessons learned, information to compare with the literature, or personal experiences.*”. This epistemological research approach were the way of answered questions focused on “*How project managers embedded in a Digital Platform-based Ecosystem can decide which Project Management Approaches would fit to deliver novelty value in Digital Business?*” is implementing a design science research perspective shedding light on insights into practice as explained by Reuver *et al.*, 2018) in the future research agenda.

Organizing the conceptual logic proposed to entire study, the research was delivered in three Studies. The Study 1 focused on The DPE evolution and constitution, as a context framework with characteristics and elements; the Study 2 focused on understanding and up-to-date the relationship between Projects Management and Digital Platform Business; and the Study 3 for rise some attributes comes from practitioners and testing and validating the Framework for Project Management Approach Decision, as summarized in **Table 4**.

Table 4. Connection matrix of studies

Study 2 Projects & Businesses <i>(Remané et al., 2022; Yordanova, 2023)</i>	Study 3 Managerial Fremawork <i>(Shenhar & Dvir, 2007; Martinsuo et al., 2019; PMI®, 2021; Musonda & Okoro, 2022)</i>			
	Digitally-enabled Prod. & Serv.		PM Approach Y	
	Resources & Capabilities			PM Approach Z
	Intermediation Platforms	PM Approach X		
Study 1 The DPE Framework <i>(Acs et al., 2021)</i>	Digital Infrastructure	Digital Users	Digital Entrepreneurs	Digital Platforms

Note. Authors.

Creswell and Creswell (2018) clearly explain the variation in the use of theories in qualitative and quantitative research. According to the authors, the research process can follow

several paths depends on the researcher's profile, and the adoption of one or more theoretical lenses shape the types of questions asked, inform how data are collected and analyzed and provide a call for action or change that denote a transformative perspective. The **Figure 2.** Research design explain the proposal design sequence of research abductive approach adopted as Design Science Research (DSR), conform Dresch *et al.* (2015).

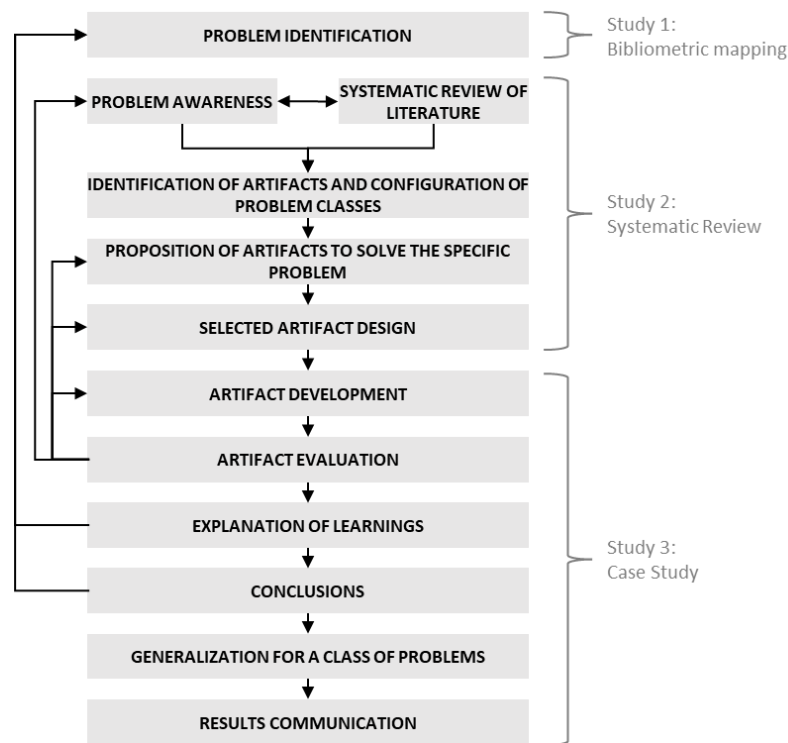


Figure 2. Research design

Note. Adapted from Dresch, Lacerda, and Antunes (2015).

According to Dresch *et al.* (2015), it is necessary start a DSR research approach delimitating the problem into a class of problems. I basic organized the class of problem during the Study 2. Starting from Project Management Development Approaches, models already known to find some of other proposed artifacts. Yet, explained that in DSR approach this step is necessary to rise similar possibilities of solutions and guide the researcher to elaborate their own proposal. **Table 5** shows the Class of problems raised in Study 2 (**Chapter 4**).

Table 5. Class of problems identified

Class of Problem	Mostly Focused on	Artefacts Identified
PM Development Approach decision (PMI®, 2021)	Adaptive approach	Diamond approach (Shenhar & Dvir, 2007) Project Type Profiling – PtP (Ehrman & Holzmann, 2012)
	Hybrid approach	<i>None</i>
	Predictive approach	The Spiral Lifecycle (Boehm, 1988)
		Overall modeling process (Thesing <i>et al.</i> , 2021)

Note. Source: Authors.

To check these, I run out the empirical Study 3 (**Chapter 5**) to collect data with practitioners project managers based on their experience in manage projects in Digital Platform-based Ecosystems environment. To this, the units of analysis become the projects they managed in The DPE context. Even initially, this research have gained scope and so that the internationalization of studies allows the wide dissemination of results finding these new specialized professionals “Digital Platform Project Manager” and “Digital Project Manager”, observed on LinkedIn platform.

3 STUDY 1: THE DIGITAL PLATFORM-BASED ECOSYSTEM (DPE) AS AN EVOLUTIONARY FRAMEWORK

A bibliometric evidence and future directions

Context: The economic discussion about collaboration between different agents to trade products and services highlights how actually firms and entrepreneurs can create value and partnership on the same marketplace as an innovative ecosystem. Most of these firms are young, only a few years old in some cases, but they ignite very quickly. These types of companies are considered startups in many ways. Since the time of Schumpeter (1911), the concepts of entrepreneurship and innovation are intertwined with economic development and have been connecting with the evolution of Kirzner's main concepts of competition (1973) in the digital business ecosystem, although not concluded. Considering the dispersion of the discussion, we conduct this study to answer the question: *What are the bibliometric evidences that identify and characterize The Digital Platform-based Ecosystem (DPE) as an evolutionary framework from Digital Entrepreneurial Ecosystems (DEE)?* **Objective:** *To identify and characterize The Digital Platform-based Ecosystem (DPE) as an evolutionary framework from The Digital Entrepreneurial Ecosystem (DEE).* **Research Procedures:** We conducted a textual data analysis to extract terms leading a bibliometric co-citation and coupling study. **Main Results:** Focus on Relevance: Annual production is increasing in the last five years (70.23% papers), achieving the top period of publication in 2020 (21.40% of articles), demonstrating a possibility to exceed in 2021 (32 papers by May). The paper *The Digital Entrepreneurial Ecosystem* (Sussan & Acs, 2017) showed a good contribution. Science Mapping: Co-citation network showed two discussions, first concentrated in digital debate and Second in the ecosystem. Co-occurrence network showed the word "platform ecosystems" recently conducting discussions. Thematic evolution highlighted the evolution from DEE to DPE. **Originality/Relevance:** There is a significant gap in the conceptualization of digital business ecosystem in The Digital Age. Exposed as initially as the DEE, the evolution of this inserted systemic context evolute understanding of four entities Digital User Citizenship, Digital Technology Entrepreneurship, Digital Multi-sided Platform, and Digital Infrastructure Governance to an economic level, as Digital Platform-based Ecosystem. **Contributions:** The combination of the findings identified and discussed in the subject of digital business ecosystems, mainly focused on the research trends of Entrepreneurial Ecosystem (EE), Digital Ecosystem (DE), Digital Entrepreneurial Ecosystem (DEE) and Digital Platform-based

Ecosystem (DPE), revealed patterns of a thematic evolution in The Digital Age. It is composed of a timeline of intellectual base in one side, the research trends on the other side, and the most relevant ideas in the EE, DE, DEE and DPE – this last in the center of this discussion. This study contributes with the advancements understanding about the digital business ecosystem in The Digital Age with focus in the digital platform context. As contribution for practitioners, this study brings up the explanation of the evolution from DEE concept to DPE. Thus, the replication of the conceptual model may be possible when idealized for other projects conducted in The Digital Platform-based Ecosystems (DPE) context, given the similarity of the cases.

Keywords: Digital Platform-based Ecosystem (DPE). Digital Entrepreneurial Ecosystems (DEE). Digital Business Ecosystems (DBE). Multisided Platform (MSP). Digital Business Models.

3.1 INTRODUCTION

The economic discussion about collaboration between different agents to trade products and services highlights how actually firms and entrepreneurs can create value and partnership on the same marketplace as an *innovative ecosystem* (Adner & Kapoor, 2010). Most of these firms are young, only a few years old in some cases, but they ignite very quickly. These types of companies are considered startups in many ways (Stenholm, Acs & Wuebker, 2013). Ever since the time of Schumpeter (2004), the concepts of entrepreneurship and innovation have been intertwined with economic development and have been connecting with the evolution of Kirzner's main concepts of competition (1973), even not concluded (Acs *et al.*, 2021). The reason the entrepreneurship literature has not studied these billion-dollar digital startup is because entrepreneurship research is focused on self-employment both as business ownership and as sole trader (Parker 2002; Shane & Venkatraman 2000).

The entrepreneurial ecosystem is also a new way to contextualize the increasingly complex and interdependent social systems being created. As explained by Acs, Szerb, Lafuente and Lloyd (2018, p. 3), the definition of Entrepreneurial Ecosystems (EE) at the socioeconomic level having properties of self-organization, scalability, and sustainability, composed of sub-systems and systems, as “(...) *dynamic institutionally embedded interaction between entrepreneurial attitudes, abilities and aspirations, by individuals, which drives the allocation of resources through the creation and operation of new ventures*”.

Even so, the reality is changing as fast as technology push innovation and market pull demand (Horbach, Rammer, & Rennings, 2012). The newer and faster digital world is raising a bundle of discussion about how entrepreneurship ecosystems has been evolving to a digital ecosystem perspective (Acs, Stam & Audretsch, 2017; Audretsch, Cunningham, Kuratko, Lehmann & Menter, 2018; Bisht, Prakash, Saraswat & Srivastava, 2019; Acs, Song, Szerb, Audretsch, & Komlósi, 2021; Cho, Ryan, & Buciuni, 2021). According to Li, Badr and Biennier (2012, p. 119) Digital Ecosystems (DE) is a terminology that emerged in the early 2000s and can be defined as “(...) *a self-organizing, scalable and sustainable system composed of heterogeneous digital entities and their interrelations focusing on interactions among entities to increase system utility, gain benefits, and promote information sharing, inner and inter cooperation and system innovation*”.

Based on these points, Acs, Stam and Audretsch (2017) organized ideas of the diverse authors and show some research opportunities in the frontiers of *entrepreneurial ecosystems* (EE), such topics as digital entrepreneurship, matchmakers, and multi-sided platforms. Evolving this discussion, Adner (2017) proposed the ecosystem as a business structure, become the concept *business ecosystem* when referred to the set of partners that align interests to materialize value in the marketplace (or multi-sided platform).

The role of *digital multi-sided platforms*, such as Apple, Microsoft, Amazon, AirBnB, Uber and others, become more evident as a digital entrepreneurial environment where write millions of apps and agents that power smartphones, startups, and thousands of other businesses. As the rapid advancement of digitization and the impact of digitalization increase, the concept of digital ecosystems has been subject to an array of perspectives – ecological, economic, and technological – in its definition (Sussan & Acs, 2017). The whole discussion around digital multi-sided platforms and digital entrepreneurship gained space in the academic debate and highlights the concept of *Digital Entrepreneurial Ecosystems* (DEE) proposed by Sussan & Acs (2017) and reconfigured by Song (2019).

The Digital Entrepreneurial Ecosystems (DEE) integrates two existing ecosystem literatures: The Entrepreneurial Ecosystems (EE) with its focus on agency and the role of institutions and The Digital Ecosystems (DE) with its focus on digital infrastructure and digital users. The intersection that we are interested in is the space where agents and users interact on multi-sided platforms created by Schumpeterian entrepreneurs using a broad array of digital and other technologies. The proposal of the digital entrepreneurial ecosystems was based on four dimensions composed by two biotic entities and two abiotic entities (see **Figure 3**).

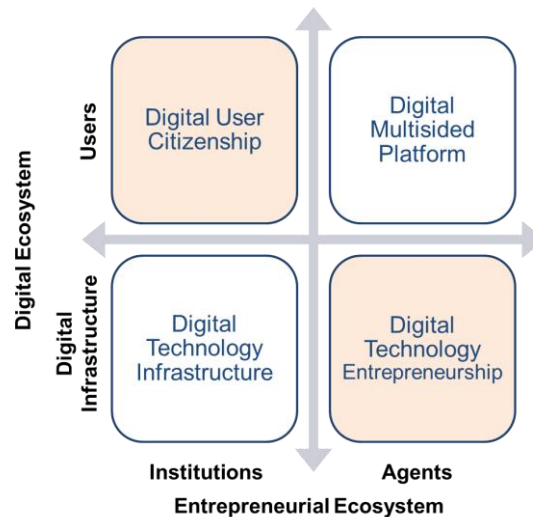


Figure 3. The Digital Entrepreneurial Ecosystems (DEE)

Note. Source: Based on Song (2019).

Note. Sections shaded in orange are the two biotic entities, namely, digital users and agents.

Most recently, the concept of digital business ecosystems gained an economic context with technological dimension – The Digital Age (Sachs, 2020). The historical analysis of the global technological revolution demonstrates an economy that migrates from organizational form based on the local factory, passing by the national corporation, to the non-geographical platform in the 21st century. This platform economy or *Digital Platform Economy* becomes the new discussion about the evolutionary idea of digitally enables activities in business, politics and social integration (Kenny & Zysman *apud* Acs *et al.*, 2021), composed by digital technology infrastructure, multi-sided digital platforms, and Digital Platform-based Ecosystems (users and entrepreneurs) (Acs *et al.*, 2021), as showed in **Figure 4**.

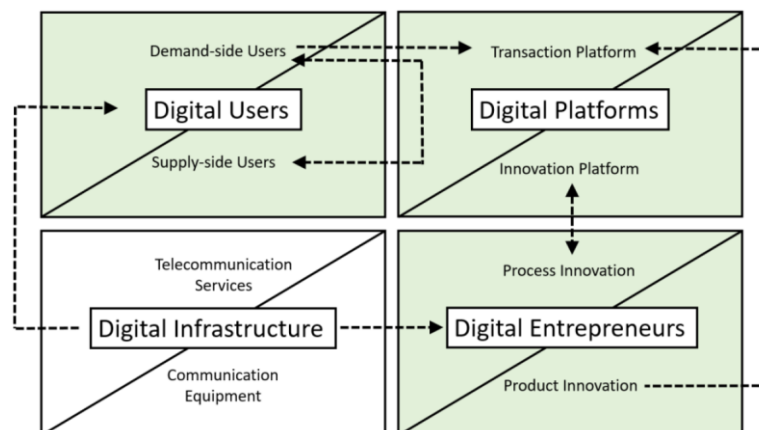


Figure 4. The Digital Platform Economy (DPE)

Note1. Source: Based on Acs, Song, Szerb, Audretsch, & Komlósi (2021).

Note2. Sections shaded in green are the digital users, digital entrepreneurs, and digital platforms that make up Digital Platform-based Ecosystems.

These Digital Platform-based Ecosystems (DPE) represent an evolutionary concept of the Digital Entrepreneurial Ecosystem (DEE), proposed by Sussan and Acs (2017) and consider Digital Users as biotic entities that explore supply and demand sides in the environment, Digital Entrepreneurs as biotic entities that increase innovation in processes and products on the Digital Platforms, which is the digital multi-sided place where both value creation and value capture occur. In this context, firms of telecommunication service and communication equipment represent the Digital Infrastructure that support the Digital Platform Economy (DPE). The **Table 6** sums up the concept evolution of the frameworks from The Digital Entrepreneurial Ecosystem (DEE) to The Digital Platform-based Ecosystem (DPE).

Table 6. The evolution of the main digital entrepreneurial business ecosystem concepts

Interactions → Frameworks ↓	Users & Institutions	Users & Agents	Agents & Digital Infrastructure	Digital Infrastructure & Institutions
Digital Entrepreneurial Ecosystem – DEE (Sussan & Acs, 2017)	Digital User Citizenship	Digital Marketplace	Digital Entrepreneurship	Digital Infrastructure Governance
Digital Entrepreneurial Ecosystem – DEE reconfigured (Song, 2019)	Digital User Citizenship	Digital Multi-sided Platform	Digital Technology Entrepreneurship	Digital Infrastructure Governance
Digital Platform-based Ecosystem (Acs <i>et al.</i> , 2021)	Digital Users	Digital Platforms	Digital Entrepreneurs	Digital Infrastructure

Note. Source: Authors.

Considering the dispersion of the discussion (Nery, Hsu, Asgary, 2019), we conduct this study to answer the question: *What is the bibliometric evidence that represent the evolution of the concept frameworks from Digital Entrepreneurial Ecosystems (DEE) to Digital Platform-based Ecosystems (DPE)?*

3.2 RESEARCH PROCEDURES

To approach the subject in a “*digital business ecosystems*” context, based on the evolution (see **Table 6**), we structured a bibliometric study to identify and characterize The

Digital Platform-based Ecosystem (DPE) as evolutionary framework from The Digital Entrepreneurial Ecosystem (DEE), as showed in **Table 7**.

Table 7. Research process sequence

Step	Process	Outputs
1 st	Data collection	Database Selection, Search expression definition, Data collection.
2 nd	Data analysis	Analysis tool selection, Run calculations and Tests.
3 rd	Results	Results Presentation, Discussion and Analysis.

Note. Source: Authors.

We opted for the measures of index production and dissemination of scientific knowledge, as exposed by Araújo (2007). The empirical contributions to research questions from various areas of knowledge allows us to structure the whole study, and map it based on the appropriate scientific method that limits the knowledge we seek (Aria & Cuccurullo, 2017). To this end, we defined the analysis tool, database, and search expression, which include minimal elements to understand and reproduce the bibliometric research, shown in the following sections 2.1 and 2.2.

3.2.1 Database Selection

To conduct the bibliometric research, we chose SCOPUS (Elsevier) database as the literature source, mainly because of the functionality of articles' impact assessment based on the Journal Citation Report (JCR). We understand that, for a literature review, SCOPUS's data structure has metadata with relevant information, considering publications from various countries, institutions, number of citations, list of authors, and other relevant information that characterize the trends and contributions to the proposed objectives.

To better direct the study, firstly we conducted a simple search based on two engines in SCOPUS (Elsevier) database. The first, to exactly represent The Digital Entrepreneurial Ecosystem (*TITLE (digital) AND TITLE (entrepreneur*) AND TITLE (ecosystem)) AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "cp")) AND (LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "SOCI") OR LIMIT-TO (SUBJAREA, "COMP") OR LIMIT-TO (SUBJAREA, "ECON") OR LIMIT-TO (SUBJAREA, "ENGI") OR LIMIT-TO (SUBJAREA, "DECI"))*) which returned 19 papers and conference papers. The second, to exactly represent The Digital Platform-based Ecosystem (*TITLE (digital) AND TITLE (platform OR marketplace) AND TITLE (ecosystem)) AND (LIMIT-TO (DOCTYPE,*

"ar") OR LIMIT-TO (DOCTYPE, "cp")) AND (LIMIT-TO (SUBJAREA, "COMP") OR LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "SOCI") OR LIMIT-TO (SUBJAREA, "DECI") OR LIMIT-TO (SUBJAREA, "ECON") OR LIMIT-TO (SUBJAREA, "ENGI")) which returned 50 papers and conference papers, totalizing 69 documents.

We excluded one conference paper for not having keywords in the metadata and we read all titles to make sure we were starting based on the core of the discussion. From these 68 initial documents, we conducted a textual data analysis on IRaMuTeQ to explore frequencies and factors focused in multifrequency and similitude analysis as proposed by Ratinaud and Marchand (2012). This exploration showed us that, in the whole 642 words presents in the “keywords” field, the relation between the terms and concepts has a strong relationship, as observed in the **Figure 5**. Textual data analysis.

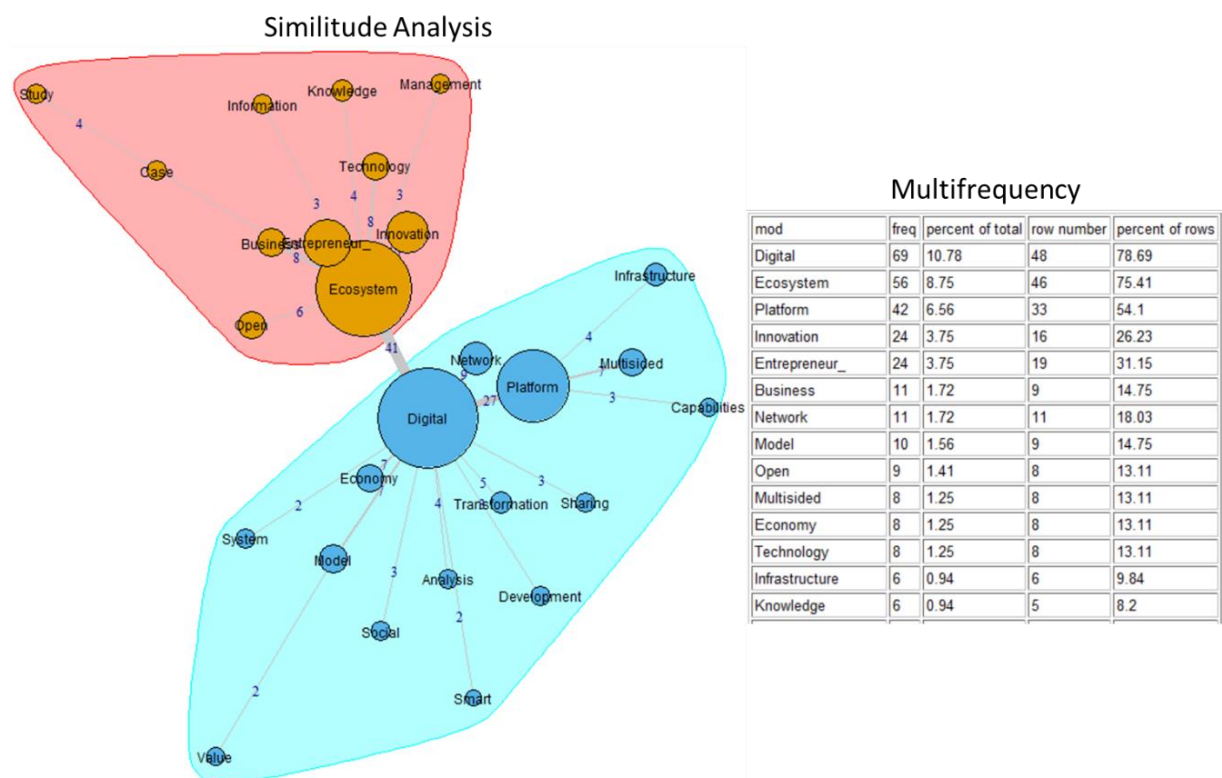


Figure 5. Textual data analysis
Note. Source: Authors (based on IRaMuTeQ).

The textual data analysis highlights words “digital” and “ecosystem” forming two clusters: 1st cluster “Digital” strongly related with “Platform”, “Network” and “Economy”; and 2nd cluster “Ecosystem” strongly related with “Entrepreneur*”, “Innovation” and “Business”. This relation contributed to organize terms and mitigate biases in the structure of the string used. Complimentarily, we considered to include some limits to the query string. Firstly, we limited the search to papers (articles) as type of documents; secondly, we limited to the six first subject areas related to Business Administration, which were “Business, Management and Accounting”, “Computer Science”, “Sociology”, “Decision”, “Engineering” and “Economy”; and thirdly, limit the language to English and the timeline to the last 15 years, 2021 inclusive. The final string stood as:

(TITLE ("digital ecosystem") OR TITLE ("entrepreneur* ecosystem*" AND "digital") OR TITLE ("platform ecosystem*") OR TITLE ("innovati* ecosystem*" AND "digital")) OR TITLE ("platform" AND "digital" AND "eco*") OR (TITLE ("business ecosystem*") AND TITLE (digital)) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "COMP") OR LIMIT-TO (SUBJAREA, "SOCI") OR LIMIT-TO (SUBJAREA, "DECI") OR LIMIT-TO (SUBJAREA, "ENGI") OR LIMIT-TO (SUBJAREA, "ECON")) AND (LIMIT-TO (PUBYEAR, 2021) OR LIMIT-TO (PUBYEAR, 2020) OR LIMIT-TO (PUBYEAR, 2019) OR LIMIT-TO (PUBYEAR, 2018) OR LIMIT-TO (PUBYEAR, 2017) OR LIMIT-TO (PUBYEAR, 2016) OR LIMIT-TO (PUBYEAR, 2015) OR LIMIT-TO (PUBYEAR, 2014) OR LIMIT-TO (PUBYEAR, 2013) OR LIMIT-TO (PUBYEAR, 2012) OR LIMIT-TO (PUBYEAR, 2011) OR LIMIT-TO (PUBYEAR, 2010) OR LIMIT-TO (PUBYEAR, 2009) OR LIMIT-TO (PUBYEAR, 2008) OR LIMIT-TO (PUBYEAR, 2007)).*

In May 2021, the scope of the final selection was composed by 215 articles in 157 different sources (journals) based on the fields of Business, Management and Accounting (107), Computer Science (77), Social Sciences (70), Engineering (35), Decision Sciences (33), and Economics, Econometrics and Finance (29), according to SCOPUS filter classification. This sample had 29 h-index means of citation with 3.838 cited articles, 3.039 cited articles without auto citing, and a meaning of 17.87 citations per article (see resume in **Table 8**).

Table 8. Main Information about the data collected

Description	Results
Documents (Articles)	215
Sources (Journals)	157
Keywords Plus (ID)	887
Author's Keywords (DE)	762
Period	2007 – 2021
Average citations per documents	17.87
Authors	533
Author Appearances	604
Authors of single-authored documents	35
Authors of multi-authored documents	498
Single-authored documents	36
Documents per Author	0.403
Authors per Document	2.48
Co-Authors per Documents	2.81
Collaboration Index	2.78

Note. Source: Authors (based on Biblioshiny software).

3.2.2 Data Analysis Procedures

For this research, we opted to use Bibliometrix (Biblioshiny) software to make the mapping analysis process robust and visual and, in general, to support workflow to perform bibliometric analyses with R language as a flexible statistical tool that can be rapidly upgraded and integrated with other statistical R-packages (Aria & Cuccurullo, 2017).

To analyze the articles, we consider the following categories of analysis: evolution of paper publications (number of publications and citations per year, most cited terms, most cited authors, journals and their number of publications, research areas and number of publications), published articles, main subjects covered and the most cited and most outstanding articles on the subject. The main base of the research process comes from classic data analysis models, with data collection procedures group and input of resources that will be processed in the results analysis. At this point, we had three decisions: database selection, definition of the search expression and data collection, with which should also consider the need to filter or narrow the base considering criteria that make this process rational. At the end, we had the data analysis, which involves selecting the tool, loading the data and performing calculations and tests, generating results that were exported to support the discussion of findings.

During the bibliometric analysis, all articles in the input dataset and the documents cited by them were linked, creating a citation network composed of documents that associate with the research. Therefore, the citation network represents the most relevant documents used by researchers in the subject matter of digital entrepreneurial ecosystem and contributing to form intellectual basis, terms, research focus terms, and field. The intellectual basis was formed by the documents cited by the researchers and represents the foundation upon the subject was built.

3.3 FINDINGS AND DISCUSSIONS

We divided the findings and discussion in two parts. In the first part, we show the literature metrics to discuss about the focus on relevance given by authors in their publications. In the second part, we show the improvements in data analysis and data visualization through science mapping that, often, can explain new knowledge that emerges at crossroad among structures and timeline evolution. Merged in the findings, we bring author's point of view about the subject *digital business ecosystems*, in entrepreneurship discipline.

3.3.1 Focus on Relevance – Metrics

Based on the metrics, an overview of the research's scope is resumed in evolution on the timeline of journals, networks and connections, number of journals found in the research and finally the generation of factors that indicate the subject *digital business ecosystems*. A simple observation of the citations per year demonstrates the increase of interest in discussing the subject; evidenced by the jump of citations from four papers per year in 2008 to 1.153 papers per year in 2020 (see **Figure 6**).

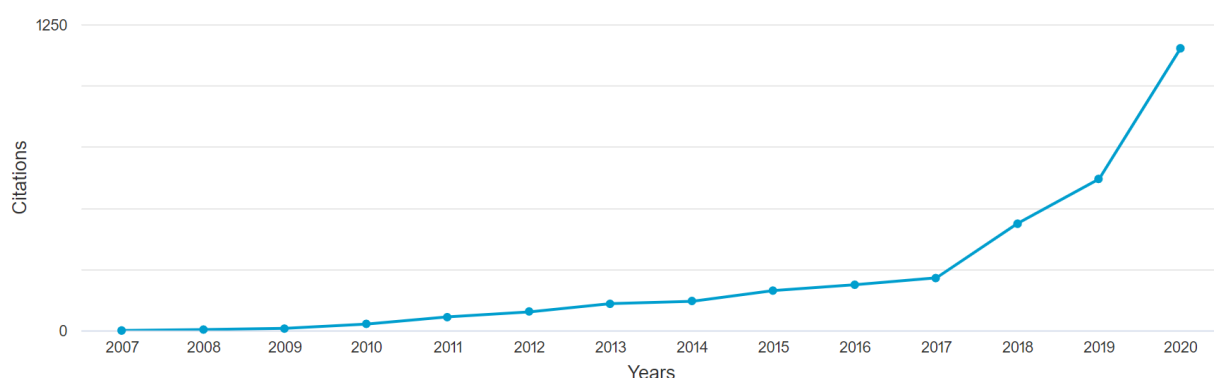


Figure 6. Number of citations per year

Note. Source: Scopus.

Complimentarily, the annual scientific production indicates an increasing interest on the subject in the last five years (70.23% of the total papers published). This interest achieved the top period of publication in 2020, comprising 21.40% of published articles, and demonstrates a possibility to exceed this condition in 2021, which already achieved 32 papers in May, meaning that researchers are tending to seek the understanding of the digital ecosystems in business context (see **Table 9**).

Table 9. Annual scientific production

Year	Documents by year	% of Total
2021	32	14.88%
2020	46	21.40%
2019	31	14.42%
2018	27	12.56%
2017	15	6.98%
Total last 5 years	151	70.23%
Total in the period	215	100%

Note. Source: Authors (based on Scopus).

The most relevant sources identified were *IEEE Transactions on Industrial Electronics*, *Technological Forecasting and Social Change*, *Sustainability* (Switzerland), *Electronic Markets* and *Journal of Business Research* totalizing an amount of 29 articles, 13.7% of the sample. The source *IEEE Transactions on Industrial Electronics* concentrated discussions about technological aspects of digital ecosystems in the beginning years (2011-2013) and stopped the growth in publications after. The others four main sources show discussions focused on management of digital business ecosystems. Hence, it is possible to check that the academic discussion starts from a technological point of view, based on the journals scope, advancing to business and economic view. This evidence reinforces Bradford's law under the dispersion of articles' publication period, reinforcing the estimates of exponentially diminishing returns of searching for references in science journals. The results showed that a few numbers of sources concentrating the most relevant articles instead many sources contain few articles (Nicolaisen & Hjørland, 2007) (see **Table 10**).

Table 10. Source Production

#	Source Title	Articles (%)	Articles (f)	Cumul. (f)	Zone
1	IEEE Transactions on Industrial Electronics	4.2%	9	9	Zone 1
2	Technological Forecasting and Social Change	3.3%	7	16	Zone 1
3	Sustainability (Switzerland)	2.3%	5	21	Zone 1
4	Electronic Markets	1.9%	4	25	Zone 1
5	Journal of Business Research	1.9%	4	29	Zone 1
6	Information Systems Research	1.9%	3	32	Zone 1
7	MIS Quarterly: Management Information Systems	1.4%	3	35	Zone 1
8	Research Policy	1.4%	3	38	Zone 1
9	Strategic Management Journal	1.4%	3	41	Zone 1
10	Business and Information Systems Engineering	0.9%	2	43	Zone 1
11	European Journal of Information Systems	0.9%	2	45	Zone 1
12	IT Professional	0.9%	2	47	Zone 1

Note. Source: Authors (based on Biblioshiny software).

Table 11 presents the top ten authors' documents. These articles represent 44.32% of all citations (1.701 of 3.838 citations) and most of them are inserted in two areas, technology and business administration sources, and address topics of co-creation, digital, IS, capabilities, platforms, entrepreneurship, incubation, technology, innovation, and ecosystem.

Table 11. Top 10 author's documents

Author	Year	Title	Source	Total Cit. / Year	Total Cit.	Doc. Cit. / Total Cit.
Ceccagnoli M	2012	Cocreation of Value in a Platform Ecosystem! The Case of Enterprise Software	MIS Quarterly	37.50	375	22.0%
Autio E	2018	Digital affordances, spatial affordances, and the genesis of entrepreneurial ecosystems	Strategic Entrepreneurship Journal	50.50	202	11.9%
Graham M	2017	Digital labour and development: Impacts of global digital labour platforms and the gig economy on worker livelihoods	Transfer: European Review of Labour and Research	35.60	178	10.5%
Weill P	2015	Thriving in an Increasingly Digital Ecosystem	MIT Sloan Management Review	22.57	158	9.3%
Parker G	2017	Platform Ecosystems: How Developers Invert the Firm	MIS Quarterly	30.40	152	8.9%
Tiwana A	2015	Evolutionary Competition in Platform Ecosystems	Information Systems Research	21.14	148	8.7%
Tan B	2015	The Role of IS Capabilities in the Development of Multi-Sided Platforms: The Digital Ecosystem Strategy of Alibaba.com	Journal of the Association for Information systems	18.43	129	7.6%
Sussan F	2017	The digital entrepreneurial ecosystem	Small Business Economics	25.60	129	7.6%
Helfat Ce	2018	Dynamic and integrative capabilities for profiting from innovation in digital platform-based ecosystems	Research Policy	29.00	116	6.8%
Basole Rc	2011	On the Evolution of Mobile Platform Ecosystem Structure and Strategy	Business & Information Systems Engineering	10.46	115	6.8%

Note. Source: Authors (based on Biblioshiny software).

Based on the Lotka's law, it was possible observe the frequency of publication by authors in *digital business ecosystems* context. It states that the 490 authors make a portion of 91.9% with just one paper in contribution to the subject. As resumed in **Table 12**, only the authors *Hussain F.K.* and *Krcmar H.* stood out publishing six articles each.

Table 12. The frequency distribution of scientific productivity

Documents Written	N. of Authors	Proportion of Authors
1	490	0.919
2	28	0.053
3	8	0.015
4	3	0.006
5	2	0.004
6	2	0.004

Note. Source: Authors (based on Biblioshiny software).

As observed, the top ten author's documents are concentrated between years 2011 and 2018 and highlights topics straightly connected with the subject *digital ecosystem*, in diverse terms as *digital ecosystem*, *entrepreneurial ecosystem* and *platform ecosystem*. The paper *The Digital Entrepreneurial Ecosystem*, by Sussan and Acs (2017) demonstrated a good evolution in the period in terms of cited growth of work, growing up from 29 citations in 2019 to 129 in May 2021, as demonstrated by Nery *et al.* (2019) (see **Table 11**).

3.3.2 Science Mapping – Structures and Timeline Evolution

We organized this part of the analysis in two subsections to better understanding the significance given to each instance, as exposed by Aria and Cuccurullo (2017) and practiced by Vils, Mazieri, Rodrigues, and Silva (2017). The first subsection constructs the intellectual structure based on co-occurrence network bibliometric technique. The second subsection explores the conceptual structure based on co-word analysis bibliometric technique that contribute to understanding the evolution of the subject in timeline.

Intellectual Structure

Co-citation

In the co-citation analysis, we focused our effort to understanding articles that had at least three citations. That decision results in 114 articles that had three citations in the whole sample. This choice permitted us to observe the phenomenon of citing concentration and answer the question based on what the main authors in the discussion about *digital business ecosystems* and how related the sections are. **Figure 7** resumes the two author's cluster.

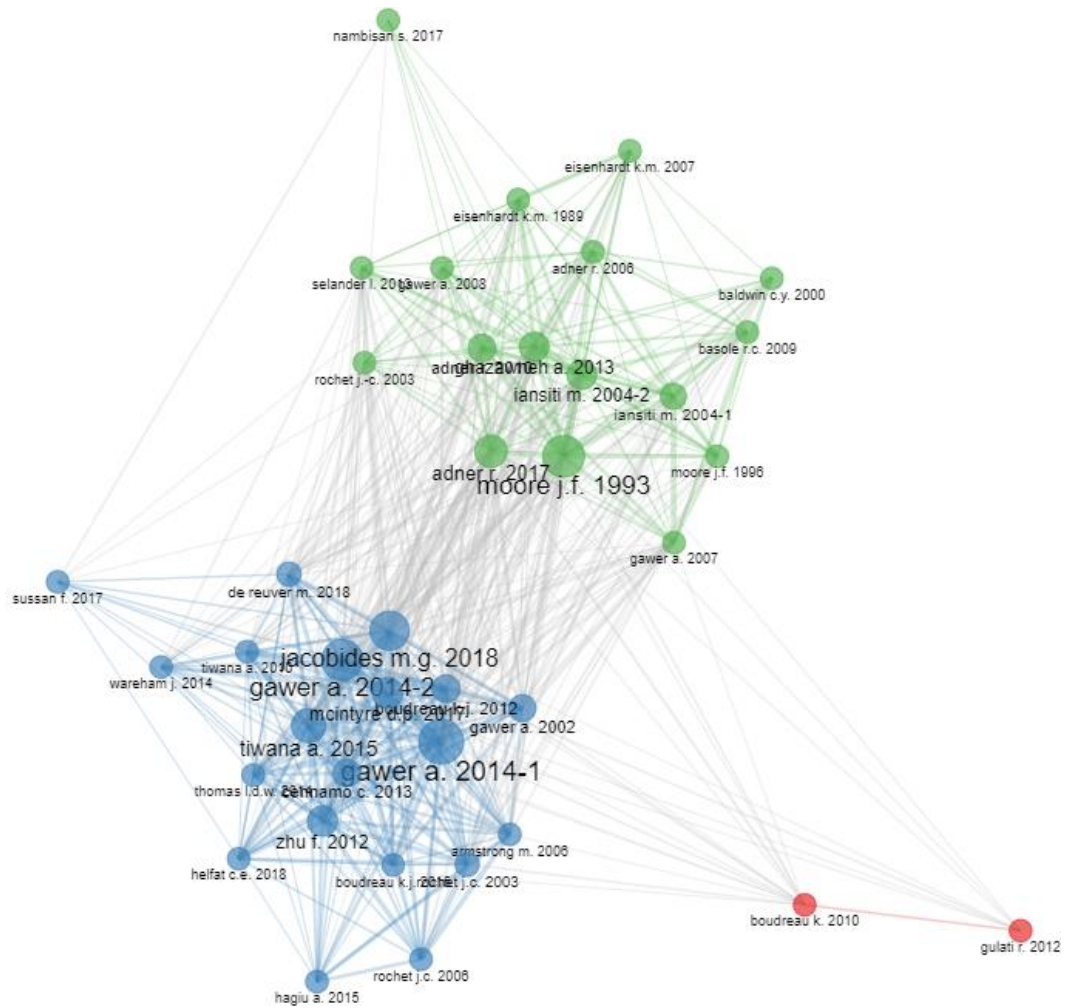


Figure 7. Co-citation network

Note. Source: Extract from Biblioshiny software (2021).

These clusters showed two discussions. First, the green cluster concentrates in *ecosystem* discussion, was formed by Nambisan S.'s (2017) work about "digital affordances, spatial affordances, and the genesis of entrepreneurial ecosystems", becoming focused on Moore J. F. (1993) and Adner R.'s (2017) opinion about "ecosystem as structure". Second, the blue cluster concentrates in *digital* discussion, was formed by Sussan F.'s (2017) evidences about how "digital entrepreneurial ecosystem" is formed from the intersection of two concepts Digital Ecosystem (DE) and Entrepreneurial Ecosystem (EE); rising a conjecture focused on Jacobides M. G. (2018) and Gawer A.'s (2014-1) discussions about digital and technologies aspects in the digital ecosystems.

Conceptual Structure

Based on the co-occurrence analysis, it is clearly possible to observe that the collaboration network are centered in the topic *platform ecosystem*. The discussion that rises to platform ecosystem comes from others such as digital platform; digital ecosystem;

centrality conjunction; and yet what knowledge is more relevant on the subject digital business ecosystem.

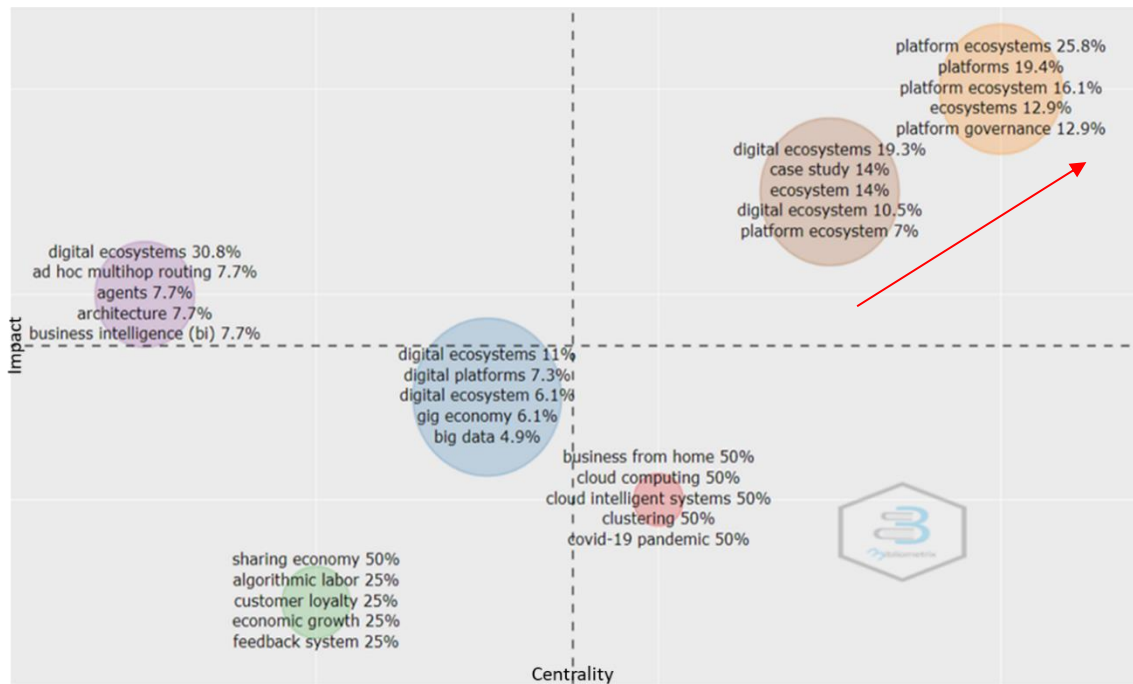


Figure 9. Clusters by documents coupling

Note. Source: Extract from Biblioshiny software (2021).

As observed, terms as *digital ecosystem* and *digital platform* represent the centrality of the today's discussion on the sample. That discussion is advancing to the higher cluster on the upper right quadrant, the orange one, where the term “platform” represents the centrality and the impact of the discussions around ecosystems (see **Figure 9**). It means that *platform ecosystem* tends to be the next centrality of academic discussion.

Based on the thematic evolution (**Figure 10**) is possible to extract a migration of terms used by authors. From the first ten years (2007-2017), the academic debate was concentrated mainly in the term “digital ecosystem” and “digital economy” with variations. By the last five years (2017-2021), the debate become concentrated around the term “platform”.

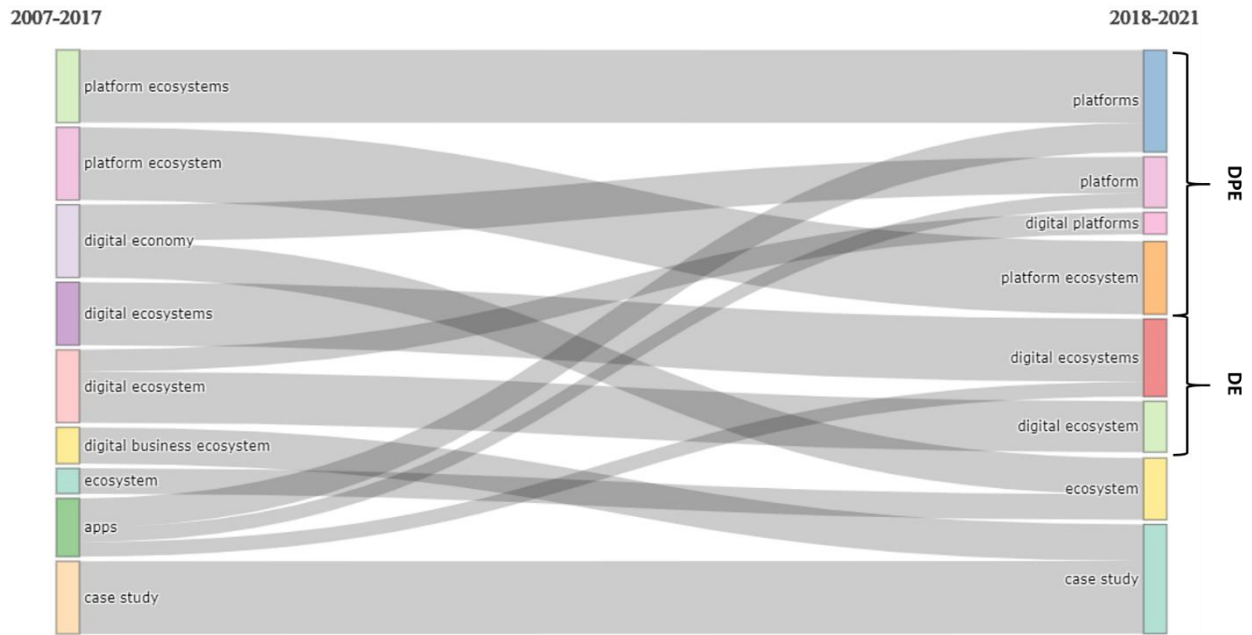


Figure 10. Thematic evolution

Note. Source: Extract from Biblioshiny software (2021).

Organized, the topics representing their own ecosystems. From the **Figure 10**, were extract two groups of topics: *Digital Platform-based Ecosystem (DPE)* and *(Digital Ecosystem (DE)*, without highlights to the evidence the changing term of *Digital Entrepreneurial Ecosystem (DEE)* to *DPE* – the most concentrated, as proposed by Acs *et al.* (2021).

The thematic evolution analysis shows the knowledge emphasis and directions for a given subject. Regard to this, we selected the papers published in the years 2017-2018 that were most cited to better understanding the directions given to the knowledge. As results of this period of timeline, we extracted the understanding that, one of the most cited authors on the sample, Jacobides M. G. (2018), brings discussions “towards a theory of ecosystems”. Contributing with this timeline evolution, we observed papers well cited written by authors as Autio *et al.* (2018) and Sussan and Acs (2017), that bring ideas about digitalization of The Entrepreneurial Ecosystem (EE), which were given an update by Acs *et al.* (2021) to *DPE*; while papers well cited were written by authors Graham *et al.* (2017), Parker *et al.* (2017) and Helfat *et al.* (2018), that bring management discussions about platform ecosystem. These papers could be marked the change of the terms, as evidence.

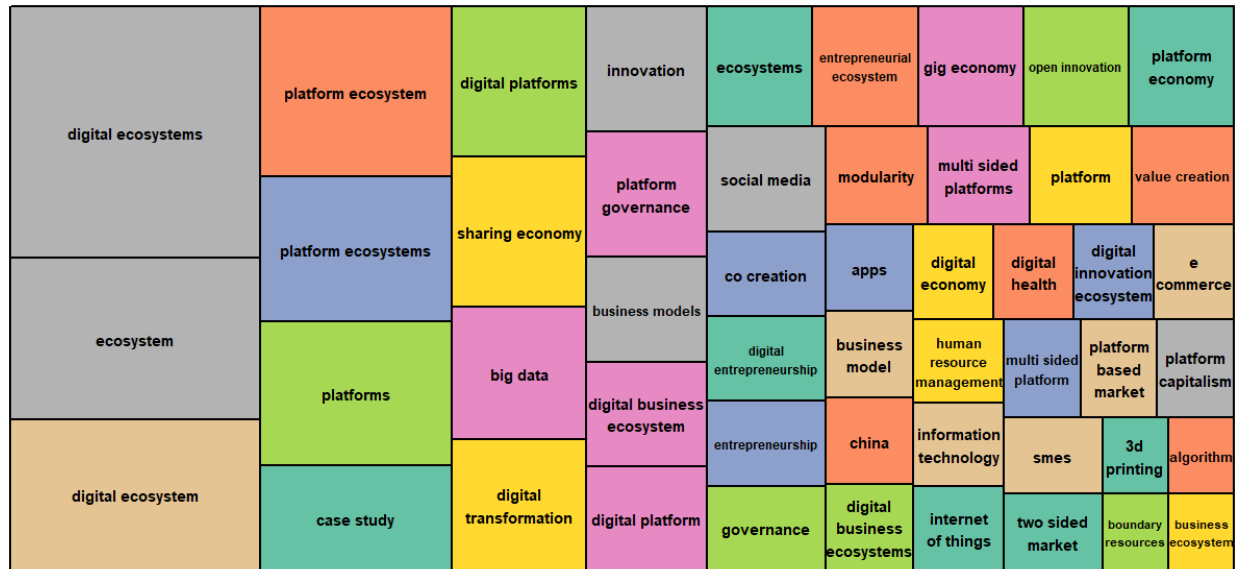


Figure 11. Word TreeMap

Note. Source: Extract from Biblioshiny software (2021).

The sample also gives the keywords from the papers, which represent the main topics of the authors, exactly what they want to call attention to the reader. These keywords highlight the combination of possible keywords, representing digital business ecosystems, such as *Digital Entrepreneurial Ecosystem (DEE)* and *Digital Platform-based Ecosystem (DPE)*, as showed in **Figure 11**. As suggestion, researchers that want to embed search based on emerged keywords could use this Word TreeMap.

3.4 FINAL CONSIDERATIONS

The documents most cited – with higher betweenness centrality and with a strong citation burst score – helped underline the intellectual base of the DEE and DPE research field. The key trends in the field also strengthen the patterns highlighted by the intellectual base, suggesting that researchers usually approach EE research questions from six perspectives: *entrepreneurship*, *innovation*, *regional development*, *regional entrepreneurship*, *entrepreneurship/entrepreneurial ecosystem*, and *new ventures*. Yet, it also suggests that researchers approach The DE with other four complementary concepts: *multi-sided platforms*, *digital ecosystem*, *entrepreneurial ecosystem*, and *public policy*.

And it helped to understand that, although the concept of EE (Acs, Stam, & Audretsch, 2017; Acs, Szerb, Lafuente, & Lloyd, 2018) and the concept of DE (Acs, Stam & Audretsch, 2017; Audretsch, Cunningham, Kuratko, Lehmann & Menter, 2018; Bisht, Prakash, Saraswat

& Srivastava, 2019; Acs, Song, Szerb, Audretsch, & Komlósi, 2021; Cho, Ryan, & Buciuni, 2021) are well defined in the literature, there is no consensus about the concept of DEE (Sussan & Acs, 2017; Song, 2019).

By other side, the combination of findings showed the evolution of digital business ecosystems, mainly focused on the research trends of Entrepreneurial Ecosystem (EE), Digital Ecosystem (DE), Digital Entrepreneurial Ecosystem (DEE) and The Digital Platform-based Ecosystem (DPE). A set formed by intellectual base timeline in one side, research trends on the other side, and the most relevant ideas in the EE, DE, DEE and DPE – this last in the center of these discussion, revealed the digital business ecosystems thematic evolution in The Digital Age context, as extract from the section *Conceptual Structure* and organized in the **Figure 12**.

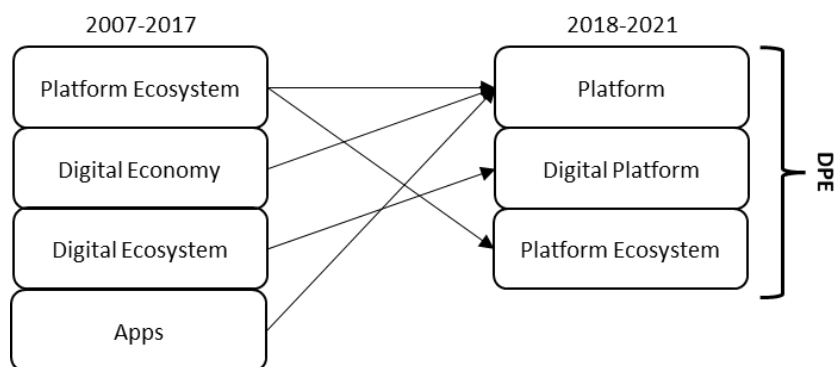


Figure 12. Synthesis of digital business ecosystems thematic evolution

Note. Source: Authors.

In this study we showed evidence of the migration of these ecosystems' concepts based on conceptual structure analysis (co-occurrence network) and its clusters (documents coupling and thematic evolution). The thematic evolution (**Figure 10**) settles the change of the new digital ecosystem formation based on digital platform economy in one way: The Digital Platform-based Ecosystem (DPE), as Acs *et al.* (2021) concept's comprehension. This economic vision contributes to give directions for strategies that could be implemented in organizations inserted in The DPE context that can be focused on topics such as digital ecosystems, sharing economy, big data, innovation, platform governance, digital transformation, digital business models, social media, digital entrepreneurship, and other (see **Figure 11**). Although is known that DPE are constituted by four entities – Digital Users, Digital Platforms, Digital Entrepreneurs, and Digital Infrastructure (Acs *et al.*, 2021) – little is known about their characteristics. Considering the knowledge got in this research, we suggest that other research can undertake focus on answer questions to better understand digital businesses its value offering, value creation, value delivery, value capture, and its interactions with economics

environmental of The DPE. To this, we rose a research agenda that could boost research in future, including:

- The interaction between digital businesses value creation and dimensions of The Digital Platform-based Ecosystems;
- Identification and characterization of digital business models (or digital platform-based models) hosted on The Digital Platform-based Ecosystems;
- Identification and characterization of the digital infrastructures that can facilitate the beginning of a digital businesses in The Digital Platform-based Ecosystems;
- Carry out the mapping of project management approaches most proper for implementing digital business models into The Digital Platform-based Ecosystems (DPE).

The proposed research agenda is widely explored by comparing reality with theoretical assumptions; it would be able to be reproduced for other researchers in digital business platform contexts. As limitations for this paper, we can point out that the terms of our research string can be better refined to reach a clearer comprehension of other possible concepts constating The Digital Platform-based Ecosystem (DPE), once there is still showing quite some evidence of the base technology.

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4 STUDY 2: DIGITAL PLATFORM BUSINESS MODELS AND PROJECT MANAGEMENT APPROACH DEVELOPMENT

A review on how digital businesses are related to projects in The Digital Platform-based Ecosystems (DPE)

Context: Since the manifesto of New Economy, technology has evolved society consumption to a digital level and changing business models to create value in this new digital economy (Dolgin, 2012) – The Digital Age. Nowadays, it means that business often emerge around a technology challenge and grow by sharing purposes with other business, mainly when its purpose has an advantage platform-based technology. That businesses structuration focused on multilateral relationship as a value system orchestrator of Digital Users (buyers and sellers), Digital Entrepreneurs, Digital Platforms and Digital Infrastructure – called as The Digital Platform-based Ecosystem (DPE). But create and innovate in this context is not easy because Digital Business Models need to achieve success. Once Project Management could be a managerial tool to implement Digital Business Models into The DPE or even to improve its business value, we question: *How digital business models and project management approaches are related in The Digital Platform-based Ecosystems (DPE)?* **Objective:** *To provide an up-to-date mapping of the Digital business models and the project management approach development in The Digital Platform-based Ecosystems (DPE).* **Research procedures:** We conducted a qualitative systematic review with three steps, First based on PICOC protocol organizing research scope and defining string maturity, Second based on PRISMA 2020 protocol to select the sample of articles identified, and Third were all around data analysis extracted from articles data-case extraction and we made a structured relation. This process was run into SCOPUS databases and return a sample of 10 articles focused on project management approaches case studies applied in Digital Business companies and related. To mitigate risk of bias we choice only case studies in compliance with research scope. **Main results:** With this discussion, we could represent a possible relation between Project Management and Digital Business. This relation approximate when we observe the type of Project Management Approach chose for deliver a specific product or service that increase Digital Business Value Creation on Digital Business Model. **Originality/Relevance:** It was not found in literature studies that resume the relation between Project Management Development Approach and Digital Business Models embedded in The DPE, and mostly, the relation approach – digital business value creation. **Contributions:** Even extracting from case studies, we can point out

that there may be more case studies in the accessible literature and to expand the results presented, other researchers can run an improved “query string” in more than one literature database. Increasing the range of empirical articles based on the case study method will substantially contribute to possible risks of bias embedded in study cases and in the review. For academy, we up to date the understanding relation between Project Management and Digital Business. For practitioners, we offer a relational model to consider when endeavor a new Digital Business Model.

Keywords: Project Management Approaches; Digital Business Model; Digital Platform-based Business Models; Digital Platform-based Ecosystems (DPE).

4.1 INTRODUCTION

Since the manifesto of New Economy, technology has evolved society consumption to a digital level and changing business models to create value in this new digital economy (Dolgin, 2012). This breakthrough of twenty-first century can be explained as a disruptive age of humans – The Digital Age, marked by the ubiquity and scale of data processing and transmission that utterly astonishing with technological dimension (Sachs, 2020). And more, technology conditions have led firms to achieve yields competitive advantage what has shaping how firms and entrepreneurs can create value in the same marketplace as an *innovative ecosystem* (Adner & Kapoor, 2010). Strategically, firms have been implementing multilateral partnerships to create alignment structures as an ecosystem with focal value proposition to materialize value and gain strategic scalable advantages (Adner, 2017).

Nowadays, it means that “*business ecosystems often emerge around a shared purpose*” (Hoeborn, Conrad, Götzen, Betz, & Neudert, 2022, p. 49) and its characteristics are focused on multilateral relationship as a value system orchestrator (Jacobides, Cennamo, & Gawer, 2018; Hoeborn *et al.*, 2022). These systems could be defined as suggested by Jacobides, Cennamo, and Gawer (2018) “*An ecosystem is a set of actors with varying degrees of multilateral, nongeneric complementarities that are not fully hierarchically controlled*”. Even each type of complementarities gives a different type of value system, one of these types is based on platforms that able specific complements like in the case of apps and OS platform/app ecosystem. When observe both sides of intermediation, production and consumption, the scope of these business ecosystems can be well defined by two types: Unique complementarity, with focus on a modular system production that cannot be produced without coordination or

adherence; Supermodular complementarity, with joint and partnership ventures around create and increase business value (Jacobides *et al.*, 2018).

The historical analysis of the global technological revolution demonstrates an economy that migrates from organizational form based on the local factory, passing by the national corporation, to the non-geographical platform in the 21st century. This platform economy or *Digital Platform Economy* becomes the new discussion about the evolutionary idea of digitally enables activities in business, politics, and social integration (Kenny & Zysman *apud* Acs *et al.*, 2021), composed by digital technology infrastructure, multisided digital platforms, and Digital Platform-based Ecosystems – users and entrepreneurs transactions (Acs, Song, Szerb, Audretsch, & Komlósi, 2021).

In The Digital Age, we can consider The Digital Platform-based Ecosystems (DPE) as an evolutionary concept that comes from The Digital Economy and was shaped by the time because of the technological rising (Nery, Mazieri, Hsu, & Meneghatti, 2021). According to Acs *et al.* (2021), These ecosystems “*are developed and nurtured not by regions or governments but by platform organizations. Ecosystem governance, the rules by who gets on a platform, and the rules of good behavior are determined by the owners of the platform firms*”. It is made up of for types of firms, clustered in two categories of entities: the abiotic entities, considering only firms type Digital Users (demand-side and supply-side) that explore supply and demand sides of the environment; the abiotic entities, considering firms type Digital Entrepreneurs that increase innovation in processes and products to the Digital Platforms firms type, which is the digital multisided place were both value creation and value capture occur, and, in this context; and, yet abiotic entity, but out of The DPE context, firms type Digital infrastructure that supports The Digital Economy with telecommunications services and communications equipment and provide resources and capabilities for digital businesses into The DPE (Acs *et al.*, 2021) (see **Figure 13**).

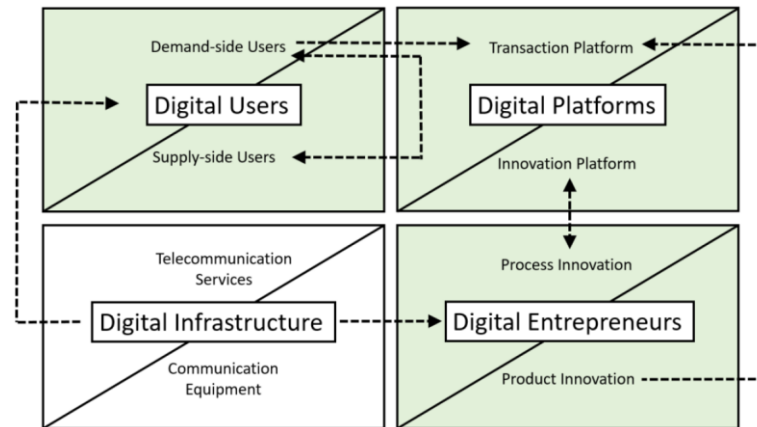


Figure 13. The Digital Platform Ecosystem (DPE)

Note1. Source: Adapted from Acs, Song, Szerb, Audretsch, & Komlósi (2021).

Note2. Sections shaded in green are the digital users, digital entrepreneurs, and digital platforms that make up Digital Platform-based Ecosystems (DPE).

It is known that both Multisided Platform (MSP) and DPE ecosystems, in general, are made up of three types of firms: Digital Users, Digital Entrepreneurs, and Digital Platforms (Dolgin, 2012; Jacobides *et al.*, 2018; Sutherland & Jarrahi, 2018; Jacobides, Sundararajan, & Van Alstine, 2019; Sachs, 2020; Øverby & Audestad, 2021; Nery, Mazieri, Hsu, Meneghatti, 2021; Teece, Pundziene, Heaton, & Vadi, 2022). Enlarging this assumption, the scope of platforms as ecosystems are merged in many ways in The Digital Economy. Based on this assumption and considering that MSPs or DPEs have ignited very quickly a significant number of young firms worldwide – startups and unicorns in many ways (Stenholm, Acs & Wuebker, 2013; Teece *et al.*, 2022), it is possible to assume that these share of digital market could achieve approximately a median of \$234 billion of dollars, only in 2022, expecting to grow to a median of \$2 trillion of dollars by 2027 in The Digital Economy (PitchBook *apud* Teece *et al.*, 2022). And it has an explanation. According to Jacobides *et al.* (2019) “*The Fourth Industrial Revolution is enabled by new digital and physical technologies with almost limitless applicability – and huge implications for the economy and society*”. In general, each of these three types of firms evolved in The DPE have a different manner to organize their process and generate value.

The First group of firms, most important in The DPE because of the centrality of intermediation, are the Digital Platforms (Acs *et al.*, 2021) or Multisided Platforms (Tiwana & Konsynski, 2010; Jacobides *et al.*, 2018; Reuver *et al.*, 2018) – providing interactions to two or more user or customer groups and, at the same time, generating a cross-side network effects as a benefit for each user group (e.g., GAFAM = Google, Amazon, Facebook [Meta], Apple, and Microsoft; etc.) (Øverby & Audestad, 2021). These group of firms have their business focused

in facilitate the intermediation of transactions (Teece *et al.*, 2022; Remané *et al.*, 2022) and can be identified by their typology as proposed by Teece *et al.* (2022): *Product Platforms*; *Industry Platforms*; *Platform-born Adjacent*; *Incumbent-born digital Platforms*; *born platforms (startups)*. Advancing their research, Remané *et al.* (2022) shows a specific type of Digital Platforms suggesting a classification based on the core business as follow: *B2B Platforms*; *B2C Platforms*; *C2B Platforms*; *O2O Platforms*; *P2P Platforms*; *Social Interactions Platforms*; and *Advanced Multisided Platforms*.

The Second group of firms are the Digital Entrepreneurs (Acs *et al.*, 2021) or Complementors (Tiwana & Konsynski, 2010; Jacobides *et al.*, 2018; Reuver *et al.*, 2018) – building process innovation and product innovation on the platform-based ecosystem. They are responsible for provide capabilities in the ecosystem from the solutions implemented (Acs *et al.*, 2021; Remané *et al.*, 2022). Such of these solutions can be mobile apps and web-based services (Acs *et al.*, 2021) or other based on data/data analytics and software and services (Remané *et al.*, 2022) (e.g., VironIT; Zco; and Blue Label Labs; etc.). Even though included in The Digital Economy context, businesses based on infrastructure, telecommunications and communications are not part of The DPE, they just give support to (Acs *et al.*, 2021). Remané *et al.* (2022) suggest a classification of Digital Entrepreneurs based on the core business of as follow: *Data/Data Analytics*; *Software and Services*; and *Hardware/Infrastructure* – this last out of The DPE context.

The Third group of firms are the Digital Users – they populate The DPE representing a set of buyers (demand-side) and sellers (supply-side) agents. Specifically focused on firms (sellers or supply-side), this group supply a good or service on a platform (e.g., Uber drivers and Airbnb hosts, sellers on Marketplaces, Advertisers, and all the small and medium-size enterprises and entrepreneurs that have an online presence) (Acs *et al.*, 2021). They comprise business model types that focus on selling products with features enabled by digital technologies (Remané *et al.*, 2022). For firms (sellers or supply-side), Remané *et al.* (2022) suggest a classification of Digital Users based on the core business of as follow: *Digitally Enabled Products*; and *Digitally Enabled Services*.

Organizations are increasingly leveraging new digital business models, including traditional entities (businesses and governments). These digital businesses have established themselves as complementary or potential substitutes for each other, which has caused a disruption in the economy: the technological effect on business models. Contemporary, the ranking of the most valuable companies in the market has completely changing the global

economy before dominated by equity-based companies to companies with digital business models – platforms and digital ecosystems. (Jacobides *et al.*, 2019).

Although at different levels, obviously companies must cooperate to provide digital services to consumers. Like vertical cooperation, usually practiced in markets before the Digital Age, companies in the digital economy can also implement horizontal cooperation in the same layer of business (Øverby & Austad, 2021). However, when companies compete within the same layer of business, these companies can compete and cooperate at the same time. This is called coopetition (Shapiro & Varian *apud* Øverby & Audestad, 2021) and permit firms switch between different multi-level strategies (Cozzolino, Corbo, & Aversa, 2021). Since the time of Schumpeter (1911), the concepts of entrepreneurship and innovation are intertwined with economic development and have been connecting with the evolution of Kirzner's main concepts of competition (1973) in the digital business ecosystem, although not concluded (Parker 2002; Shane & Venkatraman 2000).

Once characterized as complex, DPE (or MSP) are made up of various types of stakeholders, which generate numerous interactions with each other. This makes analyzing and implementing business models in the DPE ecosystem considerably more complex when compared to creating businesses that offer products/services to a homogeneous group of customers (Øverby & Audestad, 2021). As exemplified by projects such as Airbnb' Olympics and World Cup project, BlaBlaCar global transit network project, Uber and Lyft taxi services projects, UK-based JustPark individual personal parking spaces project, and others (Jacobides *et al.*, 2019), project management could be a managerial tool to implement Digital Business Models into The DPE or to improve its business value, once already in the ecosystem (Marnewick, & Marnewick, 2022; Yordanova, 2023).

This type of endeavor can be defined as “*a temporary endeavor undertaken to create a unique product, service, or result*”, being the Project Management “*the application of knowledge, skills, tools, and techniques to project activities to meet project requirements*”, guiding the effort “*to deliver their intended outcomes*” (PMI®, 2021). One of the Project aspects that could be tailored is the Life Cycle and development approach. In this sense, managers can choose the Project Management Development Approach that better fit to pursuit success. And the approach can be defined for the whole project life cycle or be combined simultaneously. As source to decide which approach develop in business implementation, project managers consult the Business Case to obtain information about business need; project justification; and business strategy (Rolstadås, Tommelein, Schiefloe, & Ballard, 2014; PMI®, 2021). Currently, the most

know Project Management development approaches are grouped in three classifications: *Predictive approach*; *Hybrid approach*; and *Adaptive approach* (PMI®, 2021; Musonda & Okoro, 2022). Even it seems like a simple `decision, it is not. The decision become complex due to the governance context but necessary to Project success (Joslin & Müller, 2015).

According to Osterwalder (2004), to extrapolate the interpretation of a phenomenon to a theoretical level, the construct needs to be explored and explained in at least ten cases, or even to the level of data exhaustion that does not alter the results, as a new case is added. Considering the possibility of replication of a conceptual model based on similarity of cases, we observed that Digital Business Models, as organized by Remané, Schneider, and Halnet (2022), and Project Management development approaches, as suggested by PMI® (2021), has a serious relation between each other in The Digital Platform-based Ecosystems (DPE) context. See **Table 13**.

Table 13. Levels of observations and interactions in The DPE

Interac- tions→	1 st	2 nd	3 rd	4 th
Observa- tions ↓	Economic	Ecosystem	Business	Project
1 st	The Digital Platform-based Economy (Jacobides <i>et al.</i> , 2019; Acs <i>et al.</i> , 2021; Øverby & Audestad, 2021)	Digital Platform-based Ecosystem (Dolgin, 2012; Jacobides <i>et al.</i> , 2018; Sutherland & Jarrahi, 2018; Sachs, 2020; Øverby & Audestad, 2021; Nery, Mazieri, Hsu, Meneghetti, 2021; Teece, Pundziene, Heaton, & Vadi, 2022)	Digital Business Models (Remané, Schneider, & Halnet, 2022)	Project Management (PMI®, 2021; Musonda & Okoro, 2022)
2 nd	Digital Platforms	Digital Platforms	Facilitating Intermediation	Project Management Development Approaches
	Digital Users	Digital Users	Provision of Digitally-enabled Products and Services	
	Digital Entrepreneurs	Digital Entrepreneurs	Provision of Resources and Capabilities for Digital Business	
	Digital Infrastructure	<i>none</i>	(Excepting Hardware / Infrastructure / [Tele]Communications Business)	

Note1. Source: Authors.

Note2. Sections shaded in green are the focus of this research.

Some studies complement the PMI® suggestion on how to select a proper approach (Thesing, Feldmann, & Burchardt, 2021; Musonda & Okoro, 2022) and, even there is a study that observed the gap in define the project management approach to a digital business model – an online university (Ramani, Bradford, Dias, & Olfman, 2022), none of study considered the complex context of implementing a Digital Business Models – by type of – in The Digital Platform-based Ecosystems – DPE, considering its value creation as stood by Kujala, Arto, Aaltonen, and Turkulainen (2010) and Rolstadås *et al.* (2014), reflecting in the Business Model (Martinsuo, Klakegg, & Marrewijk, 2019). Considering this gap in literature, the heating up of the discussion on The DPE (Nery *et al.*, 2021) and the increasing of digital platforms and ecosystems discussion in a global context (Nery, Hsu, & Asgary, 2021), we conduct this study

to understand *How digital business models and project management approaches are related in The Digital Platform-based Ecosystems (DPE)?*.

4.2 RESEARCH PROCEDURES

Answering in depth the relation between “*digital business models*” and “*project management approaches*”, we structured a qualitative study based on systematic literature review approach to synthesize the state of knowledge specifically about these subjects in The Digital Platform-based Ecosystem (DPE) context, as oriented by Creswell and Creswell (2018). Furthermore, addressing to achieve the objective *To provide an up-to-date mapping of the Digital business models and the project management approach development in The Digital Platform-based Ecosystems (DPE)*, we organize the research in three steps as showed in **Table 14**.

Table 14. Research process sequence

Step	Process	Outputs
1 st	Research Scope	PICOC Criteria, Research string (Petticrew & Roberts, 2006)
2 nd	Sample Section	PRISMA 2020 (Page <i>et al.</i> , 2021; Hiebl, 2021)
3 rd	Data Analysis	Classes grouping, Data-case extraction, and Structured relation

Note. Source: Authors.

Facing such criticism, we opted for consider the Population, Intervention, Comparison, Outcome, and Context - PICOC criteria (Petticrew & Roberts, 2006) as protocol to structure research string in the First step of research. We conducted the Second step in a combination of PRISMA 2020 protocol, conform Page *et al.* (2021), and organization of the desired attributes of the sample – structured, comprehensive, and transparent –, as stood by Hiebl (2021), filtering and defining the articles sample of research. Them, in the Third step we analysed articles and its data extracted, mainly considering case studies. All these steps were organized to provide an updated understanding, meaning and structure conclusion about the relation between Digital Business Models and Project Management Approaches in The DPE, as a state-of-the-art review Petticrew & Roberts’ (2006) concept.

4.2.1 Research Scope

To organize research scope and define research string we chose the PICOC criteria, a protocol that considers five structured components: Population, Intervention, Comparison, Outcomes, and Context (Petticrew & Roberts, 2006). The criteria for this research scope were defined as follow.

Population

In this research, the population involve two groups of unit analysis represented as: 1) Digital Business Models; and 2) Project Management Approaches, both organized as follow.

- 1) For Digital Business Models a combined classification of Remané *et al.* (2022) and Acs *et al.* (2021), except the Digital Infrastructure (Hardware/Infrastructure digital business) group:
 - a) Digital Users [demand-side only] (business who provide digitally-enabled products and services)
 - i) Digitally Enabled Products
 - ii) Digitally Enabled Services
 - b) Digital Entrepreneurs (business who provide resources and capabilities for other digital business)
 - i) Data / Data Analytics
 - ii) Software & Services
 - c) Digital Platforms (business who facilitate intermediation in the relationship)
 - i) B2B Platforms
 - ii) B2C Platforms
 - iii) C2B Platforms
 - iv) O2O Platforms
 - v) P2P Platforms
 - vi) Social Interaction Platforms
 - vii) Advanced Multisided Platforms
- 2) For Project Management Development Approaches, the general classification of development approaches proposed by PMI® (2021) and other (Thesing *et al.*, 2021; Musonda & Okoro, 2022):
 - a) Predictive approach – Traditional, Conventional, or Classic – e.g. PMBoK® Guide; PRINCE2
 - b) Hybrid approach – Iterative and Incremental combined – e.g. Rational Unified Process (RUP); OpenUP; Agile Unified Process
 - c) Adaptive approach (agile mindset) – Iterative or Incremental – e.g. Lean and Six Sigma; Scrum; Kanban; XP (Extreme Programming); DSDM (Dynamic Systems Development Method)

For register, the Digital Infrastructure (Hardware/Infrastructure digital business) group was excluded by the scope of research because of The DPE concept (Acs *et al.*, 2021), in which this group of firms is not included in the ecosystem, even participates in The Digital Economy.

Intervention

As initially observed in literature (see **Section 1**), both groups must have related aspects each other. The Digital Business Models were grouped based on its core businesses value offering, creation, delivery, and capture, as proposed by Remané *et al.* (2022) after literature review. These four characteristics drove exactly the intervention of Digital Business Models and its interaction within context of The DPE. Addressing the Project Management Development Approaches group of observation, the intervention was grouped by features and applicability of development approaches, as proposed by PMI® (2021) and organized by Musonda and Okoro (2021) in their study: Design Prospect, Management Style, Task Development, Project Span, Conformity, monitor and Supervising, and Shortcomings.

Both, Digital Business Models and Project Management Approaches observations were organized based on extract data from case studies identified in sample articles.

Comparison

The comparison could be determined based on the impact of Business Value Creation (Kujala et al., 2010; Rolstadås et al., 2014; Martinsuo et al., 2019) on Digital Business Models (Acs et al., 2021; Remané et al., 2022), considering deliverables project success by Project Management Approaches.

Outcomes

We state as outcomes the knowledge of Project Management Development Approaches solutions, besides their use as a possible managerial tool that guides project managers and other professionals proper decide the PM approach for implement new Digital Business Models and improve Digital Business Models.

Context

We analyzed the context of The Digital Platform-based Ecosystem (DPE), regarding content as explained in the subsection intervention, all materialized in the Digital Business Value Creation statement.

Search Scope

Our search query string stand as follow in the box.

(TITLE("Project management" AND ("Approach*" OR "method*" OR "model*" OR "practic*" OR "implement*")) AND TITLE-ABS-KEY("platform*" OR "multisided" OR "multi-sided" OR "two-sided" OR "dpe" OR "msp" OR ("social" AND "platform*") OR "software" OR "product*" OR "service*") AND TITLE-ABS-KEY("case")) AND (LIMIT-TO(DOCTYPE, "ar")) AND (LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "ENGI") OR LIMIT-TO (SUBJAREA, "COMP") OR LIMIT-TO (SUBJAREA, "SOCI") OR LIMIT-TO (SUBJAREA, "DECI") OR LIMIT-TO(SUBJAREA, "ENVI") OR LIMIT-TO (SUBJAREA, "MULT") OR LIMIT-TO(SUBJAREA, "ECON") OR LIMIT-TO (SUBJAREA, "MATH")) AND (LIMIT-TO(PUBYEAR, 2022) OR LIMIT-TO(PUBYEAR, 2021) OR LIMIT-TO(PUBYEAR, 2020) OR LIMIT-TO(PUBYEAR, 2019) OR LIMIT-TO(PUBYEAR, 2018) OR LIMIT-TO(PUBYEAR, 2017) OR LIMIT-TO(PUBYEAR, 2016) OR LIMIT-TO(PUBYEAR, 2015) OR LIMIT-TO(PUBYEAR, 2014) OR LIMIT-TO(PUBYEAR, 2013) OR LIMIT-TO(PUBYEAR, 2011) OR LIMIT-TO(PUBYEAR, 2010) OR LIMIT-TO(PUBYEAR, 2009) OR LIMIT-TO(PUBYEAR, 2008) OR LIMIT-TO(PUBYEAR, 2007) OR LIMIT-TO(PUBYEAR, 2006) OR LIMIT-TO(PUBYEAR, 2005) OR LIMIT-TO(PUBYEAR, 2004) OR LIMIT-TO(PUBYEAR, 2002) OR LIMIT-TO(PUBYEAR, 2000)) AND (LIMIT-TO(SRCTYPE, "j")) AND (LIMIT-TO(LANGUAGE, "English") OR LIMIT-TO(LANGUAGE, "Portuguese"))

As observed in board above, we organized the search scope in two steps: First, organizing keywords from main concepts about the subject studied; Second, testing and defining the combination most fit to problem question. To organize the keywords, we breakdown the main concepts up to its 2nd level (see **Table 1**). Based on this, we start to test the possible results with these keywords running in SCOPUS (Elsevier), well know database in social sciences that consider the Scopus Impact Factor indicator as a metric. Even the context is based on Digital Platform-based Ecosystems (DPE), because of the restriction imputed by the keyword “digital”, we decide to observe and evaluate the context one-by-one record identified.

4.2.2 Sample Selection

We ran the search query string on December 2022. The SCOPUS database returns 82 articles identified in 64 different sources (journals) based on the main fields of Social Sciences – Business, Management and Accounting (32), Engineering (32), Computer Science (20), Social Sciences (12), Decision Sciences (8), Environmental Science (3), and other subjects filter, including other Sciences like Mathematics (3) because of the subject related to study. This database was cited by 1,075 other documents in Scopus Impact Factor indicator.

After, we proceeded our sample selection protocol based on the PRISMA 2020 protocol (Page *et al.*, 2021), as resumed in **Figure 14**.

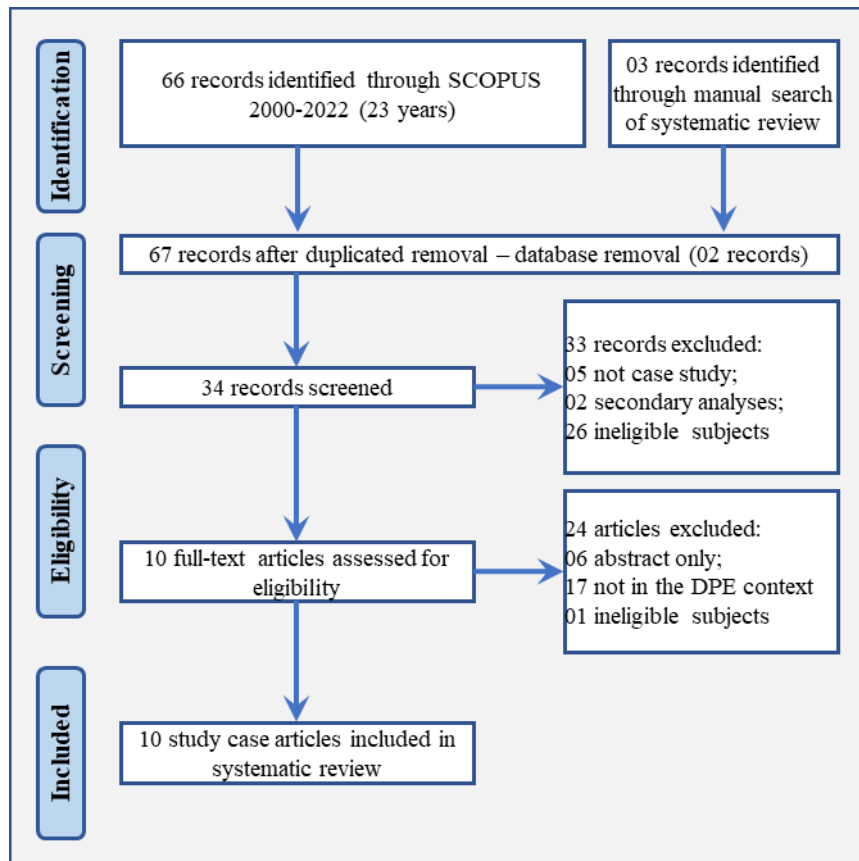


Figure 14. Sample selection based on PRISMA 2020 protocol

Note. Source: Authors based on Page *et al.* (2021).

The authors explain in detail a significant portion of the methodological section, and this is one of the positive aspects of the article: methodological rigour. However, one aspect that requires further elaboration is a paragraph detailing the reasons for excluding articles during the screening and eligibility stages.

After the protocol, we maintained the scope of the literature review with a sample selected of 10 articles, as resumed in **Table 15**. Sample of articles selected.

Table 15. Sample of articles selected

#	Article Title	Authors	Journal	Case Study	Industry
1	Identifying a Gap in the Project Management Approach of the Online Program Management and University Partnership Business Model	<i>Ramani, Bradford, Dias, & Olfman (2022)</i>	Online Learn. J.	Single Case Design	Education
2	Linking complexity factors and project management approaches to performance: an embedded single case study of IT-enabled change projects in Australia	<i>Odusanya, Ochoa, Chileshe, & Ahn (2021)</i>	Int. J. Manag. Proj. Bus.	Single Case Design	Technology
3	The Role and Characteristics of Hybrid Approaches to Project Management in the Development of Technology-Based Products and Services	<i>Copola Azenha, Aparecida Reis, & Leme Fleury (2021)</i>	Proj. Manage. J.	Multiple Case Study	Financial And Technology
4	Design and Development of an e-Learning Project Management System Modelling and Prototyping	<i>Khaldi & Erradi (2020)</i>	Int. J. Emerg. Technol. Learn.	Single Case Study	Education
5	MyPMP: A plug-in for implementing the metamodeling approach for project management in small-sized software enterprises	<i>Garcia, Pacheco, Arcilla-Cobián, & Calvo-Manzano (2016)</i>	Comp. Sci. Info. Sys.	Single Case Study	Technology
6	Dynamic staffing and rescheduling in software project management: A hybrid approach	<i>Ge & Xu (2016)</i>	PLoS ONE	Single Case Study	Technology
7	The perceived impact of the agile development and project management method scrum on information systems and software development productivity	<i>Kautz, Johansen, & Uldahl (2014)</i>	Australas. J. Inf. Syst.	Single Case Study	Technology
8	The affordances of mixed method in software project management research	<i>Ahmedshareef, Petridis, & Hughes (2014)</i>	Int. J. Mult. Res. Approaches	Single Case Study	Technology
9	Integrating service practice into project management: A matter of “do or die”?	<i>Allan Burström, Jacobsson, & Wilson (2013)</i>	Int. J. Manag. Project Bus.	Single Case Study	Media
10	Project management model: Proposal for performance in a physically distributed software development environment	<i>Zanoni & Audy (2004)</i>	EMJ Eng Manage J	Multiple Case Study	e-Commerce

Note. Source: Authors.

4.3 FINDINGS AND DISCUSSIONS

For this research we explore articles with empirical research studies, specifically case studies (single or multiple), that explore the deliverable project success by Project Management Development Approaches, as stood generally by PMI® (2021). As proposed, we want to understand the relational Project Management Development Approach impact on Business Value Creation (Kujala *et al.*, 2010; Rolstadås *et al.*, 2014; Martinsuo *et al.*, 2019) in business embedded in The DPE, as stood by Acs *et al.* (2021) and Remané *et al.* (2022) (see **Table 16**. Project Management Approaches and Digital Business Value Creation).

Table 16. Project Management Approaches and Digital Business Value Creation

Project Management Development Approaches (Rolstadås <i>et al.</i> , 2014; PMI®, 2021)	Novelty in Value Creation in Digital Business (Remané <i>et al.</i> , 2022)	Digital Business Model types (Acs <i>et al.</i> , 2021; Remané <i>et al.</i> , 2022)
Deliverable project success by Project Management Development Approaches (Predictive approach OR Hybrid approach OR Adaptive approach)	Collection of data / data analytics	Digital Users (Provision of digitally-enabled products and services)
	Augmentation / automation	
	Integration / bundling of services	
	Collection of data / data analytics Creation and leverage of connectivity	Digital Entrepreneurs (Provision of resources and capabilities for other digital business)
	Platform intermediation / connecting various (previously often unconnected) parties Increase of platform attractiveness by compensating bottlenecks through proprietary or managed services Increase of platform attractiveness through bundling demand	Digital Platforms (Facilitating Intermediation)
	Collection of data / data analytics Creation and leverage of connectivity	

Note. Source: Authors.

As source to decide which approach develop in business novelty implementation, in general, project managers consult the Business Case to obtain information about business need, project justification, and business strategy (Rolstadås, Tommelein, Schiefloe, & Ballard, 2014; PMI®, 2021). The positive impact of organizational adaptive capabilities on the initial phases of short-term projects, leading to successful outcomes. Furthermore, they discovered that adaptive capabilities also enhance the performance of project portfolios in terms of balance and resource allocation (Biedenbach & Müller, 2012). In same sense, hybrid project management fosters enhanced adaptability to address the requirements of innovation, aligning with distinct organizational and project attributes and contextual factors. The hybrid method integrates agile and traditional approaches in accordance with the project context, managerial policies, organizational culture, systems, and technological advancements (Copola Azenha, Aparecida Reis, & Leme Fleury, 2021).

Table 17. Resume of Case Studies analysis

Project Management Development Approach (Rolstadås et al., 2014; PMI®, 2021)					Digital Business Model types (Acs et al., 2021; Remané et al., 2022)	
Authors	Company (core-business)	Method Adopted	Success or Failure	Delivery	Novelty in Value Creation	Type
Ramani et al. (2022)	R University (Education)	(Adaptive) Design Thinking	Failure (in initial phases)	1. Partnership solutions	Collection of data / data analytics	Digital Users (Provision of digitally-enabled products and services)
Copola Azenha et al. (2021)	Company B (Technology)	Predictive, Hybrid, and Adaptive Diverse techniques	Success	1. Develop new business technologies - Prod & Sv	Augmentation / automation Integration / bundling of services	
Garcia et al. (2016)	None (Technology)	(Predictive) MyPMP (PMI software)	Success	1. Diverse new software solutions	Collection of data / data analytics Creation and leverage of connectivity	Digital Entrepreneurs (Provision of resources and capabilities for other digital business)
Kautz et al. (2014)	None (Technology)	(Adaptive) Scrum	Success	1. Diverse new software solutions		
Khaldi & Erradi (2020)	None	(Predictive) Modeling diagrams	Success	1. e-Learning project management system		
Copola Azenha et al. (2021)	Company C (Technology)	Predictive, Hybrid, and Adaptive Diverse techniques	Success	1. Diverse new software solutions		
Copola Azenha et al. (2021)	Company D (Technology)	Predictive and Hybrid Diverse techniques	Success	1. Diverse new automation solutions		
Copola Azenha et al. (2021)	Company E (Technology)	Hybrid, and Adaptive Diverse techniques	Success	1. Diverse new mobile solutions		

Project Management Development Approach <i>(Rolstadås et al., 2014; PMI®, 2021)</i>					Digital Business Model types <i>(Acs et al., 2021; Remané et al., 2022)</i>	
Authors	Company (core-business)	Method Adopted	Success or Failure	Delivery	Novelty in Value Creation	Type
<i>Ge & Xu (2016)</i>	Boyuan Software (Technology)	(Predictive) Genetic Algorithm (GA) Hill Climbing (HC)	Success	1. Mobile phone sales management on JAVA	Collection of data / data analytics	Digital Entrepreneurs (Provision of resources and capabilities for other digital business)
<i>Ahmedshareef et al. (2014)</i>	Company ABC (Technology)	(Hybrid) None specified	Success	1. Diverse new software solutions	Creation and leverage of connectivity	
<i>Odusanya et al. (2021)</i>	Ericsson (Telecom.)	(Predictive) Iron triangle	Success	1. Customer Service 2. Global HR system 3. Knowledge Mngt system	Platform intermediation / connecting various (previously often unconnected) parties	Digital Platforms (Facilitating Intermediation)
<i>Allan Burström et al. (2013)</i>	None (Media)	(Predictive) SERVQUAL Quality	Success	1. Diverse media service provider	Increase of platform attractiveness by compensating bottlenecks through proprietary or managed services	
<i>Copola Azenha et al. (2021)</i>	Company A (Finance)	Predictive, Hybrid, and Adaptive Diverse techniques	Success	1. Diverse new banking services	Increase of platform attractiveness through bundling demand	
<i>Zanoni & Audy (2004)</i>	Dell Computers (e-Commerce)	(Predictive) Spiral lifecycle type Object-oriented systems PMBok® Process	Success	1. Call Center 2. E-Mail Blitz (mailing)	Collection of data / data analytics Creation and leverage of connectivity	

Note. Source: Authors.

4.4 FINAL CONSIDERATIONS

A sample of 10 empirical research studies, specifically case studies (single or multiple), drove an initial approach about delivering project success by Project Management Development Approaches (PMI®, 2021). As proposed, could increase the understand of relational Project Management Development Approach impact on Business Value Creation (Kujala *et al.*, 2010; Rolstadås *et al.*, 2014; Martinsuo *et al.*, 2019) in Digital Business embedded in The DPE, as stood by Acs *et al.* (2021) and Remané *et al.* (2022).

To maintain the connection with The Digital Economy as a context, we organize the finds into The Digital Platform-based Ecosystem structure, as proposed by Acs *et al.* (2021) (See **Table 13**, **Table 16**, and **Table 17**). These finds represent 14 case studies extracted and characterized considering the explanation from researchers perspective. Even with fell number of cases, it was possible organized them in all three types of Digital Business Models classification, according to Acs *et al.* (2021) and Remané *et al.* (2022): Digital Users (only Supply-sided); Digital Entrepreneurs; and Digital Platforms.

Others main observation was the relation of Project Management Approaches with the type of Digital Business Models, and it could be explained by the relationship between a comprehensive set of project management elements and project success (Joslin & Müller, 2015). In the cases studies of projects developed by companies as Digital Users (Supply-sided), the cases showed a possible inclination to adaptive approaches adoption. In cases studies of projects developed by companies as Digital Entrepreneurs, it become less clear and conducted us to evaluate as a uncertainty condition. By other hand, the cases studies that developed projects in companies as Digital Platforms, showed an inclination most possible focused in adopt predictive approaches, maybe related to complexity of Digital Business Models evolved in this group of business (Thesing *et al.*, 2021).

With this discussion, we could represent a possible relation between Project Management and Digital Business. This relation approximate when we observe the type of Project Management Approach chose for deliver a specific product or service that increase Digital Business Value Creation on Digital Business Model. **Figure 15** resumes that idea.

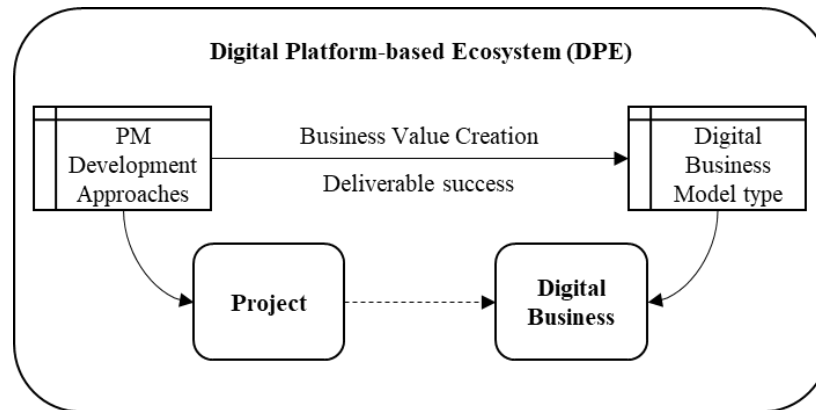


Figure 15. PM Approaches and Digital Business Value Creation relationship

Note. Source: Authors.

As resumed, complemented by evidence structured in this study, we could formulate three questions leading future research problems:

RQ1 – How Project Management Development Approaches must be chosen for implementing Digital Business Models into The Digital Platform-based Ecosystems (DPE)?

RQ2 – How Business Case tool can turn Projects more successful in implement Digital Business Models (or Digital Platform-based Business Models) in The Digital Platform-based Ecosystem?

RQ3 – How is project-level value converted to value at the level of the Digital Platform Business Model, as sparked by Martinsuo, Klakegg, and Marrewijk (2019)?

As contributions for academy, we up-to-date the understanding relation between Project Management and Digital Business, mainly considering the relation connecting by Project Management Development Approaches (and its deliverable) and the Digital Business Models value creation, as a possible framework model (**Figure 15**). For practitioners, we offer a relational model to consider when endeavor a new Digital Business Model in The Digital Platform-based Ecosystem.

Finalizing, we highlight some aspects of this research as limitations. Even with case studies found in SCOPUS database literature, we can point out that there may be more case studies in the accessible literature and to expand the results presented, other researchers can run an improved “query string” in more than one literature database. Increasing the range of empirical articles based on the case study method will substantially contribute to possible risks of bias embedded in study cases and in the review.

As lessons learned, we share not necessarily open more than 15 years of timeline in the search of articles, just because this subject is newly in Business Management area, even most discussed in Economics. We observed that, after years 2010’s the academic discussion

about Platforms and Ecosystems has began increasing in order to understand the phenomena of The Digital Era: the effect and relation of Digital Business Models in The Digital Economy.

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5 STUDY 3: THE ROLE OF PROJECT MANAGEMENT APPROACH DECISION IN DIGITAL PLATFORM BUSINESS MODELS

Relation between attributes

Context: The pervasive connectivity in the twenty-first century has propelled the world into the Digital Age, a new era of globalization. This age, driven by the digital revolution, is compelling companies to venture into the Digital Economy, predominantly shaped by platform organizations. These organizations facilitate transactions worth billions of dollars within the Digital Platform-based Ecosystem (DPE), comprising most types of Digital Business Models. Given the complexity of this environment, Project Management could serve as a crucial managerial tool with focus on increasing novelty in value in these types of digital businesses, which raise the question: *How attributes related to novelty value in digital platform business models can guide project managers in deciding which is most proper development approach?* **Objective:** *To verify attributes related to novelty value in digital platform business models that guides project managers in deciding which is most proper development approach.* **Research procedures:** We conducted an empirical qualitative approach entailing a descriptive and interpretive case study of a big e-commerce and fintech company classified conceptually as a DPE. In the case, we conducted interviews to verify the understanding of PMOs and project managers about the elements that can lead novelty in value creation in Digital Platform Business. **Main results:** Raised the attributes relation between PM Approach and Novelty in value in DPE. Contributed to advancements of understanding these attributes and most, the importance of project managers maintain focus on increasing novelty in value in DPE. A Framework was proposed based on the evidence raised in the empirical and theoretical concepts. **Originality/Relevance:** This study holds a significance insight into how decision-making about which approach use in the beginning of project's life cycle can influence the novelty in value creation in Digital Platforms Business. The framework highlighted can enhance their ability to navigate complex digital landscapes, optimize project outcomes, and effectively harness the transformative potential of digital platforms. **Contributions:** Advancements in the Project manager's development approach decision and in the understanding of Project Management value creation. For practitioners, offer a relational Framework to consider when endeavor a new project in DPD context.

Keywords: Project Management; Project Management Approach; Digital Platform Business Models; The Digital Platform-based Ecosystems (DPE); Novelty in Value.

5.1 INTRODUCTION

According to Sachs (2020), nowadays the ubiquitous connectivity rising the world to a new age of globalization in twenty-first century – The Digital Age. Marked by the digital revolution, this new age we live is pushing companies to enter in The Digital Economy, mainly formed by platform organizations that transact billions of dollars around its own structures. This phenomenon is accelerating the formation of The Digital Platform-based Economy – the economy around business hosted and organized as platforms ecosystem with own governance. (Acs, Song, Szerb, Audretsch, & Komlósi, 2021). We can consider The Digital Platform-based Ecosystems (DPE) as an evolutionary concept that comes from other concepts and is being shaped by the time because of the technological rising (Nery, Mazieri, Hsu, & Meneghatti, 2021).

According to Acs et al. (2021), These ecosystems “are developed and nurtured not by regions or governments but by platform organizations. Ecosystem governance, the rules by who gets on a platform, and the rules of good behavior are determined by the owners of the platform firms”. It is made up of for types of firms, clustered in two categories of entities: the abiotic entities, considering only firms type Digital Users (demand-side and supply-side) that explore supply and demand sides of the environment; the abiotic entities, considering firms type Digital Entrepreneurs that increase innovation in processes and products to the Digital Platforms firms type, which is the digital multisided place where both value creation and value capture occur, and, in this context; and, yet abiotic entity, but out of The DPE context, firms type Digital infrastructure that supports The Digital Economy with telecommunications services and communications equipment and provide resources and capabilities for digital businesses into

MSP serves as a digital ecosystem that facilitates collaboration and control through software, hardware, and services, without assuming ownership of the services involved. By enabling diverse inter-organizational interactions, MSP governs exchanges and creates new boundaries within which customers can engage in matchmaking, complementarity, and resource sharing to foster innovation and generate value. This dynamic fosters strong network effects, as the relative value of platforms increases with the growing number of users and suppliers joining their ecosystem. (Teece, Pundziene, Heaton, & Vadi, 2022).

Once characterized as complex, DPE (or MSP) are made up of various types of stakeholders, which generate numerous interactions with each other. This makes the analysis and implementation of Digital Business Models more complex than usual when occur in The

Digital Platform-based Ecosystem (DPE) context (Øverby & Audestad, 2021). As exemplified by projects such as Airbnb's Olympics and World Cup project, BlaBlaCar global transit network project, Uber and Lyft taxi services projects, UK-based JustPark individual personal parking spaces project, and others (Jacobides et al., 2019), project management could be a managerial approach to increase novelty in value in Business (Shenhar & Dvir, 2007), even in the modern context of technology (Marnewick, & Marnewick, 2022; Yordanova, 2023), or to improve its business value creation, once already inserted in The Digital Platform-based Ecosystem (DPE).

Innovation alone does not guarantee commercial success; it should be complemented by a well-designed business model that addresses value capture and go-to-market strategies, as showed by Teece in The Profiting from Innovation (PFI) framework in selecting suitable business models based on the type of innovation and capturing value through licensing, vertical integration, or hybrid approaches (Teece, 1986, as cited in Teece *et al.*, 2022). Factors such as the emergence of a dominant design and the appropriability regime shape business model design. Additionally, research on strategy and platforms emphasizes the significance of owning and controlling complementary assets in the successful commercialization of new technologies. This encompasses not only the necessary supply chain inputs but also other products, technologies, and services that contribute to value creation. Empirical evidence from the typesetter industry supports the role of complementary assets in determining success (Teece *et al.*, 2022).

Business ecosystems encompass the collaborative endeavors of diverse organizations converging towards the construction of a value proposition that aligns with customer preferences. The prevalence of digital ecosystems is pervasive, evident in various domains. This transformative phenomenon manifests from disparate industries, synergistically striving to establish interconnections, fostering increased autonomy, and delivering augmented benefits to the customer base (Boston Consulting Group – BCG, 2021). As Teece (2010) said “*The essence of a business model is in defining the manner by which the enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profit*” and “*In essence, a business model [is] a conceptual, rather than financial, model of a business*”. And increasing value in business is one of the main challenges that must be overcome in project management discipline (Martinsuo, 2023).

Most recently, Locatelli, Ika, Drouin, Müller, Huemann, Söderlund, Geraldi, and Clegg (2023) wrote a manifesto affirming that project management research has undergone substantial development, attaining a level of maturity as an established disciplinary domain.

They practically convoked scholars to join efforts providing a foundation looking at creative, theoretical, and empirical contributions. In one of the five contributions, they marked that “*Projects are often ‘agents of change’ and hence fundamental to driving the innovation and change required to tackle grand challenges*”, leading to the same way of Teece *et al.* (2022).

5.2 THEORETICAL BACKGROUND

5.2.1 Digital Platform Business Models novelty in value

Analysing the world’s top-1.000 venture funded technology startups Remané, Schneider and Hanelt (2022) identified a total of 49 novel digital model types. They subsequently consolidated these digital business models into twelve distinct groups within three overarching categories. These categories encompass firms engaged in (1) the creation and sale of digital products and services to consumers, (2) the provision of digital resources and capabilities required by other businesses for their operations, and (3) facilitating intermediation processes. They basically complemented the connection between digital entities in The DPE, as stood by Acs *et al.* (2021). Based on this perception, we reorganize the breakdown structure of The Digital Platform-based Ecosystem (DPE) as following:

- a) Digital Users [demand-side] (business who provide digitally-enabled products and services)
 - i) Digitally Enabled Products
 - ii) Digitally Enabled Services
- b) Digital Entrepreneurs (business who provide resources and capabilities for other digital business)
 - i) Data / Data Analytics
 - ii) Software & Services
- c) Digital Platforms (business who facilitate intermediation in the relationship)
 - i) B2B Platforms
 - ii) B2C Platforms
 - iii) C2B Platforms
 - iv) O2O Platforms
 - v) P2P Platforms
 - vi) Social Interaction Platforms
 - vii) Advanced Multisided Platforms

- d) Digital Infrastructure (business who create communications equipment and maintain the telecommunications service functioning) – **not considered in DPE**
- i) Hardware / Infrastructure (provide resources and capabilities – e.g. IaaS, PaaS)

Remané *te al.* (2022) brought some observations about novelty in value offering, creation, delivery, and capture for each group of these Digital Platform Business Models. In sum, they organized the logic in a unique matrix, follow represented in **Figure 16**:

	Novelty in value <u>offering</u>	Novelty in value <u>creation</u>	Novelty in value <u>delivery</u>	Novelty in value <u>capture</u>
Provision of Digitally-enabled Products & Services	Improved access, affordability, availability, convenience and customization	Collection of data/ data analytics Augmentation/ automation Integration/ bundling of services	Use of digital channels After-sales connectivity On-demand pull delivery Increase in digital deliverables	Continuous subscriptions, after sales fees Customization of pricing
Provision of Resources & Capabilities for Digital Business	Provision of high-performance IT infrastructure and services for connectivity and collaboration Provision of data, data collections and data-based information Augmentation/ influence/ replacement of human labour	Collection of data/ data analytics Creation and leverage of connectivity Sharing of infrastructure	Use of digital channels	Commercialization of data and information Use-based pricing
Facilitating Intermediation	Provision of good and information sharing opportunities Provision of lending and investment opportunities Provision of purchase and sales opportunities Provision of job and service opportunities Provision of access to novel databases/ information transparency Provision of social media opportunities	Platform intermediation/ connecting various (previously often unconnected) parties Increase of platform attractiveness by compensating bottlenecks through proprietary or managed services Increase of platform attractiveness through bundling demand Collection of data/ data analytics Creation and leverage of connectivity	Use of digital channels	Commercialization of data and information Data-enabled advertisement Fees for digital intermediation services

Figure 16. Overview of novelty in value for Digital Platform Business Models

Note1. Source: Remané *et al.* (2022).

Explain about how Digital Ecosystems create value, Michael G. Jacobides highlights two main ideas: 1) Companies in today's competitive market prioritize meeting customer needs also strive to attract complementors, who play a crucial role in their success. 2) Market leaders like Samsung, Apple, and Huawei engage in intense competition to ensure the intelligence of their phones, deciding at which stage of the value-adding process to incorporate intelligence (Boston Consulting Group – BCG, 2021). This is possible to check in Cennamo and Santaló's Generativity Tension and Value Creation in Platform Ecosystems paper.

5.2.2 Project-level Value Conversion

Projects deliver unique products, services, or results, aligned with organizational strategies, leading to future change. Their temporary nature ends when objectives are met, or resources are unavailable. Executed projects create tangible or intangible business value, perceived by stakeholders in terms of financial assets, equity, goodwill, public benefit, brand recognition, strategic alignment, and reputation (PMI®, 2021).

In the realm of business analysis, business value is regarded as the return obtained in exchange for various elements, including time, money, goods, or intangibles. Business value is the measurable net benefit obtained from a business endeavor, encompassing both tangible and intangible outcomes. In the context of projects, business values pertain to the advantages delivered to stakeholders through specific project outcomes, which can be tangible, intangible, or a combination of both (PMI®, 2021).

Laursen & Svejvig (2016) heat up the discussion about project value conversion with four directions for future research. In one of these they evoked research to look at **supplementing value creation with value capture**, a huge trend. At this point, Artto, Ahola, & Vartiainen (2016) were focusing discussion on the whole project life cycle value creation.

Even all these discussions were occurring, Green & Sergeeva (2018), criticizing the emerging literature on value creation up to 2017, emphasize the critical requirement for research that specifically examines identity work within project contexts and explores the transformations occurring in the self-identities of project managers. Moment at Martinsuo *et al.* (2017) raised some opportunities to research and discuss about delivery value in projects, including the big question about “*How is project-level value converted to value at the level of the project portfolio and, consequently, at the level of the entire business?*”.

Martinsuo (2023) explain that project value creation can be summarized in three modes: sensemaking and negotiation, shaping and co-creation, and monitoring and control. See **Figure 17**.

	Sensemaking and negotiation	Shaping and co-creation	Monitoring and control
Processes of value creation	Cognitive and social	Operational and behavioral	Evaluation and decision making
Nature of value creation	Dominantly immaterial	Dominantly material	Both material and immaterial
Key phase in the project lifecycle	Front end (extending to full lifecycle)	Project implementation (extending to full lifecycle)	Project control, closure and commissioning (extending to full lifecycle)
Purpose in a project network	Understanding stakeholders' priorities and adjusting them to achieve shared value goals	Designing a feasible project concept and using/modifying resources and materials to achieve the shared goal	Resolving problems and achieving maximized project value and continued value creation at the post-project operations phase
Challenges in a project network	Owner may dominate; all stakeholders' voices are not necessarily heard; peripheral stakeholders are often neglected	Contractor may dominate, but in line with owner's rules; stakeholders may have competing priorities or fail to voice their values	Owner may dominate; stakeholders' interests are not necessarily monitored or controlled as part of official project governance
Practices of value creation in a project network	Dreaming, thinking, visioning; speaking, listening, discussing	Investing and using resources (people, knowledge, time); using, consuming and molding material	Assessing benefit realization; communicating; detecting and managing risks, deviances; and errors Problem solving
Examples of previous studies	Kolltveit and Grønhaug (2004); Martinsuo et al. (2019b); Matinheikki et al. (2016); Williams and Samset (2010); Zerjav et al. (2021)	Artto et al. (2016); Fuentes et al. (2019); Laursen (2018); Lehtinen et al. (2019)	Aaltonen and Kujala (2010); Ahola et al. (2008); Fuentes et al. (2019); Kivilä et al. (2017); Volden (2019); Vuorinen and Martinsuo (2019)

Figure 17. Three modes of value creation in the project networks

Note1. Source: Martinsuo (2023).

5.2.3 Project Life Cycle and Project Management Approaches

Project life cycles can be developed in three options: predictive, adaptive, or hybrid. Each life cycle encompasses one or more phases related to the product/service/result development. These are known as development life cycles, with choices include predictive, adaptive (iterative or incremental), or hybrid models. Throughout the project's life cycle, a development approach propels the progress and advancement of the product, service, or result for a business, and the development approach option may be varied between life cycles in the same project or phase. These approaches form a continuum, ranging from the predictive approach to the adaptive approach variation (PMI®, 2021) (see **Figure 18**).

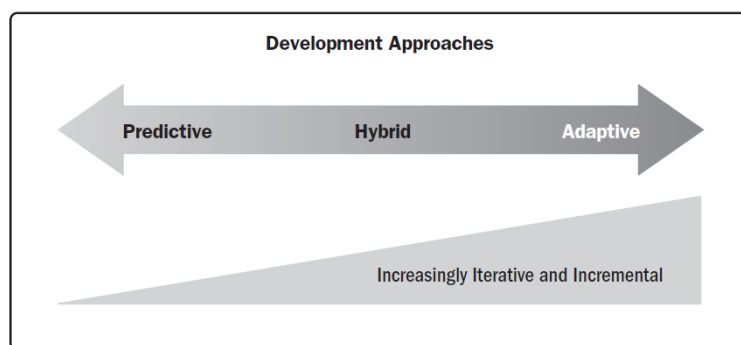


Figure 18. Project Management Development Approaches

Note1. Source: PMI® (2021).

Currently, the most know Project Management development approaches could be grouped in three classifications (PMI®, 2021; Thesing, Feldmann, & Burchardt, 2021; Musonda & Okoro, 2022):

- a) Predictive approach – Traditional, Conventional, or Classic – e.g. PMBoK® Guide; PRINCE2
- b) Hybrid approach – Iterative and Incremental combined – e.g. Rational Unified Process (RUP); OpenUP; Agile Unified Process
- c) Adaptive approach (agile mindset) – Iterative or Incremental – e.g. Lean and Six Sigma; Scrum; Kanban; XP (Extreme Programming); DSDM (Dynamic Systems Development Method)

The selection of a development approach is influenced by multiple factors, which can be categorized into three main areas: the product, service, or result; the project itself; and the organization involved (PMI®, 2021). Based on a literature collection of various sources, Musonda & Okoro (2022) summarized the attributes (features and applicability of project management approaches) of the Traditional (Predictive), Agile (Adaptive), and Hybrid approaches: Design Prospects; Management Styles; Task Development; Project Span; Conformity; Monitor and Supervising; and Shortcomings. These attributes generally guide some organizations within decision of which approach adopt.

As already argued by Shenhar & Dvir (2007) in its Strategic Project Leadership® (SPL®) model, the adaptive project management dimensions, based on contingency theory, establish a sustainable connection between projects and organizational strategy, emphasizing effective and efficient management. Unlike traditional models focused solely on efficiency, this model recognizes project success as a strategic and multidimensional concept, going beyond the conventional iron triangle logic presented by PMI® (2021).

To carry out project management, the appropriate application of management processes identified exclusively for each project is assumed as an adaptive form of need (Shenhar & Dvir, 2007; PMI®, 2021). Once organizations assume that all projects are identical and therefore apply the same knowledge, skills, tools, and techniques equally, projects can naturally be led to inevitable failure. Based on the assumptions from the contingency theory, The Diamond approach (NTCP model) was designed for projects (see **Figure 19**) (Shenhar & Dvir, 2007).

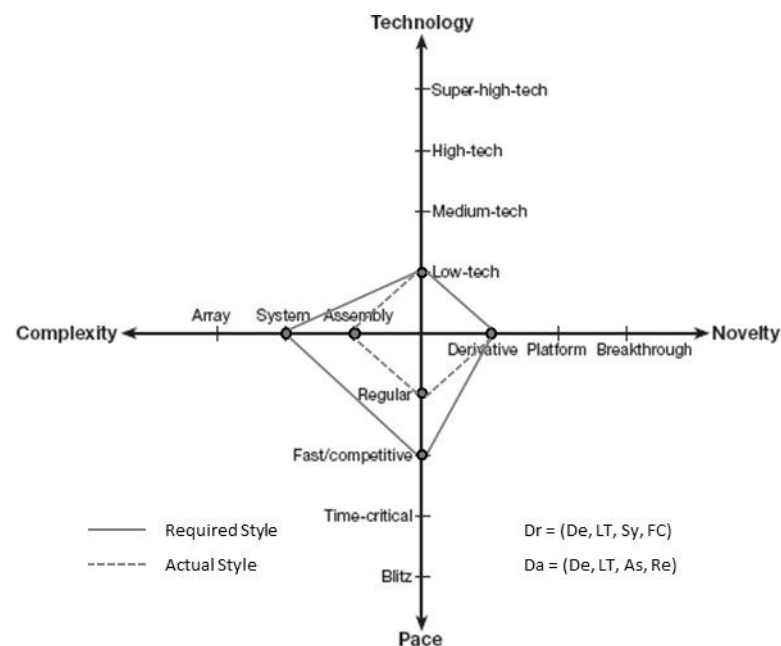


Figure 19. The Diamond approach (NTCP model), an example

Note1. Source: Shenhar & Dvir (2007).

Collyer & Warren (2009) have already explained that approaches for dynamic projects “*is a non-binary dimension*” (decision), in real, it is an applied situation covered by varying degrees to all projects because “*all projects have some degree of dynamism*”. And that idea added to the Shenhar and Dvir (2007) contingency approach on project management was grouped in a white paper by Ehrman and Holzmann (2012). They extended the logic of the Diamond Approach model to develop and implement best practices in a high-tech project-based company. They coined the term *Diamonds are forever* (Ehrman, & Holzmann, 2012).

Mainly, project managers may utilize the diamond framework to foster business innovation by mapping proposals on a matrix based on benefit opportunity and risk difficulty, enabling them to approve high opportunity, low-risk projects and discard low opportunity, high-risk ones (Shenhar & Dvir, 2007). Hence, an examination of the congruity between the notion of novelty in value as presented by Remané *et al.* in the context of Digital Platform Business

Models and the corresponding concept of novelty in project management proposed by Shenhar & Dvir (2007) reveals a noteworthy alignment of ideas at same business level, as elucidated in **Table 18**.

Table 18. Corresponding concept of novelty to the research

Concept	Origin of the concept	Meaning	Type of Construct	Classifications
Novelty in Value (Remané <i>et al.</i> , 2022)	Some studies: (e.g., Planing, 2017; Broekhuizen <i>et al.</i> , 2021; Sebastian <i>et al.</i> , 2021)	Novel aspects of digital technologies provided	Parts of a classification	• Value Offering • Value Creation • Value Delivery • Value Capture
Novelty Shenhar & Dvir (2007)	Not identified	The Novelty dimension represents the uncertainty of the scope of the project's objectives or the time to market its results and reflects the appropriate time for the fulfillment of product, service, or outcome requirements	Measurement Scale	• Derivative • Platform • Breakthrough

Note. Source: Authors based on Shenhar & Dvir (2007) and Remané *et al.* (2022).

5.2.4 Initial conception of the framework

Choosing a Project Management Development Approach is a complex decision influenced by governance context, particularly in The DPE context. It is vital for project success (Joslin & Müller, 2015). Despite ongoing debate, we can link Project Management and Digital Business, as seen in the chosen approach to enhance Digital Business Value Creation in the Digital Business Model. **Figure 20** resumes that complex idea.

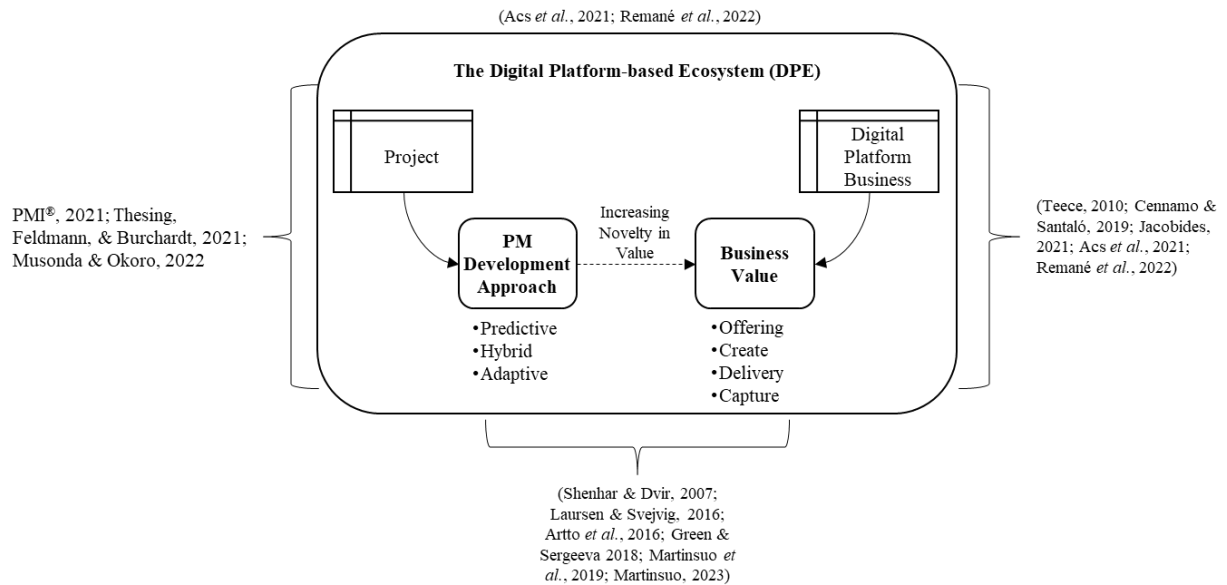


Figure 20: PM Approaches and Digital Platform Business novelty value creation
Note1. Source: Authors.

As exemplified by Ayat, Qureshi, and Kang (2021) the Diamond Approach NTCP model can be extended for improve some conditions and mainly be adapted to a context. Observing this case, we delimitate the problem of a tool that guides project managers in deciding which is most proper development approach into a class of problems. We simply organized the class of problem considering the tools initially found. Starting from Project Management Development Approaches models already known to find some of other proposed artifacts (see **Table 19**), as a necessary step to rise similar possibilities of solutions and guide the researchers to elaborate our own framework proposal (Dresch *et al.*, 2015).

Table 19. Class of problems identified

Class of Problem	Mostly Focused on	Artefacts Identified
PM Development Approach decision (PMI®, 2021)	Adaptive approach	Diamond approach (Shenhar & Dvir, 2007) Project Type Profiling – PtP (Ehrman & Holzmann, 2012)
	Hybrid approach	None
	Predictive approach	The Spiral Lifecycle (Boehm, 1988)
		Overall modeling process (Thesing <i>et al.</i> , 2021)

Note. Source: Authors.

Basically, the heating up of the discussions on The Digital Platform-based Ecosystems – DPE (Nery & Mazieri, 2021; Nery, Hsu, Asgary, 2021), on value in novelty in The DPE (Acs *et al.*, 2021; Remané *et al.*, 2022), and on project management value conversion (Martinsuo *et al.*, 2019; Martinsuo, 2023), conducted this study to answer the question: *How attributes related*

to novelty value in digital platform business models can guide project managers in deciding which is most proper development approach?

5.3 RESEARCH PROCEDURES

To answer this main question, and considering the references already cited in this article, we design three propositions completing the objective *To verify attributes related to novelty value in digital platform business models that guides project managers in deciding which is most proper development approach.*

P1 – *Project manager's development approach decision are related to attributes of the three modes of Project Management value creation and to attributes of the novelty in value in Digital Platform Business Models;*

Observing the approaches in Project Management related to the Digital Business Models implementation, by type (Remané *et al.*, 2022), the context of DPE requires a focus on design an artifact that respond research in the academic and practitioners environment.

To better see the phenomenon, we decide to organize the research around Eisenhardt and Yin's lens for a positivist view. At this point, Eisenhardt and Yin differ in these three significant ways: Firstly, Eisenhardt favors 'theory-building' case studies that derive theory from data. Secondly, her approach aligns closely with grounded theory, emphasizing inductive theory-building cases. Lastly, a notable distinction lies in the significance assigned to the single case. Even though they diverge from each other, it is known that they are shaping the management case study traditions (Piekkari & Welch, 2018). Because of this complement research theory, we choose Case Study as a method to explore the singularity of a real situation, based on Yin (2014), and we considered the possibility of extrapolating the research results to other contexts, as a theory-building Eisenhardt (1989) concept.

Eisenhardt's model of knowledge production is grounded in traditional notions of induction/theory-building and deduction/theory-testing, as well as a strict demarcation between theory and observation. However, the emergence of abduction as a prominent concept has called into question these dichotomies, as existing theoretical frameworks and preconceptions seem insufficient in providing a satisfactory explanation. Abduction, characterized by the process of offering theoretical explanations for empirical puzzles, holds the potential to generate new theories and concepts. Therefore, the abductive approach values the flexibility of

research design and considers shifts in the focus of case studies as valuable sources of theoretical insights and opportunities for learning, even in contrast to Yin, who views the research design as a rigid blueprint with costly consequences for any deviations (Piekkari & Welch, 2018).

Based on these concepts, we developed this work under the auspices of the abductive approach focused on answer a Design Science Research (DSR) construction and relied on techniques of data collection, data recording, analysis, and interpretation, adopting a positivist perspective and a methodological framework indicated by Dresch, Lacerda and Antunes (2015). The research method adopted was the unique case study with a good market share impact, following the logic proposed by Yin (2014), given that it deals with a contemporary phenomenon with limited possibilities of environmental control, as explained in the research design.

5.3.1 Case Selection

To conduct the research, we considered the Remané *et al.* (2022) classification. We organized the most known companies nucleated by a digital platform and have been characterized as a Digital Platform-based Ecosystem (DPE) in its level of organization, as stood by Acs *et al.* (2021). Based on these assumptions, we filtered possible companies included in The DPE context, considering its characterization in the e-commerce sector, to select one of them as the Case Study (see **Table 20**).

Table 20. Largest e-commerce companies by market cap

Rank	Name	DPE char.	Market Cap (US\$)	Price (US\$)	Country
1	 Amazon AMZN	Yes	\$1.326 T	\$129.33	USA
2	 Alibaba BABA	Yes	\$223.75 B	\$84.92	China
3	 Meituan 3690.HK	Not Yet	\$99.42 B	\$15.93	China
4	 Pinduoduo PDD	Yes	\$94.37 B	\$69.80	China
5	 Shopify SHOP	Yes	\$81.58 B	\$63.79	Canada
6	 MercadoLibre MELI	Yes	\$61.57 B	\$1,226	Argentina
7	 Jingdong Mall JD	Not Yet	\$57.44 B	\$34.87	China
8	 Copart CPRT	Not Yet	\$42.58 B	\$89.19	USA
9	 Sea (Garena) SE	Yes	\$34.47 B	\$58.91	Singapore
10	 Coupang CPNG	Yes	\$30.37 B	\$16.60	S. Korea

Note1. Source: Authors extracted from CompaniesMarketCap (2023, June 16).

Note2. This is the list of the largest e-commerce companies by market capitalization. Only the top e-commerce companies are shown in this list and e-commerce companies that are not publicly traded are excluded. The ranking and the market cap data shown on this page are updated daily.

Once all these ten e-commerce companies were filtered by Market cap and classified as a Digital Platform-based Ecosystem (DPE), we applied the third criteria, accessibility to project managers. We choose one of these companies as a Case Study to verify attributes related to novelty value in digital platform business models that guides project managers in deciding which is most proper PM development approach, considering accessibility to project managers professionals.

Case Explanation

The company is an Argentine company headquartered in Montevideo, Uruguay, incorporated in the United States that operates online marketplaces dedicated to e-commerce and online auctions. As of 2016, the company had 174.2 million users in Latin America, making it the region's most popular e-commerce site by number of visitors. The company has operations in Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El

Salvador, Guatemala, Honduras, Mexico, Panama, Paraguay, Peru, Spain, Uruguay, and Venezuela.

Standing as one of the largest marketplaces in Latin America, catering to millions of customers with its extensive range of products and services. One of the key factors driving the company's success lies in its remarkable adaptability. The company has displayed exceptional prowess in adjusting to market dynamics, such as the surging popularity of e-commerce, and has been quick to offer innovative products and services that meet evolving customer demands. Moreover, the company has efficiently expanded its market presence by means of acquisitions and strategic partnerships with local enterprises. It comes as no surprise that it has emerged as one of the foremost global marketplaces, given these outstanding attributes.

To put it in perspective, the company processed over \$100 billion in payment transactions in 2022, delivering more than 1 billion packages through its own logistics network, and its operating income surpassed the \$1 billion milestone for the first time. With a remarkable year-on-year increase of 8.8 million active users, the total user count in the ecosystem exceeded 148 million by the end of 2022. Furthermore, the net revenue reached \$10.5 billion, representing a staggering 49% growth in US dollars compared to the previous year. The substantial investments made in technology, novel product offerings, and cutting-edge innovation have resulted in substantial, sustainable, and profitable growth across the entire ecosystem. Its Digital Platform-based Ecosystem (DPE) is composed of two major business units: the first is an e-commerce core, and the second one is a fintech core. Within these two vast realms, there are several companies focused on enhancing the user experience.

Representativeness of the Case

Unlike considering each of the cases equivalent to a respondent in a survey or even an individual in a social experiment, a more rigid point of view should be adopted in view of the deepening of the occurrence of the phenomenon. In each study, the researcher must realize how many cases should be adopted to better represent the possibility of replicability (Yin, 2014). Taking this concept as a basis, the objectively adopted selection criteria contributed to the scope of the sample cut studied, including the fact that all 10 e-commerce companies run digital projects.

Therefore, we understood that the one-case-study selected correspond to a representativeness of 10% of the post-cut sample group with the expressiveness market cap criterion met, that is 3.00% of the global e-commerce market share and 14% of the LATAM e-

commerce market share (Yahoo Finance, 2023, May 4). With the criteria being minimally met for the studied phenomenon, as stood by Eisenhardt (1989).

Interviewees Profile

Seeking the triangulation of the collected data, as indicated by Yin (2014), three semi-structured interviews were conducted been two of them with Project Management Officers (PMO), representing the e-commerce major business unit's side (e-commerce core), and one of them with a Project Supervisor, representing the fintech major business unit's side. The definition of these interviewees was supported by the exercise of the attributions and responsibilities that each one has and based on review of their LinkedIn profile and based on the classification of level of project leadership function (Olugboyega *et al.*, 2023). A briefing profile is following presented:

- Fintech major business unit's side
 - 1st Interviewee
 - Date: 20/06/2023
 - Position: Operation & Project Supervisor (Lower-level project leadership)
 - Level of degree: Bachelor's degree in Business Administration
- e-commerce major business unit's side
 - 2nd Interviewee
 - Date: 16/06/2023
 - Position: PMO and Innovation Manager (Middle-level project leadership)
 - Level of degree: Postgraduate certificate's degree in Supply Chain Mngt
 - 3rd Interviewee
 - Date: 22/06/2023
 - Position: PMO and Innovation Manager (Middle-level project leadership)
 - Level of degree: Masters' degree in Supply Chain Mngt

5.3.2 Data Collection

We develop the Data Collection phase in two pragmatic ways. Firstly, based on documents with Documents with Project Management Approach Proposals as secondary data set; and semi-structured interviews as primary data set. Both enriched the content analysis and permitted a triangulation data analysis.

Documents with Project Management Approach Proposals

Understanding the knowledge already available in literature, we considered start from the articles raised in the class of problem identification and we decided to add the two most known body of knowledge in project management disciplines: The Project Management Body of Knowledge – PMBoK® and PProjects IN Controlled Environments – PRINCE2. We analyse these five documents to triangulate text extracts with interviews.

Semi structured interview

In general, semi-structured interviews are techniques applied due to the need to elicit information from people about how the theme is related to the attributes identified in the literature, and, for this purpose, they can contain four types of questions addressed to the interviewees. The essential questions – are the central focus of the study; the extra questions – work like the essential ones, but are used in cases where validation of the veracity of the collection is necessary; wasted questions – serve as an instrument for introducing and harmonizing the interview, and may allude to demographic aspects or to introduce the theme; and probing questions – not programmed, expand the story told by the interviewee and provide more arguments for the interviewer to understand the theme (Berger, 2004).

Starting from the assumptions taken in the literature and complementary documents, the semi-structured interview protocol was applied as a guide for conducting the interviews. The interview protocol was equally directed to the interviewees and the questions sought to elicit information on the following aspects (for more details see **Appendix A**):

- 1) *Digital Business Model Type* (Acs et al., 2021; Remané et al., 2022)
- 2) *PM Development Approach adopted* (Shenhar & Dvir, 2007; PMI®, 2021; Thesing, Feldmann, & Burchardt, 2021; Musonda & Okoro, 2022)
- 3) *PM Development Approach decision process - intuitive or rational* (PMI®, 2021)
- 4) *PM Size and Complexity* (Carvalho & Rabechini, 2019; (PMI®, 2021)
- 5) *Artefact(s) or technique(s) used to classify PM Development Approach* (PMI®, 2021)
- 6) *Novelty in Platform Business Value Creation* (Shenhar & Dvir, 2007; Martinsuo et al., 2019; Acs et al., 2021; Remané et al., 2022)

The interviews were realized with online Google Meet webapp, and the transcriptions been registered automatically by Microsoft Word software (dictate option).

All participants became aware of the TCLE (Termo de Consentimento Livre e Esclarecido), according to Res. CNS nº 466/12 e Res. CNS 510/2016 (CoEP-UNINOVE).

5.3.3 Data Analysis Procedures

Although some inductive researchers use a few techniques for data collection, most researchers combine multiple methods to explain phenomena. This allows for data triangulation, enhancing interpretation and strengthening conceptual models (Eisenhardt, 1989). According to Yin (2014), "explaining" a phenomenon involves establishing causal relationships and understanding the "how" or "why" behind it. Based on this, we decide to conduct the Data Analysis in deeping at the content analysis process, as stood by Bardin (2016).

Content Analysis

According to Bardin (2016) the content analysis process have five main steps: 1) Pre-analysis – organization of documents, superficial reading and changes necessary for the proper conduct of the analyses; 2) Coding – identification and coding of recording units based on quotes and excerpts; 3) Categorization – grouping of codifications that represent understanding for the research theme, considering groupings by meaning and/or merges isolations codes; 4) Frequency Analysis – frequency of occurrence of codes and their associations with each other; and, 5) Occurrence – existence of reference for the indicated categories. To operate this stage of research, we opted to use ATLAS.ti Windows (Version 23.1.2.0-2023-06-20) to organize documents and interviews in unique work analysis.

5.4 FINDINGS AND DISCUSSIONS

We organize findings according to Bardin (2016) steps to make sense of our logic comprehension of phenomenon. We found some instructions on how to use ATLAS.ti software to analyse data in Silva and Leão (2018). Our main focus in the research was to verify the proposition stated in the study.

Pre-analysis

To assure an understanding of all documents, we checked all documents to make sure they become more cleaned, mainly in the transcripts documents'. Yet, we organized them in three groups. These groups give us segregation of how hard information is.

- Interviews (three)
 - Transcriptions of three interviews
- Articles (four)
 - Diamond approach (Shenhar & Dvir, 2007)
 - The Spiral Lifecycle (Boehm, 1988)
 - Project Type Profiling – PtP (Ehrman & Holzmann, 2012)
 - Overall modeling process (Thesing et al., 2021)
- Body of knowledges in PM (two)
 - The Project Management Body of Knowledge – PMBoK® (7th ed.)
 - PRojects IN Controlled Environments – PRINCE2

Coding and Categorization

To coding, we read all documents finding registries that contribute to understanding of the phenomenon. We started from a deductive reasoning research approach to check in the documents some evidence to verify the propositions stated. Even we started with this point of view, during the processes of collection and analysis, we could observe some attributes raising from interviews and, because of the relevance, these attributes entered in our inductive analysis. Our unit of analysis were the project manager, considering his/her decision focusing on increasing value in Digital Platform Business Models.

Based on the three interviews running, we extracted code distribution by document, structuring by colors to allow check the groups of concepts. This provides a comprehensive overview of the most frequently used codes and those that were rarely used (Silva & Leão, 2018). Thus, we structured the main codes and grouped in categorizations all concepts come from the initial conception of the framework proposed (see item 5.2.4), and we structured this concepts in the three Propositions stated. **Figure 21** resumes the organization used to find evidence in analysis.

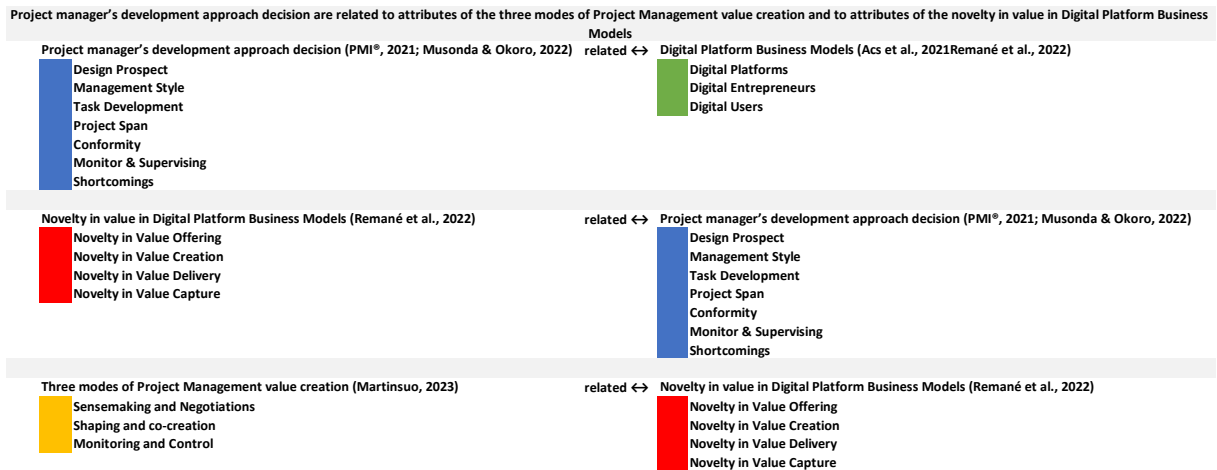


Figure 21. Family of categorization

Note. Source: Authors extracted from ATLAS.ti (2023).

Frequency Analysis

Generating an ordered pair of the x-y, the software allows quantitative observations like relations between topics (codes) and the most cited subject highlighted in the analyzed texts, facilitating the researchers' interpretation of the phenomenon (Silva & Leão, 2018).

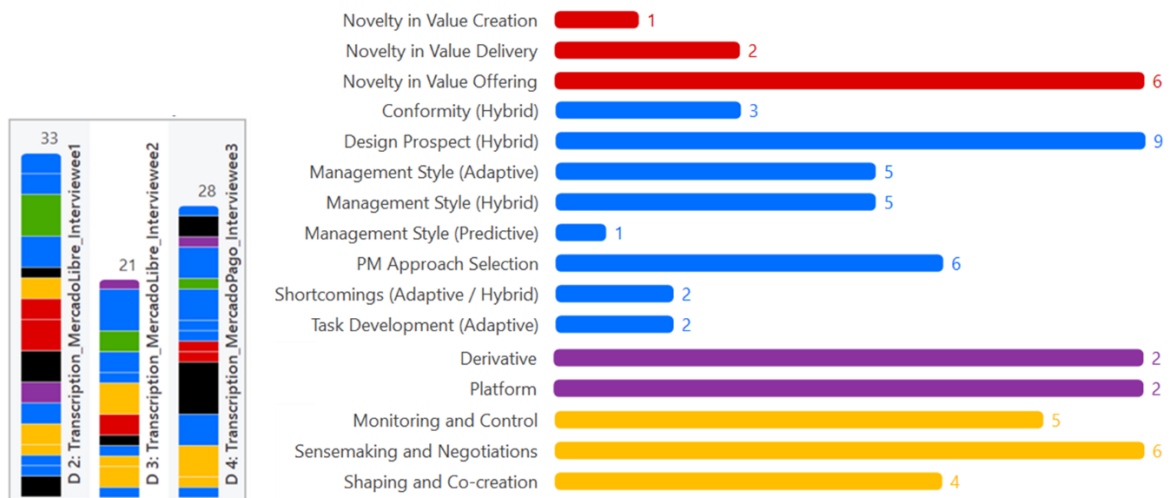


Figure 22. Codes distribution

Note. Source: Authors extracted from ATLAS.ti (2023).

Analysing the frequency of categories, we observed that *Novelty in Value Offering* were the most raised value indicated by Remané *et al.* (2022). And some interviewees words showed the main value in project managers' mind: the centrality of the client. And it become more concentrated in the beginning of the life cycle's project, as observed the *Sensemaking and Negotiations* frequency's, which is the mode characterized by initiate in the front end and extend to full project's life cycle and by been dominantly immaterial value creation because of the fostering moment (Martinsuo, 2023).

Occurrence

The occurrence analysis showed us mainly categories happened in all interviews, not considering the green group of categories (representing Digital Platform Business types). This observation excludes specifically the category *Novelty in Value Creation* which was observed only in one interview (see **Figure 23**). This category was related to the project manager when he/her explained that data analytics are an important issue that projects must address in the Digital Business “*Então é um fato que todos eles têm que estar conectados, né? Então todo mundo está olhando para essa questão da tecnologia, dos dados, das análises de dados no negócio.*”.

	Transcription Interviewee1 MercadoLibre Gr=32	Transcription Interviewee2 MercadoLibre Gr=20	Transcription Interviewee3 MercadoPago Gr=27	Totals
● Digital Entrepreneurs Gr=7	●	●	●	3
● PM Approach Selection Gr=6	●	●	●	3
● Design Prospect (Hybrid) Gr=9	●	●	●	3
● Management Style (Adaptive) Gr=5	○	●	●	2
● Management Style (Hybrid) Gr=5	●	●	●	3
● Management Style (Predictive) Gr=1	○	○	●	1
● Task Development (Adaptive) Gr=2	●	●	○	2
● Conformity (Hybrid) Gr=3	●	○	●	2
● Shortcomings (Adaptive / Hybrid) Gr=2	●	○	●	2
● Platform Gr=2	●	○	○	1
● Derivative Gr=2	○	●	●	2
● Sensemaking and Negotiations Gr=6	●	●	●	3
● Shaping and Co-creation Gr=4	●	●	●	3
● Monitoring and Control Gr=5	●	●	○	2
● Novelty in Value Offering Gr=6	●	●	●	3
● Novelty in Value Creation Gr=1	○	○	●	1
● Novelty in Value Delivery Gr=2	●	○	○	1
● Team Experience Gr=2	●	○	○	1
● Manager Experience Gr=1	●	○	○	1
● Organizational Culture Gr=9	●	●	●	3
● Data Analytics Gr=2	○	○	●	1
Totals	16	12	15	43

Figure 23. Code document occurrence

Note. Source: Authors extracted from ATLAS.ti (2023).

5.4.1 Project managers decision's related to novelty in value in The DPE

Project management's life cycle and approach selection can normally be tailored depending on the context (PMI®, 2021) and that is one of the hardest Project managers' decisions, even because it can be changed during the entire project's life cycle and can be combined during its execution (PMI®, 2021; PRINCE2, 2022). And it was not different of our

observation during interviews approach. In some points of the processes was possible verify that managers need to demonstrate some level of wisdom or bias as explicit by Interviewer1 in the extract “*Sim. De maneira geral. É aí que eu estou assim um pouco enviesado porque eu estou dentro de uma área operativa não estou dentro de uma área técnica de tecnologia*”, even he/her already had implemented a project delivering value to a Digital Platform, e-commerce side core business in its case.

Project manager’s approach decision evolve a style of management (Musonda & Okoro, 2022). Based on this we verified that style and how it is related to the Digital Business type and its Novelty in Value (offering, creation, delivery, and capture). **Figure 24** and **Figure 25** show the network relation between these three concepts.

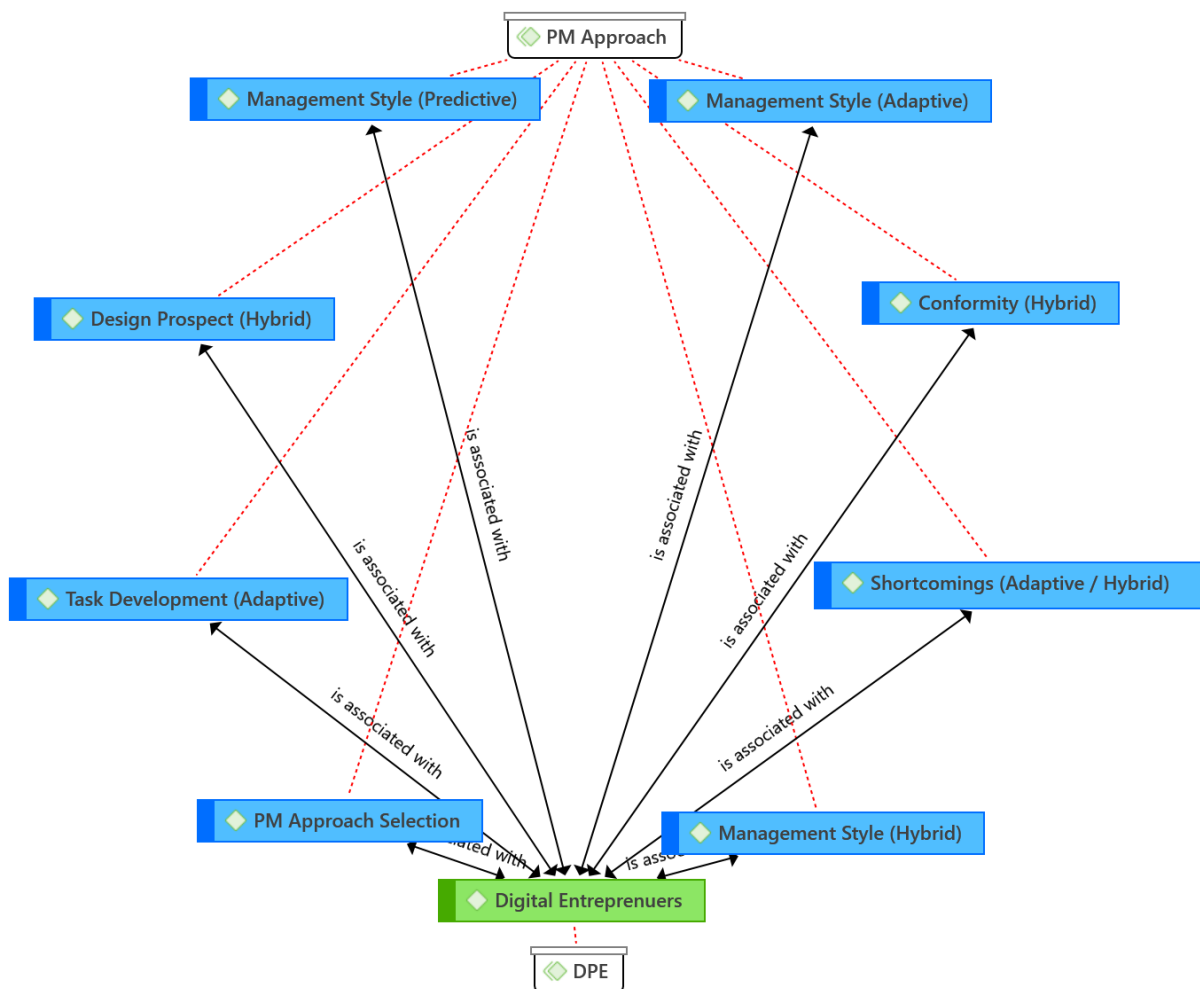


Figure 24. Network of Codes – Attributes of PM Approach decision

Note. Source: Authors extracted from ATLAS.ti (2023).

Easily answered by the network codes, Project Management Approach decision evolved almost all of attributes indicated by Musonda and Okoro (2022). It could naturally be explained by the size of sample investigated. But, in other hand, allows inferring that *Project*

Span attribute is not relative in the Project Management Approach decision, even because of the distance between the moment of decision and the length of the project.

As well explained by Martinsuo (2023), project manager's having to solve an issue in the relation between Project Management approach (practices and techniques) and value creation, and it becomes more difficult when they need to deliver an increase of novelty in a technological business (see Yordanova, 2022).

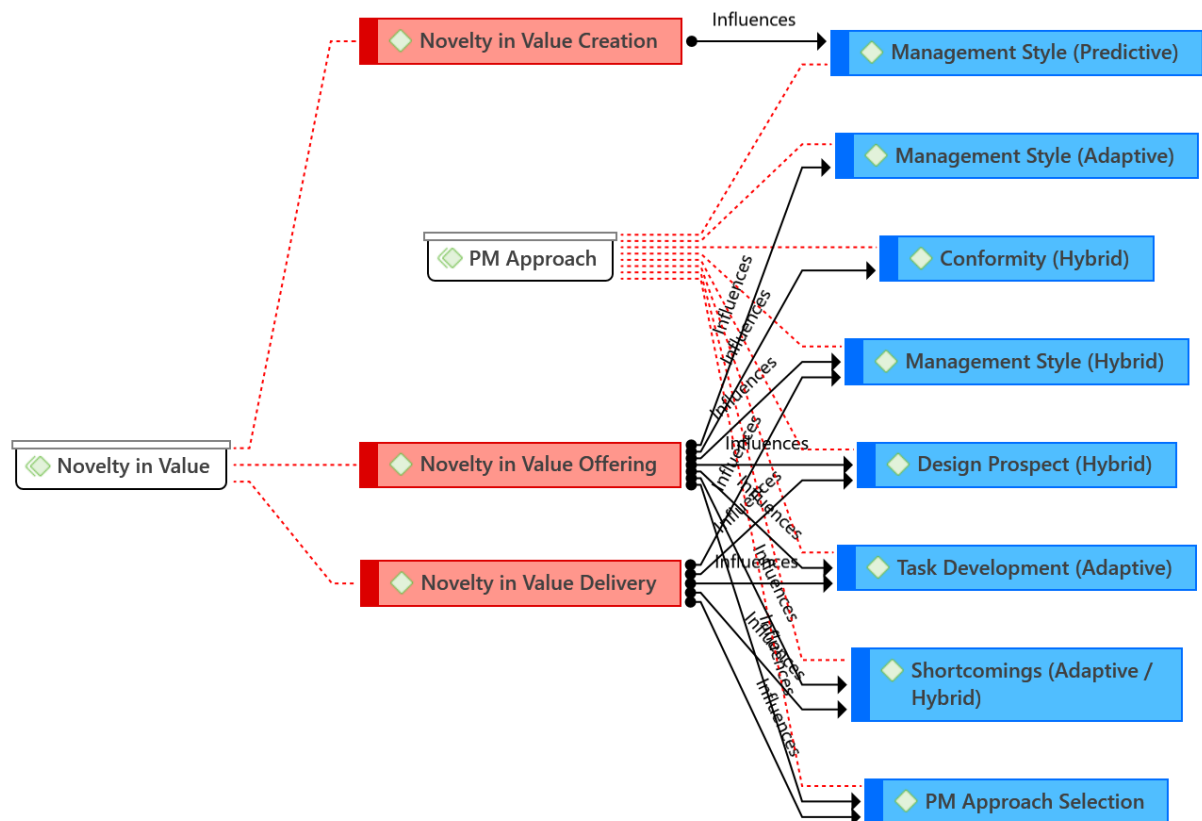


Figure 25. Network of Codes – Attributes of Novelty in Value

Note. Source: Authors extracted from ATLAS.ti (2023).

5.4.2 Increasing value in novelty in The DPE based on PM value creation

Other association we made were look for the relation between Martinsuo concept's of three modes of Project Management value creation and novelty in value (offering, creation, delivery, and capture) in Digital Platform Business Models exposed by Remané *et al.* (2022), as demonstrated in **Figure 27**.

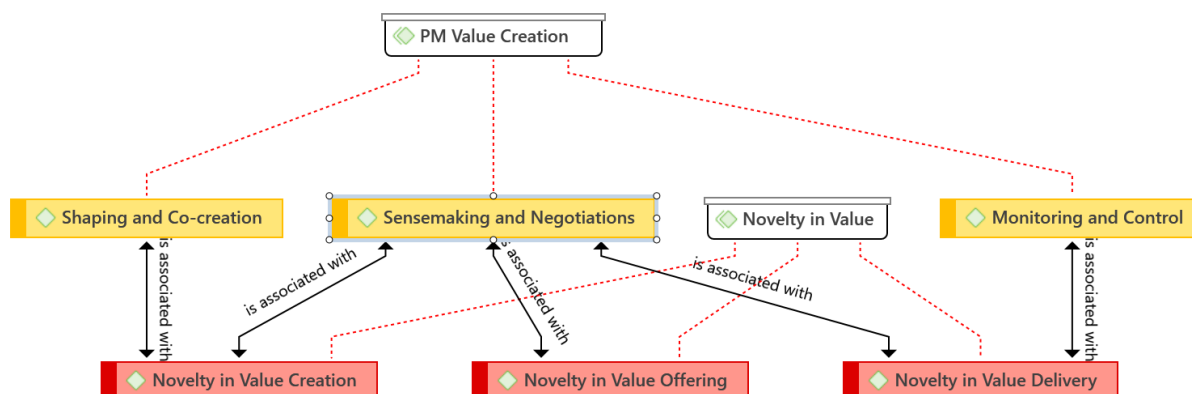


Figure 26. Network of Codes – Attributes of PM Value Creation

Note. Source: Authors extracted from ATLAS.ti (2023).

It could be explained by the phase in which project are been analyzed. According to Martinsuo (2023) the mode of project create value are considered by key phase of the project's life cycle. Once we observed the phenomenon based on the initial phase of the projects, the three managers answered questions focusing on the mode *Sensemaking and Negotiation*, which is more focused on elucidate the characteristics of the project. Some interview extractions can represent that observation, as follow:

“são projetos que envolvem tecnologia de alguma maneira é existe um feedback mais rápido sobre qualquer atuação e é necessário um tipo de comunicação com Stakeholders”

Interviewer1

“levei em consideração os riscos e a quantidade de partes interessadas envolvidas a quantidade e a complexidade das partes interessadas envolvidas no projeto”

Interviewer2

“os riscos e a quantidade de stakeholders envolvidos foram atributos relevantes que foram observados”

Interviewer3

These evidences validated the importance of give attention to how Project Managers focus on PM value creation converting into value in novelty in Digital Business.

5.5 PROJECT MANAGEMENT APPROACH DECISION FRAMEWORK

The framework was elaborated based on aspects as literature review, practical knowledge, and empirical testing. The mapping of the most suitable project management development approaches focused on increase value in novelty in digital business models entailed a strategic and iterative process of study and analysis. It necessitated a profound understanding of the Digital Platform-based Ecosystem (DPE) context to ensure alignment with the objectives of Digital Platform Business Models.

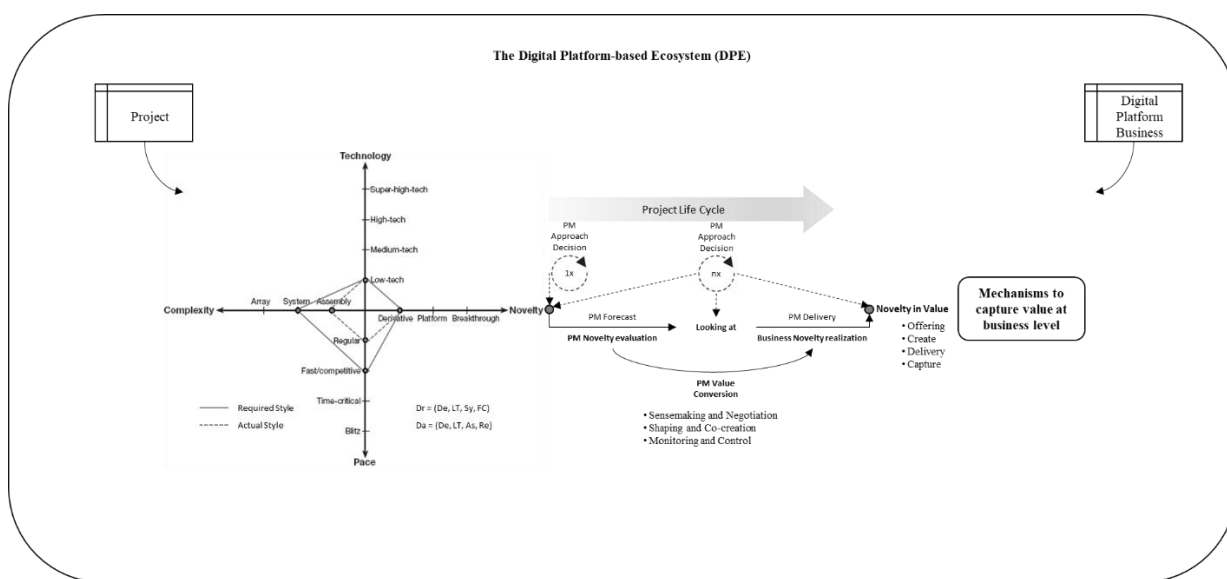


Figure 27: Project Management Approach Decision Framework

Note1. Source: Authors.

Summarily, the Project Management Approach Decision Framework was elaborated to guide project managers follow a basically sequence of decision and maintain the focus on the topic novelty in value. Based on study, some attributes can be raised to project management team:

- 1) Project Objectives
- 2) Organizational Culture
- 3) Lessons Learned
- 4) Novelty in Value Creation
- 5) Project Characteristics
- 6) Stakeholder Requirements
- 7) Risk Assessment
- 8) Project Communication

9) Value Conversion (Monitoring & Control)

The decision of usage and style of these attributes may be associated with the strategic decision about innovation at the business level. Because of this, project managers may observe the trend topics related to this technologies Digital Platform Business Models and constantly verify and align the following relations between project and business (at project level interaction):

- • Project manager's development approach decision (PMI®, 2021; Musonda & Okoro, 2022) <=related to=> Digital Platform Business Models (Acs et al., 2021; Remané et al., 2022);
- • Novelty in value in Digital Platform Business Models (Remané et al., 2022), <=related to=> Project manager's development approach decision (PMI®, 2021; Musonda & Okoro, 2022);
- • Three modes of Project Management value creation (Martinsuo, 2023) <=related to=> Novelty in value in Digital Platform Business Models (Remané et al., 2022).

5.6 FINAL CONSIDERATIONS

The study proposes a framework based on the previous literature and analysis of DPE projects' data set. The framework has extended the NTCP diamond model by adding an additional dimension, which explains the impact of extrinsic factors on DPE project success. The dimension considers income of a country, climate risk, control of corruption, political stability, regularity quality and religious diversity of the host country as important factors for project evaluation. The proposed framework is meant to assist projects managers considering the uniqueness of each DPE projects in developing countries. It will also aid them in developing project-specific approaches and solving project issues in the early stages.

Furthermore, the DPE projects in the MELI Ecosystems have been analyzed in this study considering the proposal. The answer to these proposals facilitated the elaboration of the proposed framework considering NTCP model and extrinsic characteristics of projects. The framework implementation is supportive for the practitioners to understand project characteristics as well as the extrinsic factors such as income of a country, climate risk, control of corruption, political stability, regularity quality and religious diversity of the host country.

Furthermore, a comprehensive set of recommendations for each dimension of the framework have been presented for improving the performance of DPE projects in developing countries. Although the study has made some important contributions, there are few limitations. However, the study also opens new avenue for future research.

There can be other projects different than those analyzed in this study. They may need different frameworks and different factors to consider. Therefore, someone in future should use data from other sources to explore further aspects of the DPE projects. Even proposed, the artifact evaluation that guides improve the design of this framework, we understand to be possible validate the technological artifact proposed (Digital Project Management Approaches Decision Tool – MANAGERIAL TOOL) generalizing them for the class of problems, as stood by Lacerda, Dresch, Proença, and Antunes (2015).

To this, we are understanding that have future directions as following elaborated:

- The three modes of Project Management value creation increase novelty in value in Digital Platform Business Model;
- The proposed framework can be used to other types of Business Models.

And finally, as sum as Ayat, Qureshi, and Kang (2021) brought an example and Ehrman and Holzmann provided a project type profiling (PtP) based on the ideal company project, we are proposing this framework as an extension of the Diamond Model NTCP framework (Shenhar & Dvir, 2007). That is not a substitute managerial tool, but a complementary tool that can guide project managers in deciding which project management approach better fit to be improved in The Digital Platform-based Ecosystem (DPE) context.

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6 TECHNOLOGICAL ARTIFACT PROPOSED

The last 11 years has showed an increasing connection between subject project management and digitalization or technology. It happened just because project management have been turned an integrative business process in organizations closely related with other process as supply chain, decision-making, product development, etc. (Yordanova, 2023). It is a spontaneous demand based on the digital technology sector's growth and has a potential coverage and replicability supporting to initiate new digital business. It is characterized as a production with medium innovative content due to the combination of PM approaches (PMI, 2021) and novelty in digital business model as essentially proposed by Remané *et al.* (2010).

This objective without previously defined application focus with a possible impact in the economics area – all industries submitted to digitalization process and disposed to receive new digital business and new ventures. The medium complexity of the artifact is based on the combination of know knowledge and to the various agents in the DPE as government, institutions, entrepreneurs, and platforms, all as business part of the ecosystem.

Observing the gap in the literature, concluded in the Study 2, we intend to develop and communicate a framework Digital Project Management Approaches Selection Tool (**Appendix A**) as a managerial tool to guide business administrators make decision on “How” project management approaches must be chosen for implementing digital business models into The Digital Platform-based Ecosystems (DPE), focusing on novelty value.

According to CAPES (2018), all Technical and Technological Production must be assessed as a contributed tool for innovation and technological improvement of society. Based on this assumption, this Brazilian foundation organized the entire possible Technical and Technological Production originated by all types of academic research characterizing types and subtypes of products and technical and technological processes developed by graduate programs, proposing a method of classification and indicators for technical and technological products. Thus, the Public and Business Administration, Accounting and Tourism Brazilian graduate division decided to choose 12 Technical and Technological Products as more adherent to business and organizations reality.

Considering the CAPES (2018) classification, we develop a **Process, technology and product, non-patentable (21st CAPES product)**, subject to protection or not, which may generate intellectual property assets. the technical and technological product presented in this

Dissertation is a framework called PROJECT MANAGEMENT APPROACH DECISION FRAMEWORK, a non-patentable process.

6.1 FRAMEWORK SUMMARY

The framework elaboration process entailed a systematic progression through key stages, encompassing problem identification, literature review, conceptual framework development, empirical data collection and analysis, model refinement, and conclusion formulation, thereby establishing a comprehensive framework that contributes to the advancement of knowledge in the Project Management field, especially in the Approach Development decision at initial phase of each life cycle of the project. A briefing of the Framework is presented in **Figure 28**. For more details, please check **Appendix A**.

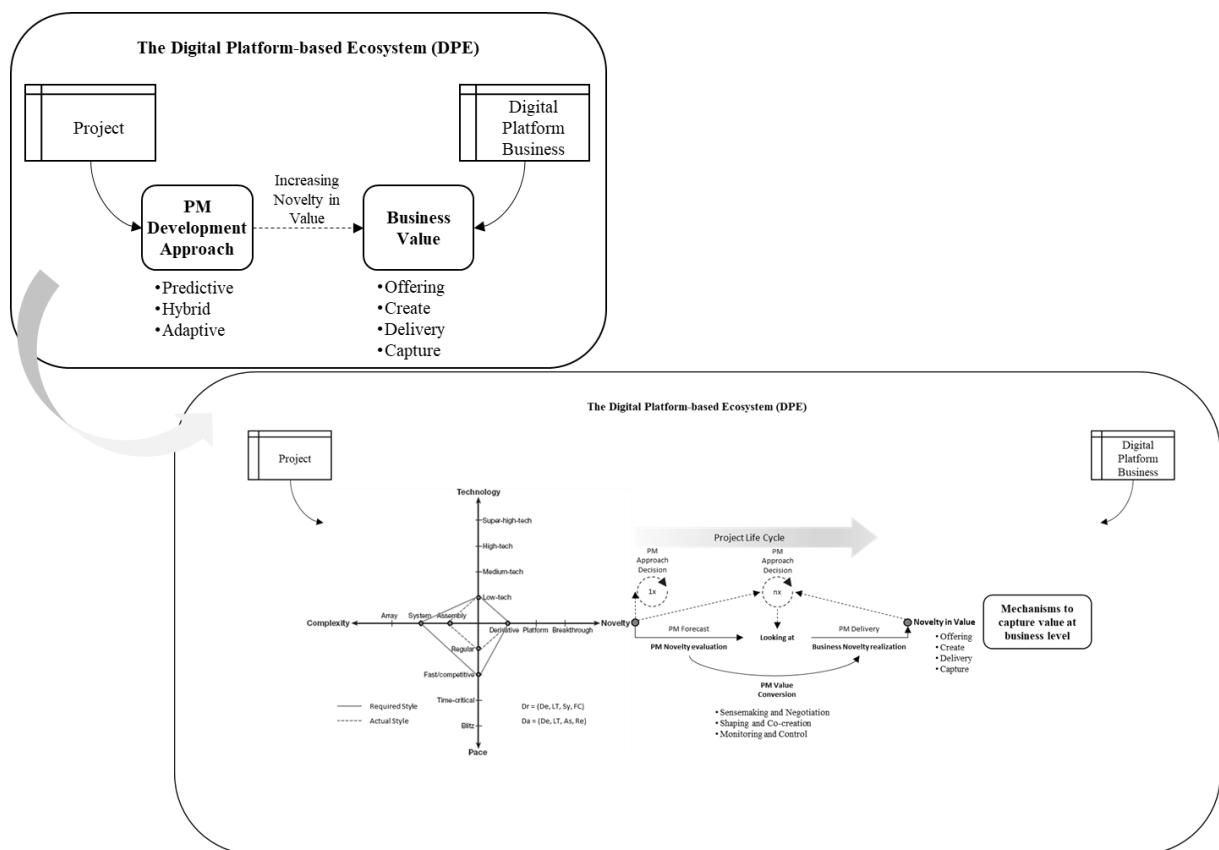


Figure 28: Briefing elaboration of the Framework

Note1. Source: Authors.

Summarily, the Project Management Approach Decision Framework (**Appendix A**) was elaborated to guide project managers follow a basically sequence of decision and maintain

the focus on the topic novelty in value. Based on study, some attributes can be raised to project management team:

- 1) Project Objectives
- 2) Organizational Culture
- 3) Lessons Learned
- 4) Novelty in Value Creation
- 5) Project Characteristics
- 6) Stakeholder Requirements
- 7) Risk Assessment
- 8) Project Communication
- 9) Value Conversion (Monitoring & Control)

The decision of usage and style of these attributes may be associated with the strategic decision about innovation at the business level. Because of this, project managers may observe the trend topics related to this technologies Digital Platform Business Models and constantly verify and align the following relations between project and business (at project level interaction):

- Project manager's development approach decision (PMI®, 2021; Musonda & Okoro, 2022) <=related to=> Digital Platform Business Models (Acs et al., 2021; Remané et al., 2022);
- Novelty in value in Digital Platform Business Models (Remané et al., 2022), <=related to=> Project manager's development approach decision (PMI®, 2021; Musonda & Okoro, 2022);
- Three modes of Project Management value creation (Martinsuo, 2023) <=related to=> Novelty in value in Digital Platform Business Models (Remané et al., 2022).

6.2 EVALUATION

According to Martens, Scafuto, Bartholomeu, and Zanfelicce (2022), to analyze whether a survey has the potential to generate Technical and Technological Products, researchers must keep in mind this list of 12 products and what each one of them consists of, their characteristics, and if any can be envisioned as a result of the ongoing study. Because of

this the authors proposed a diagnostic tool composed by questions to facilitate “How to identify possible Technical and Technological Products in Dissertations and Thesis”.

Firstly, I would like to bring a conceptual difference between Methodology, Framework, Model, and Approach to clarify the conception of the framework proposed in this doctoral dissertation. And the conceptual difference most adaptable to my comprehension was given by Mr. Kiron Bondale (Trainer, speaker & coach well recognized at PMI community) at Project Management Central, a PMI forum discussion (PMI®, 2020, September 28), following extracted in vivo:

“A methodology is a theoretical construct - what most people are referring to when they used that word is really "method".

Method and framework are interchangeable - both provide specific guidance with "some" level of flexibility.

An approach is a generic term - it can imply a whole set of practices or just a single practice.

And finally, a model is just a construct intended to help us understand something in the real world.

Kiron

Posted: Sep 28, 2020 8:16 AM”

(PMI®, 2020, September 28)

These conceptualizations gave me directions to make sure I have been working on a possible framework as I provided as proposal. Based on this, it is possible verify that the Project Management Approach Decision framework has the characteristics of a guidance with little flexibility applied, once the managerial tool allow project managers have their own novelty answered by their inputs been classified as NTCP Diamond Model and after been directed by novelty in value focus.

Secondly, I found CAPES (2018) criteria to property asset the technical and technological artifact proposed. Thus, the Framework was shortly asset in terms of adherence, impact, applicability, innovation, and complexity.

In terms of adherence, the Project Management Approach Framework is inserted in the research group at CNPq coordinated by Dr. Marcos Rogério Mazieri, called: *Inovação em Projetos na perspectiva da maturidade em contextos de integração e/ou convergência tecnológica*. And, as a managerial tool raised by academic methodological approach, it is aligned with academy and practitioners.

In terms of impact, the Framework carries the potential to reach all project managers embedded in a Digital Platform-based Ecosystem (DPE) or similar. At this point, as already observed on LinkedIn platform, Digital Platform Project Managers or similar professionals may touch on the framework to understand the relevance of focus on increase novelty value in digitalized business, or even to criticize it. And in academy, could be used as an instrument to be studied, tested, and mostly improved.

In terms of applicability, the higher possibility of usage of the Framework is consolidated in its simplicity construction for practitioners comprehension. The replicability could be represented by its logical understanding in only one sheet.

Even classified by authors as medium impact of innovation, as *Derivative* classification of Shenhar & Dvir (2007), the Framework brings a good possibility of implementing innovation strategies in Digital Platform Business by maintain the project managers' focus on increasing novelty in value (offering, create, delivery, or capture). And, most naturally could be improved by academics, researchers, and practitioners, what demonstrate that it is a valuable managerial tool, even in its initial stage of construction.

7 CONTRIBUTIONS AND FUTURE DIRECTIONS

Although the proposed conceptual model is widely explored by comparing reality with theoretical assumptions, it will be able to be reproduced for other digital entrepreneurial projects in other contexts. According to Osterwalder (2004), to extrapolate the interpretation of a phenomenon to a theoretical level, the construct needs to be explored and explained in at least ten cases, or even to the level of data exhaustion that does not alter the results. as a new case is added.

Thus, the replication of the conceptual model may be possible when idealized for other projects conducted in The Digital Platform-based Ecosystems (DPE) context, given the similarity of the cases. However, it is appropriate to analyze the application of the model, case by case, when extrapolating the conceptual model to other categories of organizations.

The Contribution Mooring Matrix (**Table 21**), explained in the final considerations section as a summary of main results obtained in hole research.

Table 21. Contribution Mooring Matrix

How project managers decide the development approach most proper for increasing novelty value in digital platform business models?				
To design a framework that guides project managers in deciding which development approach is most proper for increasing novelty value in digital platform business models.				
PARTICULAR CONCLUSION				
Sequency of Research	Summary of results	Contributions to the advancement of knowledge	Limitations	Proposal for future studies
THE DIGITAL PLATFORM-BASED ECOSYSTEM (DPE) AS AN EVOLUTIONARY FRAMEWORK: A bibliometric evidence and future directions	Annual production is increasing since the last five years before 2021 and demonstrating a possibility to exceed. Co-citation network showed mapping science and its concentration focused on two debates: digital platform and ecosystem. Co-occurrence network and Thematic evolution highlighted the word "platform ecosystems" conducting discussions. and evolution to DPE	Academics: advancements understanding about the digital business ecosystem in The Digital Age with focus in the digital platform context; Practitioners: brings up the explanation of the evolution from DEE concept to DPE.	Access to other data basis in business and management such as Web of Science.	Broadly enlarge the analysis including other article data base in the analysis.
DIGITAL PLATFORM BUSINESS MODELS AND PROJECT MANAGEMENT APPROACH DEVELOPMENT: A review on how digital businesses are related to projects in The Digital Platform-based Ecosystems (DPE)	Represent a possible relation between Project Management and Digital Business. This relation approximate when we observe the type of Project Management Approach chose for deliver a specific product or service that increase Digital Business Value Creation on Digital Business Model.	Academics: up-to-date the understanding relation between Project Management and Digital Business; Practitioners: offer a relational model to consider when endeavor a new Digital Business Model.	Short quantity of case studies exploring managerial tools focused on initial phase of project management life cycle.	Including Scientometrics as a complementary method to bring patents into the conjoint analysis with articles.
THE ROLE OF PROJECT MANAGEMENT APPROACH DECISION IN DIGITAL PLATFORM BUSINESS MODELS: Relations between attributes	Raised the attributes relation between PM Approach and Novelty in value in DPE. Contributed to advancements of understanding these attributes and most, the importance of project managers maintain focus on increasing novelty in value in DPE. A Framework was proposed based on the evidence raised in the empirical and theoretical concepts.	Academics: advancements in the Project manager's development approach decision and in the understanding of Project Management value creation; Practitioners: offer a relational Framework to consider when endeavor a new project in DPD context.	Short quantity of participants of interview process and difficult of access to the documents of case study.	Including Delphi and/or Focus Group as a complementary method to stress and validate the Framework, considering insert Digital Platform Project Managers or related into study.
INTEGRATING CONCLUSION				
From the perspective of the abductive approach Design Science Research (DSR), three individualized studies were conducted as integrated research brings a understandable comprehension about the topics covered. Were employed some academic procedures as methods such as Bibliometrics, Systematic Literature Review, and Study Case conjoint with practical guides, which allowed a ground experience to the researchers. Understand the evolution of the Digital Platform-based Ecosystems (DPE) and its Digital Business Models enriched the conclusion on how develop the Framework proposed. This was relevant once the discussion about project management value creation conversion at digital business are yet not concluded by academy. Overall, the academic discussion and practical Framework could be improved by future implications.				

Note. Source: Based on Costa, Ramos, and Pedron (2019).

7.1 ACADEMIC AND PRACTICAL CONTRIBUTIONS

The thesis encompasses advancements in the understanding and practical application of the Project Management Approach decision and Business Digital Platform, with a specific focus on the context of novelty in value.

From an academic perspective, this research makes contributions to the understanding of the Digital Platform-based Ecosystem in The Digital Age, with a particular emphasis on its Digital Business and interactions with project management discipline. By conducting thorough research and analysis, this thesis enhances our knowledge of the intricacies of digital platforms, their functionalities, and their transformative impact on various industries. The findings from this study shed light on the opportunities and challenges presented by digital platforms within the rapidly evolving digital landscape.

Furthermore, this research built up the relationship between Project Management and Digital Business by updating our understanding. By exploring the convergence of these two topics, was possible contribute to a more comprehensive understanding of how project management practices can effectively support digital business initiatives and improvements. This research also provides insights into the unique challenges and requirements posed by digital projects, ultimately facilitating improved project management practices in The Digital Era.

In addition to the academic advancements, this research also offers practical contributions that directly benefit practitioners in the field. It introduces an explanation of the evolution from the concept of Digital Entrepreneurship Ecosystem (DEE) to Digital Platform-based Ecosystem (DPE). By providing a clear understanding of this evolution, practitioners gain insights into the shifting landscape of digital business models and the key factors that drive their novelty in value creation. This knowledge empowers practitioners to navigate and capitalize on the opportunities presented by the emergence of digital platforms.

Moreover, this research presents a relational model that project managers can employ when developing or improve Digital Business Models. The model provides a structured framework to analyze and assess the interdependencies and relationships within a digital business ecosystem. By leveraging this model, project managers can enhance their decision-making processes and develop more robust and sustainable digital business models, ensuring their alignment with the dynamic nature of digital platforms.

Lastly, this research contributes to practitioners by offering a practical relational framework to consider when undertaking a new project in the context of Digital Platform-based Ecosystem (DPE). The framework provides a connection to project management within the digital business, considering the challenges and dynamics associated with digital platforms. By incorporating this framework into their project management practices, practitioners can improve the possibilities of increase novelty in value to digital business optimizing the value creation process at the business level.

In summary, this thesis makes significant academic contributions by advancing the understanding of the digital business ecosystem, specifically in the context of digital platforms, project management, and value creation. Additionally, it offers valuable practical insights to practitioners by elucidating the evolution from DEE to DPE, providing a relational model for digital business model development, and presenting a framework for project management in The DPE context. Collectively, these contributions enrich both academic research and practical endeavors, fostering innovation and success in the rapidly evolving digital business landscape exactly in a new moment of society evolution: The Digital Age.

7.2 LIMITATIONS AND FUTURE DIRECTIONS

Future research endeavors should focus on exploring the decision-making processes related to project management approaches, unravelling their intricacies, and examining their potential impact on project outcomes. By delving deeper into this area, researchers can gain valuable insights into how different decision-making processes can affect project success and provide recommendations for effective project management strategies.

Another area that warrants investigation is the increasing of novelty in value within digital platform businesses. Understanding the mechanisms by which enhancements can cultivate competitive advantages, foster innovation, and drive sustainable growth in the dynamic digital economy is crucial. Future research should aim to elucidate these mechanisms and provide guidance on strategies to maximize the novelty value in digital platform businesses.

Furthermore, it is important to improve the proposed framework by seeking input from Digital Platform Project Managers professionals. Their expertise and experiences can help stress-test the framework and identify areas for refinement. By incorporating the perspectives

of practitioners, the framework can be enhanced to better align with the realities of The DPE environment.

Moreover, researchers can consider expanding the logic used in proposing this framework by exploring the other three dimensions of the NTCP Diamond Model (Technology, Complexity, and Pace). Investigating these dimensions individually or jointly can provide a more comprehensive understanding of the factors that influence project success and enable researchers to develop a holistic framework that encompasses a broader range of variables.

In summary, by exploring the main topics decision-making processes and novelty value in digital platform businesses, and refining the proposed framework through practitioner input, validating its applicability, critically evaluating its practical implications, and considering other three dimensions of the NTCP Diamond Model (Technology, Complexity, and Pace), researchers can contribute to the advancement of scholarly knowledge and practical implications in project management and the digital business context. These efforts will enhance the understanding of project management approaches, foster innovation, and ultimately drive sustainable growth in the ever-evolving digital economy.

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APPENDIX A – TECHNOLOGICAL ARTIFACT

PROJECT MANAGEMENT APPROACH DECISION FRAMEWORK (BUSINESS FRAMEWORK)

SUMMARY

Higher Educational Institution: UNINOVE University

Authors: MSc André Luiz Barros Nery; Dr. Marcos Rogério Mazieri

Dissertation Linked: FRAMEWORK FOR PROJECT MANAGEMENT APPROACH
DECISION FOCUSED ON INCREASING NOVELTY VALUE IN
DIGITAL PLATFORM BUSINESS MODELS

Link to Dissertation: <https://bibliotecatede.uninove.br/simple-search?filterquery=Disserta%C3%A7%C3%A3o&filtername=type&filtertype>equals>

Evaluated in: 30/06/2023

Research Project: *Inovação em Projetos na perspectiva da maturidade em contextos de integração e/ou convergência tecnológica*, research group at CNPq, coordinated by Dr. Marcos Rogério Mazieri.

Sector benefiting by the research project: Academy and Digital Business Industry

Name: Project Management Approach Decision Framework

CAPES Classification: 21. Process, technology and product, non-patentable materials

Innovative classification: Production with medium innovative content (combination of pre-established knowledge)

Keywords: Project Management; Project Management Approach; Digital Business Models; Novelty in Value; The Digital Platform-based Ecosystems (DPE).

DESCRIPTION

Main comprehension

The framework was elaborated based on aspects as literature review, practical knowledge, and empirical testing. The mapping of the most suitable project management development approaches focused on increase value in novelty in digital business models entailed a strategic and iterative process of study and analysis. It necessitated a profound understanding of the Digital Platform-based Ecosystem (DPE) context to ensure alignment with the objectives of Digital Platform Business Models.

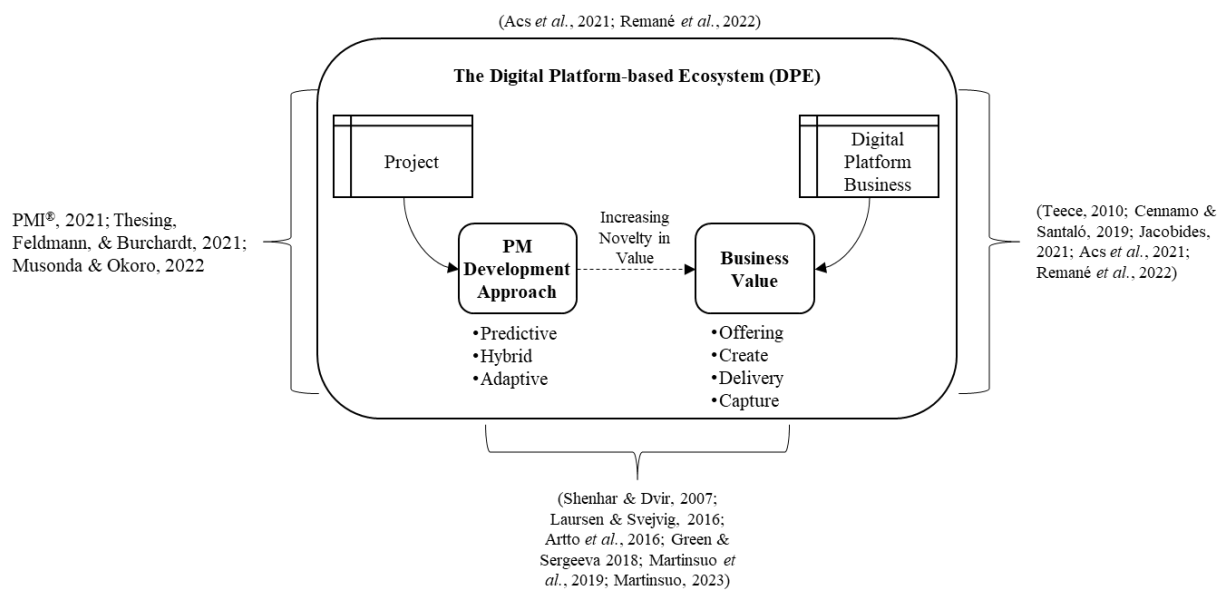


Figure X: PM Approaches and Digital Platform Business novelty value creation

Note1. Source: Authors.

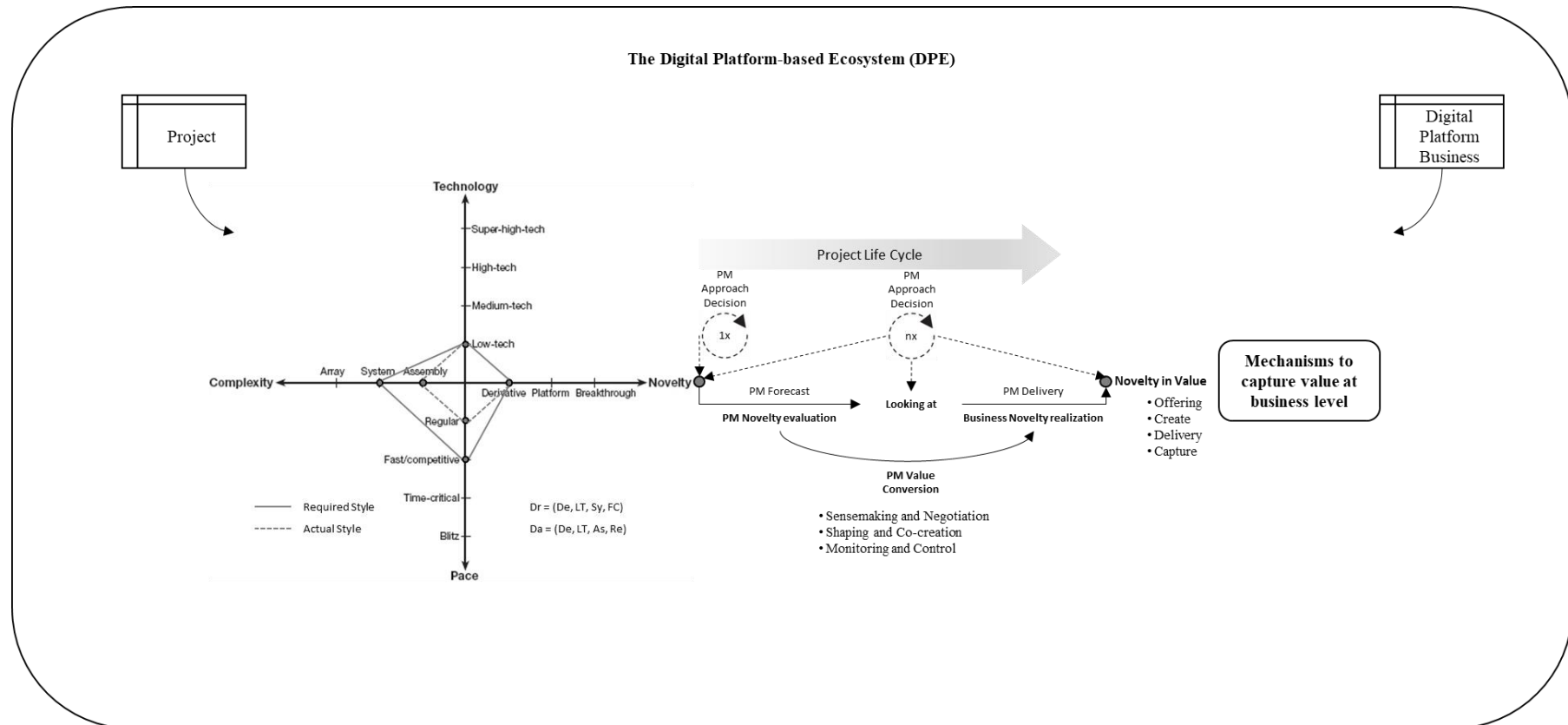


Figure Y: Project Management Approach Decision Framework in The DPE context

Note1. Source: Authors.

At the Digital Platform Business Level

At the business level, project managers and functional managers may jointly make efforts to assure a good influence between the modes of Project Management value creation and Novelty in Value conversion in Digital Platform Business.

Three modes of Project Management value creation (Martinsuo, 2023)

Sensemaking and Negotiations
Shaping and co-creation
Monitoring and Control

PM Approach Decision

By considering these attributes during the decision-making process, the project team ensures a project management approach that is better aligned with the specific needs and challenges of projects involved with The DPE environment. The attributes of project complexity, flexibility, stakeholder involvement, alignment with project objectives, and risk management play significant roles in guiding the decision-making process and ultimately determining the most appropriate approach.

To guide project managers decide which approach (predictive, adaptive, or hybrid) is most suitable for digital platform businesses in the beginning of the project life cycle, the following framework can be applied:

1) Project Objectives:

Start by clearly defining the project objectives within the digital platform business context. Identify the desired outcomes, timeline, and deliverables that align with the platform's goals and vision. This understanding will influence the choice of approach.

2) Organizational Culture:

Assess the existing organizational culture and its readiness to embrace change and adaptability. Consider factors such as decision-making processes, hierarchy, and the organization's history with project management approaches. An organization with a culture that supports flexibility and experimentation may lean towards an adaptive or hybrid approach.

3) Lessons Learned:

Leverage lessons learned from previous projects within the digital platform business or similar contexts. Identify successful practices and challenges encountered during those projects and apply those insights to inform the selection of the project management approach. This guides avoid repeating mistakes and capitalizing on proven strategies.

4) Novelty in Value Creation:

Consider the level of novelty and innovation associated with the project. If the project involves exploring new technologies, untested ideas, or uncertain market conditions, an

adaptive approach may be more suitable. Adaptive approaches are well-suited for projects that require experimentation, rapid learning, and frequent adjustments.

5) Project Characteristics:

Analyze the specific characteristics of the project, such as complexity, uncertainty, and interdependencies. Evaluate factors like the size of the project team, technological requirements, and the need for integration with existing systems. These characteristics provide insights into the nature of the project and guide determine the most suitable approach.

6) Stakeholder Requirements:

Identify the requirements and expectations of the stakeholders involved in the project, including platform owners, users, developers, and any other relevant parties. Consider their level of involvement, their ability to provide feedback, and their tolerance for change. Understanding stakeholder requirements is crucial in selecting an approach that meets their needs.

7) Risk Assessment:

Conduct a comprehensive risk assessment to identify potential risks and uncertainties associated with the project. Assess the impact of these risks on the digital platform business and the project's success. Determine whether a more adaptive approach would be beneficial in managing and mitigating these risks.

8) Project Communication:

Evaluate the communication needs and dynamics within the project and the digital platform business. Consider the frequency, channels, and complexity of communication required for effective collaboration. A more adaptive approach may be suitable if the project involves frequent and open communication channels.

9) Value Conversion (Monitoring & Control):

Evaluate how the project contributes to value creation within the digital platform business. Assess whether the project requires a more iterative and adaptive approach to enable faster value realization and feedback loops. Consider the potential for incremental improvements and the ability to respond to market demands.

Based on the analysis of these elements, project managers can make an informed decision about whether a predictive, adaptive, or hybrid approach is the best fit for the digital platform business at the beginning of the project life cycle. It's important to note that the choice of approach may evolve as the project progresses and new information becomes available. Flexibility and adaptability are key in The Digital Platform Ecosystem (DPE).

APPENDIX B – SEMI-STRUCTURED INTERVIEW SCRIPT

I. File Data

Name: *.MP4

Length: [00:00:00]

II. Interview Data

Date: DD/MM/YYYY

Time: HH:MM

III. Interviewer

ANDRÉ LUIZ BARROS NERY, acadêmico Doutorado PPGP (UNINOVE).

IV. Interviewee

NAME OF INTERVIEWEE, Position and Current Company.

V. *Digital Platform-based Ecosystem (DPE) – company based*

Nome da Empresa referência para o Ecossistema:

Tamanho do ecossistema (profissionais):

Tamanho do ecossistema (faturamento anual):

Tamanho do ecossistema (quantidade de empresas associadas):

VI. *Empresa associada ao Digital Platform-based Ecosystem (DPE) – novo negócio*

Nome da empresa associada ao Ecossistema:

Tamanho da empresa associada ao Ecossistema (profissionais):

Tamanho da empresa associada ao Ecossistema (faturamento anual):

VII. *Caracterização do projeto que implementou o novo negócio digital no contexto do DPE*

a) Nome do Projeto:

b) Tamanho do Projeto (duração em meses):

c) Tamanho do Projeto (custo total U\$\$):

d) Complexidade do Projeto (grau de risco avaliado):

e) Complexidade do Projeto (quantidade de negócios envolvidos):

f) Novelty of Project delivery (Shenhar & Dvir, 2007):

VIII. *Caracterização do gerente de projetos responsável pela fase final de implementação da novidade no negócio digital no contexto do DPE*

g) Grau de formação:

h) Certificações em PM:

i) Tempo de experiência em PM:

- j) Project leadership function (Olugboyega *et al.*, 2023): (*Top-level project leadership, Middle-level project leadership, Lower-level project leadership*)

IX. Itens a serem tratados na entrevista

- a) *Digital Business Model Type* (Acs *et al.*, 2021; Remané *et al.*, 2022)
- b) *PM Development Approach adopted* (Shenhar & Dvir, 2007; PMI®, 2021; Thesing, Feldmann, & Burchardt, 2021; Musonda & Okoro, 2022)
- c) *PM Development Approach decision process - intuitive or rational* (PMI®, 2021)
- d) *PM Size and Complexity* (Carvalho & Rabechini, 2019; (PMI®, 2021)
- e) *Artefact(s) or technique(s) used to classify PM Development Approach* (PMI®, 2021)
- f) *Novelty in Platform Business Value Creation* (Shenhar & Dvir, 2007; Martinsuo *et al.*, 2019; Acs *et al.*, 2021; Remané *et al.*, 2022)

X. Seções da entrevista

- a) Coleta da assinatura no Termo de Consentimento Livre e Esclarecido (TCLE) – 5 min
- b) Aplicação das questões “desperdiçadas” da entrevista – 5 min
- c) Apresentação do entrevistador e da pesquisa – 3 min
- d) Proposição de acordo sobre as regras da entrevista – 2 min
- e) Aplicação das questões essenciais da entrevista – 40 min
- f) Aplicação da questão extra da entrevista (caso necessário) – 5 min
- g) Desfecho – 5 min

XI. Termo de Consentimento Livre e Esclarecido (TCLE) – 5min

Entregar o Termo de Consentimento Livre e Esclarecido (TCLE) ao entrevistado(a) e solicitar-lhe a leitura tranquila e atenta, sendo sequencialmente solicitada a assinatura do documento.

XII. Aplicação das questões “desperdiçadas” da entrevista – 5 min

Realizar perguntas que ampliem a interação e harmonizem o clima da entrevista, tais como “antes do projeto, o senhor chegou a se dedicar a outras atividades diferentes?” ou “atualmente, quais os temas que mais lhe chamam a atenção?”.

Enaltecer o entrevistado com comentários do tipo “tive acesso ao seu perfil no LinkedIn e percebi o quão valioso ele é. O senhor realmente se destaca em sua área de atuação”.

XIII. Apresentação do entrevistador e da pesquisa – 3 min

Sou André Nery, estudante do doutorado em Gestão de Projetos da UNINOVE e estou realizando uma pesquisa sobre a “escolha da abordagem em gerenciamento de projetos” no contexto dos “Ecossistemas Baseados em Plataformas Digitais”. Reforço que sua participação é voluntária e valiosíssima para esta pesquisa, e que os resultados serão compartilhados com o senhor(a) posteriormente.

XIV. Proposição de acordo sobre as regras da entrevista – 2 min

Para auxiliar na análise do conteúdo da entrevista a mesma será gravada, sendo que o senhor(a) poderá solicitar a interrupção da gravação ou da entrevista a qualquer instante. A gravação será de acesso somente aos pesquisadores envolvidos no processo e informações como nomes, empresas, órgãos e instituições citadas serão transcritas de forma codificada e não serão publicadas em nenhum veículo de comunicação. Outras informações que o senhor(a) julgar sigilosas, assim o serão tratadas e serão inseridas de forma codificada no texto da transcrição.

XV. Aplicação das questões essenciais da entrevista – 40 min

- 1 Concept: *Digital Business Model Type* (Acs *et al.*, 2021; Remané *et al.*, 2022).

Objective: Identify the characterization of the new digital business, according to market structures.

Question1: Do you know the meaning of Digital Platform?

Question2: What is the classification of the novelty implemented by the project in these Digital Platform Business?

Question3: Do you guess that there is difference in manage a common project and a project evolved in a digital platform context?

- 2 Concept: *PM Development Approach adopted* (Shenhar & Dvir, 2007; PMI®, 2021; Thesing *et al.*, 2021; Musonda & Okoro, 2022).

Objective: Identify the project management approach adopted by the project manager.

Question4: Have had your organization a PM Development Approach already defined?

Question5: Which type of approach did you adopted for manage the project? (if not defined by organization)

Question6: Could you classify the general method or technique used?

Question7: Could you exemplify some of the most tools and techniques used for managing the project?

- 3 Concept: *PM Development Approach decision process - intuitive or rational* (PMI®, 2021).

Objective: Understand the decision-making process inserted in the mental model of the project manager when choosing the project management approach at the time.

Question8: How did you carry out the mapping of project management approaches most proper for implementing digital business models? (if not defined by organization)

Question9: Was it easy make decision about what type of approach better fit the project?

Question10: What were the main attributes observed during decision make the process?

- 4 Concept: *PM Size and Complexity* (Carvalho & Rabechini, 2019; PMI®, 2021).

Objective: Understand the association between degrees of project size and complexity and the choice of project management approach.

Question11: Were the length and costs relevant attributes observed to decide the PM development approach?

Question12: Were the risks and quantity of stakeholders evolved relevant attributes observed to decide the PM development approach?

- 5 Concept: *Artefact(s) or technique(s) used to classify PM Development Approach* (PMI®, 2021).

Objective: Identify tools or techniques that could have been used during the decision-making process of choosing the project management approach.

Question13: Which Artefact(s) or technique(s) were used to classify and choice the PM Development Approach adopted?

- 6 Concept: *Novelty in Platform Business Value Creation* (Shenhar & Dvir, 2007; Martinsuo *et al.*, 2019; Acs *et al.*, 2021; Remané *et al.*, 2022).

Objective: Associate the choice of project management approach to the degree of novelty in creating new business value.

Question14: After the completion of the project, what kind of novelty was delivered to the digital business? Derivative, Platform or Breakthrough?

XVI. Aplicação da questão extra da entrevista (caso necessário) – 5 min

- 7 Concept: *Integration* (PMI[®], 2021).

Objective: Validate whether the respondent was committed to management or delegated.

Question15: How schedule and activity rescheduling changes were controlled?

XVII. Desfecho – 5 min

Ciente do valioso tempo do(a) senhor(a), agradeço ter se disponibilizado em contribuir com a consecução do objetivo desta pesquisa.

XVIII. Anotações após a realização da entrevista – 5 min

Deve-se registrar as percepções do pesquisador sobre as atitudes emocionais e de reflexo às perguntas demonstradas pelo entrevistado, exatamente no momento que ocorrerem, registrando-se no diário de anotações o tipo de reação e minuto exato de forma que se permita associá-las aos textos transcritos.

Após a entrevista, requisitar as seguintes informações:

- Documento de registro do início do projeto (ex. Termo de Abertura do Projeto, contrato de serviços, etc.);
- Documento de registro do encerramento do projeto (ex. Termo de Encerramento do Projeto, dissolução de contrato, etc.);
- Ao menos uma evidência (documentos, registros em sistemas, etc.) que demonstre a abordagem gerencial adotada para o gerenciamento do projeto.

APPENDIX C – TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO (TCLE)

Prezado Participante,

Você está sendo convidado(a) a participar da pesquisa PROJECT MANAGEMENT APPROACH DECISION FOR DIGITAL BUSINESS NOVELTY INTO THE DIGITAL PLATFORM-BASED ECOSYSTEMS, desenvolvida por ANDRÉ LUIZ BARROS NERY, discente do Doutorado Profissional em Gestão de Projetos do Programa de Pós-graduação em Gestão de Projetos – PPGP da Universidade Nove de Julho (UNINOVE), sob orientação do Professor Dr. MARCOS ROGÉRIO MAZIERI.

Sobre o objetivo central

O objetivo central do estudo é: To map project management approaches most proper for add value to digital business models into The Digital Platform-based Ecosystems (DPE).

Por que o participante está sendo convidado

O convite para sua participação se deve à sua experiência profissional voltada a gerenciar projetos, mais especificamente, empreender projetos que visam entregar produtos, serviços ou melhorias que adicionem valor aos Negócios Digitais num contexto de Plataformas Digitais, podendo ser estes voltados para: Inovação do Produto, Inovação do Processo, Inovação da Plataforma, Transação da Plataforma ou Oferta de Produtos/Serviços (*sellers*).

Sua participação é voluntária, isto é, ela não é obrigatória, e você tem plena autonomia para decidir se quer ou não participar, bem como retirar sua participação a qualquer momento. Você não será penalizado de nenhuma maneira caso decida não consentir sua participação, ou desistir da mesma. Contudo, ela é muito importante para a execução desta pesquisa, posto a relevância de sua experiência e disponibilidade de sua atenção.

Reafirma-se que serão garantidas a confidencialidade e a privacidade das informações por você prestadas.

Mecanismos para garantir a confidencialidade e a privacidade

Qualquer dado que possa identificá-lo será omitido na divulgação dos resultados da pesquisa, e o material será armazenado em local seguro.

A qualquer momento, durante a pesquisa, ou posteriormente, você poderá solicitar do pesquisador informações sobre sua participação e/ou sobre a pesquisa, o que poderá ser feito através dos meios de contato explicitados neste Termo.

Identificação do participante ao longo da pesquisa

Não há risco direto ou indireto de identificação do participante nesta pesquisa. Ainda assim, ressalva-se o direito do participante em explicitamente solicitar que seja resguardado o sigilo de sua identificação.

Procedimentos detalhados que serão utilizados na pesquisa

A sua participação consistirá em responder perguntas de um roteiro de entrevista/questionário ao pesquisador do projeto. Uma vez que a gravação da entrevista é condição sem a qual não se pode prosseguir, considera-se autorizada pelo entrevistado(a) a gravação da entrevista, sendo a mesma registrada também no ato da entrevista.

Tempo de duração da entrevista

O tempo de duração total da entrevista é de aproximadamente uma hora, incluindo-se o tempo destinado ao questionário de aproximadamente trinta minutos.

Guarda dos dados e material coletados na pesquisa

As entrevistas serão transcritas e armazenadas em arquivos digitais, mas somente terão acesso às mesmas o pesquisador e seu orientador.

Ao final da pesquisa, todo material será mantido em arquivo, por pelo menos 5 anos, conforme Resolução 466/12 e orientações do CoEP-UNINOVE.

Benefícios diretos (individuais ou coletivos) aos participantes da pesquisa

Não há benefício direto em participar da pesquisa.

Previsão de riscos ou desconfortos

Toda pesquisa possui riscos potenciais, maiores ou menores, de acordo com o objeto de pesquisa, seus objetivos e a metodologia escolhida. Assim, esclarece-se que esta pesquisa possui os seguintes riscos e medidas para minimizá-los:

- Risco de constrangimento durante a entrevista
 - Medida: contorno com esclarecimento sobre a intenção da pergunta;
- Risco social/profissional
 - Medida: não divulgação dos dados do entrevistado e ocultação do nome da empresa

Sobre divulgação dos resultados da pesquisa

Os resultados serão divulgados de forma agrupada na Tese de Doutorado, por meio da publicação no repositório de teses/dissertações da Universidade Nove de julho (UNINOVE) no link <https://bibliotecatede.uninove.br>, ou por meio de artigos científicos.

ANDRÉ LUIZ BARROS NERY

Contato com o pesquisador responsável:

Tel: (61) 99133-4152

e-mail: adm.andrenery@hotmail.com

São Paulo/SP, XX/XX/2023

Declaro que entendi os objetivos e condições de minha participação na pesquisa e concordo em participar.

NOME DO PARTICIPANTE

Contato com o participante:

Tel: (99) 99999-9999

e-mail: email@host.com

ATENÇÃO:

Este termo é redigido em duas vias, sendo uma para o participante e outra para o pesquisador, sendo todas as páginas rubricadas pelo participante da pesquisa e pelo pesquisador responsável, com ambas as assinaturas apostas na última página.

O Comitê de Ética em Pesquisa da Universidade Nove de Julho (CoEP-UNINOVE) é um colegiado interdisciplinar e independente, que deve existir nas instituições que realizam pesquisas envolvendo seres humanos no Brasil, criado para defender os interesses dos participantes de pesquisas em sua integridade e dignidade e para contribuir no desenvolvimento das pesquisas dentro dos padrões éticos (Normas e Diretrizes Regulamentadoras da Pesquisa envolvendo Seres Humanos – Res. CNS nº 466/12 e Res. CNS 510/2016). O CoEP-UNINOVE é responsável pela avaliação e acompanhamento dos protocolos de pesquisa no que corresponde aos aspectos éticos. Endereço do CoEP-UNINOVE: Rua. Vergueiro nº 235/249 – 12º andar – Liberdade – São Paulo – SP CEP. 01504-001. Telefone: 3385-9010. E-mail: comitedeetica@uninove.br. Horários de atendimento do CoEP-UNINOVE: segunda-feira a sexta-feira – Das 11h30 às 13h00 e Das 15h30 às 19h00.