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# Carving out New Business Models in a Small Company through Contextual Ambidexterity: The Case of a Sustainable Company

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Received: 31 January 2020; Accepted: 13 March 2020; Published: 17 March 2020


**Abstract:** Business model innovation (BMI) and organizational ambidexterity have been pointed out as mechanisms for companies achieving sustainability. However, especially considering small and medium enterprises (SMEs), there is a lack of studies demonstrating how to combine these mechanisms. Tackling such a gap, this study seeks to understand how SMEs can ambidextrously manage BMI. Our aim is to provide a practical artifact, accessible to SMEs, to operationalize BMI through organizational ambidexterity. To this end, we conducted our study under the design science research to, first, build an artifact for operationalizing contextual ambidexterity for business model innovation. Then, we used an in-depth case study with a vegan fashion small e-commerce to evaluate the practical outcomes of the artifact. Our findings show that the company improves its business model while, at the same time, designs a new business model and monetizes it. Thus, our approach was able to take the first steps in the direction of operationalizing contextual ambidexterity for business model innovation in small and medium enterprises, democratizing the concept. We contribute to theory by connecting different literature strands and to practice by creating an artifact to assist management.

**Keywords:** business model innovation; organizational ambidexterity; design science research; small and medium enterprises; sustainability; strategy

## 1. Introduction

Business model innovation (BMI) has been praised as a mechanism for companies achieving sustainability [1,2]. However, several types of barriers may hinder this type of innovation: cognitive [3–6], managerial [3,5,7], relational [3,8] and environmental [3,4,9]. It is not surprising that the capability for BMI is not widespread amongst organizations [10]. When considering small and medium enterprises (SMEs), the challenge is even more prominent, as SMEs tend to focus on business survival rather than planning BMI [11]. Exploiting their current business model (BM) in order to attain economic effectiveness constitutes, by itself, a significant challenge [12]. As a consequence, SMEs are likely to be trapped into addressing emerging issues of current BM implementation, neglecting exploring new opportunities [11]. However, for long term survival, it is important to also be innovative and adaptive to a changing context, at a time of shortening BM life cycles [13] and of increased

pressure from economic, social and environmental demands, entailed by the transition to sustainable development (SD) [14]. Incorporating environmental and social aspects into businesses represent additional challenges for BMI processes. It requires cross-functional and systems thinking, as well as radical changes in business processes, products, and organizational forms [15]. As a result, most BMIs for sustainability are developed ad-hoc and are neither systematic nor systemic [16].

Thus, there is a need to exploit established BMs and, at the same time, a need to search for new BMs that adapt to the needs and demands that are constantly changing, in order to become a sustainable organization, that is, an organization that can achieve (enduring) success while performing well in economic, social and environmental aspects. This managerial capability to exploit and explore refers to organizational ambidexterity [17,18]. Organizational ambidexterity has also been often highlighted as a mechanism to attain sustainability [19,20]. However, this is another concept that is difficult to implement [21]. Again, in the context of SMEs, it becomes an even more difficult task [12], even though, as suggested by recent studies, SMEs could benefit from being ambidextrous and should take action in this direction [22].

It is observed that, although BMI and ambidexterity are important mechanisms for achieving sustainability, the connection between both concepts has received limited attention in the literature [23]. This gap is even larger from the perspective of SMEs, as BMI literature mostly focuses on large companies, often neglecting SMEs [7,24]. Laudien and Daxböck [4] argue that BMI research should go beyond the focus on large, established companies. In the small business scenario, resource constraints and top management belief that SMEs cannot pursue more ambitious innovation strategies, make ambidexterity difficult [22,25] and explains the emphasis on current BM. Large companies, taking advantage of greater resources, can dedicate teams to pursue innovations in BMs, while also improving current BM. For example, the study by Winterhalter and colleagues [9] demonstrates how BASF has sought BMI leveraging its slack resources and creating new internal divisions. From a sustainability perspective, SMEs tend to engage mostly in incremental sustainability innovations rather than radical BM changes [15].

Tackling such a gap, this study's research question is: how to manage BMI through contextual ambidexterity in the SME context? This study aims to develop a practical artifact, accessible to SMEs, to operationalize BMI through organizational ambidexterity. This will support SMEs in improving current performance while exploring novel BMs for sustainability. Methodologically, the work has an exploratory objective, since there are few contributions that meet the gap presented, it seems inappropriate to propose a generalization or theory validation approach. Addressing BMI within specific contexts is useful for initially understanding the phenomenon in a particular situation, before being able to draw general conclusions [26]. From a procedural viewpoint, we use Design Science Research (DSR) that fits the purpose of building an artifact. A testing case study was conducted as a complimentary evaluation of the DSR [27].

Our findings show that the artifact was able to achieve satisfactory results, helping the business improve its current BM performance, leveraging economic resources, while also exploring a new BM. We contribute to the BMI and the contextual ambidexterity literature, by better understanding the relations between both concepts and elucidating key managerial aspects that underlie its practical application. Finally, our practical artifact organizes the process and existing tools, which provide interesting managerial implications regarding helping SME managers in their BMI efforts.

The paper is organized as follows. Section 2 presents the theoretical background, exploring the BMI and the organizational ambidexterity literature and presenting the idea behind this study's propositions. Section 3 presents the proposed method, the key aspects of the research design. Section 4 contains the artifact design and development. Section 5 covers the case study and the evaluation of the artifact. Section 6 presents the discussion of the results, and, finally, the conclusions are presented in Section 7.

## 2. Theoretical Background

### *2.1. Business Models and Sustainability*

The BM construct emerged in the early 2000s with the emergence of the internet-based business [28]. Its prominence is related to understanding why have most of the newly created internet-based businesses failed, following the dot-com bubble bursting [29]. This line of inquiry proposes that the BM represents the key logic of the business, answering questions such as: why does it make sense to execute these activities? Does the proposition make sense for the customers, and will it entice them to pay a fair amount for my offering? The concept is closely associated with business success and profitability. Every successful company depends on a winning BM [30,31].

Teece [32] (p.172) defines BM as a representation of the company architecture of value creation, delivery and the mechanisms to capture part of this value. The concept of BM draws on the resource-based view (RBV), on Porter's strategic positioning idea and notions from Transactions Cost Economics (TCE) [33]. DaSilva and Trkman [33] consider that, by connecting these major theoretical roots, the BM concept helps to leverage differential resources (or VRIN as defined by Barney [34]) and to combine it to a sound market position strategy, while providing a decision-making framework to issues such as verticalizing or de-verticalizing.

The definition of BM suggests that by thinking about its BM, the company will focus on finding ways of improving value flow, securing its economic success [35]. The sustainability literature has endorsed the power of BM conceptualization, as a means to innovate towards sustainability. To achieve sustainability from a Triple Bottom Line (TBL) perspective, there is a need to be economically successful while bringing environmental and social value to a wider range of business stakeholders. The concepts of BM and BMI are fundamental to achieve TBL success. Therefore, it is important to understand better the BMI phenomenon, its specificities and characteristics to derive practical solutions for its operationalization.

### *2.2. What Characterize a Business Model Innovation?*

Characterizing the concept of innovation has always been complex, even when addressing rather well-investigated issues such as product and service innovation [36–38]. Innovation generally refers to changing a situation to achieve a better condition. Even though all innovations can be regarded as improvements, the other way around is not always true. Many improvements are not innovations. The definition of innovation evolved during a long period, and the Oslo Manual editions capture the consensus and the advancements [39]. The result of years of research regarding innovation allowed for reaching out to a consensus. However, when considering BMI, there is still subjectivity and confusion. Even the latest 2018 version of the Oslo Manual [39] acknowledges this fact. There still exists much subjectivity in what are improvements to the BM, through strategic action, and what consists of innovation of the BM. If we broaden too much, we reach a point where every improvement may be called BMI.

The BM literature began, therefore, to discuss the relations of BM with the concept of strategy [29,40–42]. However, the blur between what is BMI and what are actions for improvement remains. To what extent would the creation of new choices in the BM be confused with the implementation of improvement actions, or tactics, commonly envisaged in strategic planning? Could, for instance, the adoption of a new channel in the BM also sum up as an initiative to improve the performance of an established goal in the strategic plan?

It is noteworthy that definitions such as Eppler and Hoffmann's [43] (p.5), which characterizes BMI as a "(...) multi-stage process whereby organizations transform new ideas into improved business models", makes it difficult to determine the differentiation between strategic improvement actions and innovations in BMs.

Regardless of the lack of consensus, it seems evident that both approaches have their relevance. Moreover, they are not excluding but complementary views. Casadesus-Masanell and Ricart [40] show

how the strategy can select the best BM option, and how tactics will strengthen the virtuous cycles of the BM. Magretta [29] contributes to understanding how the reality of competition addressed by strategy relates to the creation of the BM system. Zott and Amit [44] demonstrate that cost differentiation or leadership strategies, acting in conjunction with novelty-focused BMs, are related to improving business performance. Chesbrough and Rosenbloom [45] argue that while the BM primarily seeks to articulate value creation and delivery, the strategy focuses on how to protect the BM from competitive threats. Achtenhagen, Melin and Naldi [41] propose a framework that demonstrates how actions can lead to incremental changes in the BM, creating sustained value for the company. Minatogawa et al. [46] propose an artifact that assigns indicators and measures the performance of BM choices, seeking to improve their performance from web analytics data.

From the literature presented, it is observed that strategy enhances the BM. That is, tactical actions [40] can derive new BM elements in order to improve it. BMI would then occur incrementally, enhancing the company's current BM. The creation of new BMs, not necessarily addressing improvements in current BM, follows another BMI school of thought. They are studies usually associated with visual tools [5] and BM design [47] and are often studies related to startups and new organizations [48–53]. This research area is more recent, and does not present mature tools and methodologies, unlike strategic planning.

According to the gap previously discussed, corporate sustainability is increasingly being able to deal with these two forms of BMI. Therefore, there is a need for studies that can not only bring these two strands of thought together theoretically but also demonstrate how to manage them. In this research, organizational ambidexterity has been adopted as a conceptual framework to deal with the management of improvement of current BM and the creation of new BM. Literature regarding the discussion of ambidexterity in the context of BMs is very incipient. Further analysis of how these concepts can work together lays the foundation for this work, and support building an artifact to develop both types of innovations in BMs.

### *2.3. Organizational Ambidexterity*

Organizational ambidexterity is the ability of a company to simultaneously execute the present strategies while exploring new business opportunities [54]. The management challenge is substantial, once the future arises within the context in which its employees currently operate, making it difficult to simply engage them to drop the certainty for the uncertainty [55]. This ability encompasses both capabilities for exploitation and for exploration [56], which would respectively represent alignment and adaptability capabilities [17]. Exploitation is related to competition in markets that value efficiency, control, and incremental improvements. Exploration is related to new markets that need greater flexibility, autonomy, and experimentation. The ability to balance the acts of exploitation and exploration characterize the concept of organizational ambidexterity [18,57,58].

It is important for this study to understand how ambidexterity can be accomplished so that an artifact can be proposed. According to O'Reilly and Tushman [56], the literature has pointed three approaches to understanding the achievement of organizational ambidexterity, namely:

- **Sequential Ambidexterity**: it is characterized by the companies' evolution, adapting to environmental changes by realigning their structures and processes sequentially [59]. That is, a company would go from the condition of exploiting to exploring, and vice-versa, at specific periods of time. Extending to the context of BMI, an organization with sequential ambidexterity would identify a problem in its current BM and explore a possible new BM. Then, it would manage more than one BM at the same time and, when the new BM is at the point of escalation, steadily move from the previous to the next BM, dropping the first after the novel is successful. For this reason, sequential ambidexterity studies often focus on long-term examples.
- **Simultaneous or structural ambidexterity**: this approach usually separates the company into two different structures, which could differ not only structurally but also in competencies, systems, incentives, process, and culture [56]. Each distinct unit has its own purpose. Hence the idea of

simultaneity: while the company allocates part of its resources for exploitation, it keeps another part simultaneously for exploration. In terms of BM, the company would manage to exploit and exploring more than one BM at the same time. They could be seen as two different companies, whenever there is also structural separation [23].

- **Contextual Ambidexterity**: both types of ambidexterity presented above face the challenge of exploring and exploiting at the organizational level. Gibson and Birkinshaw [54] propose an approach at the individual level—characterized by starting from the individuals of the company—depending on the context presented. This approach is defined as the behavioral ability to simultaneously demonstrate alignment and adaptability in a single business unit [54]. This approach argues individuals in a company make their own judgment on how to best divide their time to meet demands for alignment and adaptability. From the BM context, the company would manage more than one BM at the same time. However, unlike the structural approach, there would be no structural separation between them. Therefore, usually, the same people are responsible for the different BM, having to shift from one activity to another.

For a better understanding of the relations between individual and organizational level in ambidexterity, we recommend the work of Prange and Schlegelmilch [60]. At this point, it is relevant to observe which ambidexterity approach would have greater synergy with this study. Literature has noted that there are cognitive barriers related to BMI, e.g., cognitive inertia [3–6] and path dependency [5,33], that would hardly be transposed. Convincing a small business to simply drop the work of several years, to bet on exploring something new without concrete opportunities, would not be trivial. This discards the sequential approach. Moreover, typically small companies do not have enough resources to divide the organization into units, which discards also structural ambidexterity.

The contextual approach provides the possibility of exploiting the maximum performance of an existing BM, while, at the same time, exploring new BM opportunities. From the theoretical point of view, Markides [23] reinforces the importance of testing the contextual ambidexterity for BMs, as the literature does not commonly present proposals in this sense. The theoretical framework on BMs has sought to address the issue of competing with two BMs in a limited way [23]. For these reasons, we determined that contextual ambidexterity fits better with SME context and to our study.

Through contextual ambidexterity, we address the need previously described regarding the ability to manage BMI in different environments. It is noted that the BMI process needs to be managed from two perspectives. On the one hand, it is necessary to manage tactical actions, which can generate improvements and changes in the company's current BM. The results aligned with strategic planning will usually be predictable. On the other hand, it is also necessary to be able to explore new BM and this process will need to rely more heavily on experimentation, something present in the BMI literature but poorly instrumentalized [46,61,62]. Predicting the architecture of a new BM from the start can be difficult.

Thus, the contextual ambidexterity represents a form of combining the two BMI schools. It allows pursuing continual improvement, aiming to build a sustainable organization and, at the same time, to explore new BM configurations, which fits the idea of trailing a path towards SD. While the BMI literature can provide means to operationalize each objective, the contextual ambidexterity literature contributes to means of doing so concomitantly.

### *2.4. BMI Mechanisms and Sustainability*

Both BMI [1,2] and ambidexterity [19] are considered important mechanisms, at the firm level, to achieve (SD), which can be defined as the "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [14] (p.16). It is a form of development that seeks to, besides generating profit, safeguard the environment's and society's health. The goal of this section is to better clarify the relations between these mechanisms and SD.

The capability to effect changes in traditional BM, which may not be aligned with the SD concept, has recently been acknowledged as a fundamental approach to achieving sustainability [63]. According

to Bocken et al. [64], there is a close connection between sustainable BMI and experimentation. The latter refers to the process of seeking innovations that can result in sustainable BMs. Thus, experimentation is the trigger to begin a transition towards SD [65], because it is the knowledge acquired from the experimentation process that helps develop new BMs [66]. "Experimentation highlights the iterative nature of a process of trial and error" [67] (p.1501). However, although BMI for sustainability can be impactful, it is also challenging and can be slow to achieve [68]. This is partly due to the lack of published in-depth case studies of BMI and of effective ways for organizations to perform low-cost and low-risk BM experimentation, hindering the implementation of more radical BMs [63].

It is, therefore, necessary to create complementary mechanisms that allow organizations to respect this challenging and time-consuming experimentation process for new sustainable BM, aligned with the SD. The organizational ambidexterity fulfills this role, it allows exploratory experimentation while sustaining current business performance, i.e., profit-oriented development [19,69] through exploitation [70]. Experimentation brings a linkage between BMI, ambidexterity, and sustainability. The capability to experiment with new BM can be supported by ambidexterity, nourishing the organization while exploring new BMs. This can result in a TBL-oriented BM or a pure profit-oriented BM depending on the content and direction of the conducted experiments. Bocken et al. [71] proposition to build archetypes for connecting BMI and the sustainable transition is a good example to explore the artifact to pursue a path towards sustainability. In this regard, firms could leverage the archetypes to improve creativity and improve the design of new sustainable BM through conceptual combination and analogical thinking.

The herein proposed artifact focuses on promoting BMI ambidextrously through experimentation, which means that its output will be dependent upon the nature of the experiments. This aligns with Evans et al. [63] recommendation not to take BMI lightly, as output assessments are complex and context-dependent. The artifact could potentially support higher business sustainability when used within a sustainability experimentation context, i.e., defining TBL variables and impact measures. Thus, the sustainability performance of the developed BM will vary depending on the business environment in which it is developed. We aim to provide the first steps into this direction with our proposition, reducing the experimentation variables and focusing on what is not yet well developed: the ambidextrous management of BMI.

## 3. Method

### *3.1. Research Methodology*

This study aims to create an artifact (for a thorough definition of an artifact see Dresch et al. [72] (p.106–112)) to help SMEs manage BMI ambidextrously, improving economic performance while exploring new BM. Existing theory addressing this issue, the organizational ambidexterity, is poorly operationalized in practice. Thus, despite having a solid theory, it lacks practical means to be translated into practice. There is a need, therefore, to create innovative solutions, consisting of tools, methods, procedures, etc. to cover this gap.

Management science usually calls for new ways of doing things to answer unsolved problems in a changing environment, which is called "the sciences of the artificial"—defined as the science of studying human-made artifacts that did not previously exist [72]. The key point is that common methodological practices in management science, such as case studies, action research and surveys [27,73], usually focuses on artifacts, that is, models, methods, techniques, tools, etc. which already exists [72]. In other words, these methodologies usually seek to understand practical actions and translate them into theories. The other way around, meaning that newly constructed theories being translated into practical applications is often neglected [74]. This leads to gaps between theory and practice, failing to create new knowledge of innovative solutions and, therefore, needing to wait until practitioners come with different solutions to generate knowledge.

Considering that this study aims at creating an innovative solution, it needs a methodological procedure that fits this objective, which has led the authors to adopt the Design Science Research (DSR) approach [46,75–77]. DSR combines theory building with different forms of practical evaluation to reach potential technological solutions. Figure 1 [78] depicts the conceptual framework of the DSR.

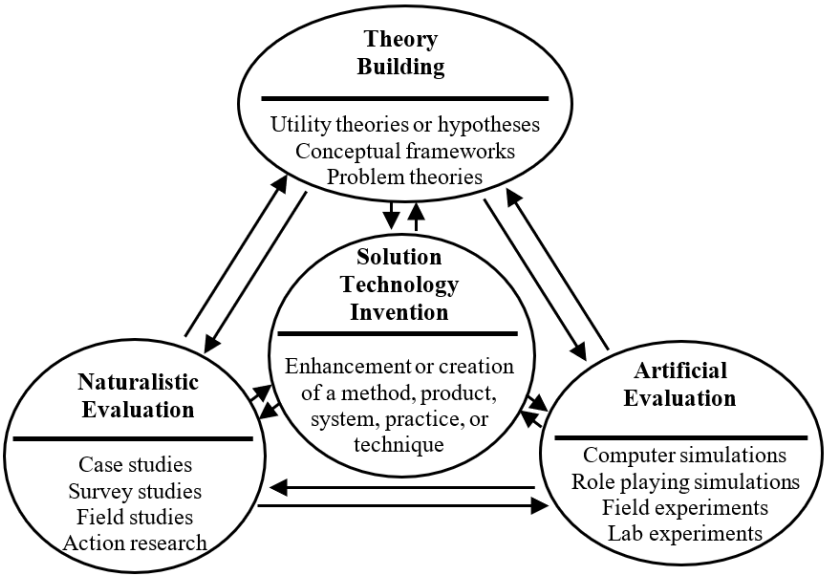


**Figure 1.** Conceptual framework of the Design Science Research methodology [78].

The central point in DSR is the solution (the artifact), which can be a method, a product, a system, among others. To reach out to the solution, different theories are combined with an evaluation configuration, which should be aligned with the artifact's aim. Thus, one can combine theory with naturalistic and artificial evaluation, or with both at the same time. The naturalistic approach seeks to understand how does the artifact work in real-world conditions, meanwhile, the artificial evaluation uses simulation models or experiments [78]. Considering our approach targets managerial audience, and it seeks to solve problems within complex human systems, in which applying computer models, or making experiments can be not only a challenge but also can lead to biases [72], we adopted a combination of theory building with naturalistic evaluation through an in-depth case study.

### *3.2. Research Design*

We adapted Hevner et al.'s [79] four steps method for DSR, using Cole et al. [27] suggestions. This adaptation is important as Hevner et al.'s [79] method is primarily designed for information systems, while Cole et al. [27] provide interesting pathways for using DSR for managerial aims. Thus, the adapted Hevner et al.'s [79] DSR steps using Cole et al.'s [27] are as follows:

- **First step**: Understand the problem and the class of problems based on practical observation and theoretical considerations. The main focus is to understand the existing and unsolved problem in practice that also lacks theory as to how to overcome it in practice [73].
- **Second step**: build the artifact based on the extant literature and by taking into consideration existing frameworks and methods. This is a literature analysis especially focused on building the artifact for solving the identified problem. Thus, it should not be confused with a literature review used to build an article since they have different inputs and different goals [72].
- **Third step**: evaluate the artifact using naturalistic and/or artificial evaluations. The former refers to real-world applications, using testing case studies or action research, whereas the latter involves simulation models or experimental settings. As justified above, in this study we followed a naturalistic approach.

- **Fourth step**: derive conclusions and generate discussion for knowledge creation around the class of problem and the artifact. It is a reflective step once the focus is to better understand the artifact functioning and also take into consideration consequences not previously expected due to the close relation to practical context [72].

### *3.3. Class of Problem*

Management practice faces a series of problems that demand attention and decision making for reaching out to potential solutions and may be very specific to each company or can be broad and pervasive to a population of companies facing similar issues. DSR is primarily concerned with diffused problems, focusing on problems that populations of companies have in common, which are poorly addressed. This group of problems diffused to a set of companies is called the class of problem. By considering a class of problems, the DSR allows for certain generalization to the application of the artifact, which could be applied to companies that share the same nature of the problem [73]. For example, the Balanced Scorecard is an artifact created to solve the class of the problem of strategic alignment [72]. Dresch et al. [72] provide examples of classes of problems in the operations management area and the existing artifacts addressing each of them, represented in Table 1.

**Table 1.** Examples of existing artifacts to different classes of problems.

| Class of Problem | Artifacts |
| --- | --- |
| Production planning and control | Drum-Buffer-Rope [80]; Kanban [81]; CONWIP [82] |
| Cost measurement | Throughput Accounting [83]; Activity-based Costing [84]; Production effort units [85] |
| Process mapping | Value stream map [86]; Mapping by production function mechanism [87]; Architecture of integrated information systems ARIS [88] |
| Problem analysis and decision-making support | Thinking process [89]; Systems thinking and scenario planning [90]; Method for problem identification, analysis and solving [91] |
| Project management | Critical chain [92]; PERT/CPM |

For this study, we derive our class of problems by looking closer into the SME population. BMI has a significant influence on SME performance [12]. However, finding a successful BM is not trivial [61], considering that most fail to achieve financial results and to sustain working capital to increase growth, key elements of a successful BM [93]. SMEs face significant challenges in terms of resources, revenues and working capital, which hinders their growth and, in many cases, the path towards sustainability. At the same time, the sustainability curves are blurred, because many small businesses get trapped in this situation, failing to both make substantial improvements and explore new, alternative BMs [11,22].

This is not a problem of technological innovation per se or strategic alignment alone. It is a diffused problem with BMI, a two-sided problem. On the one side, it is a problem of finding a path for its current BM, increasing its performance. On the other side, it is a problem of seeking new BMs, alternatives to search the unknown, to make new value propositions, to seek a new path, aiming to achieve TBL goals for SD. The main issue is, however, that one needs to pursue these two BMI goals at the same time. It would be unreasonable to expect a small business to drop everything to explore a new BM. It does not make sense either to be constantly trying to keep pace with the current state that has its drawbacks, failing in the long run. This study's class of problem is, therefore, the ambidextrous management of BMI.

### *3.4. Naturalistic Evaluation Data Collection and Analysis*

To answer this study's research question, we chose to build an artifact and then test it in a real-world case study. Thus, we followed Yin's [94] and Eisenhardt's [95] case study guidelines for selecting the case and building the data collection and analysis protocol. We first delineated the configuration of the case selection, aligned with the study's aim and focusing on building theory [96]. Then, we designed

the data collection protocol, using data triangulation from different sources, and aligned with the particularities of the study. This means that different data collection, from different sources, should match the needs for understanding the artifact's working in the reality, its potential issues and its capability to reach satisfactory results, solving the problem [72].

#### 3.4.1. Case Selection

The case selection was fundamental for evaluating the artifact during the third stage of DSR [74]. The relevance of the DSR approach relies on not trying to draw generalizations, but on proposing solutions to address a specific class of problems, generating managerial and theoretical implications [78]. In search of a naturalistic assessment, a case was sought where it would be possible to evaluate the proposed artifact, tracing the contributions to a theoretical construction, and that showed alignment with the class of problem. Thus, a small company with the unfeasible capacity to carry out structural and sequential ambidexterity was a primary criterion. The idea is to show that ambidexterity can be democratized, being accessible to companies of different sizes and proportions. Suggesting companies that have the capability for other types of ambidexterity, could lead to the error of not applying the idea of contextual ambidexterity, allowing, for example, the allocation of people to the specific task of searching for innovations in BMs.

It would also be important for the company to present at least one BM that is already exploited. Otherwise, it would not be possible to observe issues related to ambidexterity, since the focus on only searching for a new BM will characterize the company only in the exploration environment. Therefore, companies considered startups have been excluded from this selection. Startups are under the condition of extreme uncertainty [51], implying that they may not have a mature BM for exploitation.

In addition, for this ambidextrous relationship that guides the artifact, it would be important to characterize the selected case from the TBL perspective, bearing in mind that the objective was to propose BMI ambidextrously, in order to promote the organization's sustainability.

#### 3.4.2. Data Collection and Analysis

For the data collection, we used mainly interviews, documents, and observation as data sources. The data collected was divided into three dimensions: the exploitation environment, the exploration environment and the connection between environments through knowledge management (KM). We conducted two interviews per month during a two-year period, amounting to a total of 48 interviews, divided by the exploitation, the exploration, and the KM perspectives.

The interviews were conducted mainly with the company's CEO, as the top management was considered ideal to deal with the BMI strategies and the overall evaluation of the artifact's functioning. The CEO was 32 years old, graduated in fashion, and had specializations in Textile and Clothing Marketing. In addition, she had an MBA in business and marketing management. Before founding this current company, she already had another experience as an entrepreneur also in the fashion industry. Besides, she had worked as a business coordinator for other companies. The decision-making about the company's BM was always taken by the CEO, thus, she was the focus of the interview.

We used a semi-structured approach to the interviews, in which the direction of each interview depended upon the results of the previous data collection. Thus, we kept flexibility, always focusing on understanding the artifact's application. If the results of the previous visit pointed to a need to perform, for instance, the action of calling potential customers and using the Lean Startup tool, then the next visit's interview would incorporate questions regarding the implementation of this action. On average, the interviews last one hour, with some variations also depending on the extent of the actions and changes conducted. The interviews were not recorded since this usually leads to informant biases [97]. Thus, we took notes during interviews, separating them into the dimensions of exploitation, exploration, and KM, and also in sub-dimensions of the artifact step conducted. The data was qualitatively analyzed after every two-months to compile the results.

The observations occurred in every visit to the company, and the researchers were allowed to observe day-to-day activities and the application of the artifact. Finally, we used several documents to support the interviews and the observations, as a triangulation for bias reduction and to secure internal validity and reliability [94]. Table 2 depicts the data sources and the objective of each in every dimension. The researchers took notes from each visit to the company, to compile and organize the data.

**Table 2.** Data sources and data collection strategy.

| Data Source | Exploitation | Exploration | KM |
| --- | --- | --- | --- |
| Interviews | The exploitation environment focus was mainly to teach key selected tools and follow the designed process. Thus, interviews were used first to teach and pass knowledge to the company. Second, it was used to follow-up the usability, the practical results, the satisfaction and the capability to reach practical solutions. Finally, interviews were used to understand the creative process for BM improvements. | Interviews were conducted in the exploration environment to teach the practitioners the artifact and the associated tools. Then, subsequent interviews were conducted to evaluate the relationship between practitioners and the artifact's usage, its potential outcomes and drawbacks. | Interviews were conducted to understand how the generated knowledge in each environment was being used by the company. The dynamics of the contextual ambidexterity was evaluated, to understand potential disruptions and negative effects on the company's routines. |
| Documents | Documents were the key data source for the exploitation environment. We gathered data from the company's ERP, the company's strategic maps and balanced scorecard, from the company's data analytics and the company's BM evolution. The goal was to derive the evolution of the company's BM and its performance. | We used documents such as the notes from telephone and e-mail contacts and BM design evolution through the process to understand its performance. The focus is to understand the BM creation process, as well as the fit to the designed artifact | |
| Observation | We observed day-to-day activities, how the artifact impacted the company and how was its application, also used to reduce informant bias from interviews. | We participated in the company exploration endeavors, to observe the contacts with the customer segments, and how the tools were used. | We participated in several meetings and routine activities of the company during the artifact's implementation. We also observed the shift between activities in both environments to better understand the challenges and impacts of the contextual ambidexterity in managerial terms |

## 4. Building the Artifact—Combining Business Models Innovation Schools

As argued in the theoretical background, there are two distinct but complementary BMI schools of thought. In this section, we explore both schools to create an artifact comprising an ambidextrous structure, also understanding its importance for the companies' sustainability. The BMI school that focuses on exploitation is aligned with strategy and acts through incremental changes on the BM. Thus, it seems logical to use the strategy literature concepts and practices in this environment. An adaptation would be necessary to better address the relationship between BM and strategy since it is still poorly understood in practice. The goal of the other BMI school, which focuses on exploration, is to create new BMs. This literature usually targets startups and new venture creation, often exploring concepts such as ideation, design and hypothesis creation and validation [48–53]. Its practical operationalization is still rather diffuse in the literature, thus, it was necessary to integrate and design rather than just adapt.

### *4.1. Adapting the Exploitation Environment*

As a starting point, we followed Minatogawa et al. [46] because it is one of the few studies that operationalizes BMI in the exploitation environment. The strategy and performance management

are this environment's main pillars. Thus, we followed the strategic planning guidelines [98] and the performance management, using the Balanced Scorecard [99]. We also explored the link between the Balanced Scorecard and BM as initially suggested by Osterwalder [100] and further explored by Batocchio, Minatogawa and Anholon [101]. However, considering the need to fit this environment to an overall ambidextrous structure, we made necessary adaptations.

We present our exploitation environment proposition by leveraging this knowledge base, combining strategic planning, performance management, and BM theories. Finally, we integrated mature and well-known systems in the managerial field to facilitate their practical use and also better connect the artifact to the common business best-practices. Figure 2 depicts the designed process flow for the exploitation environment and the key tools and practices for each step.

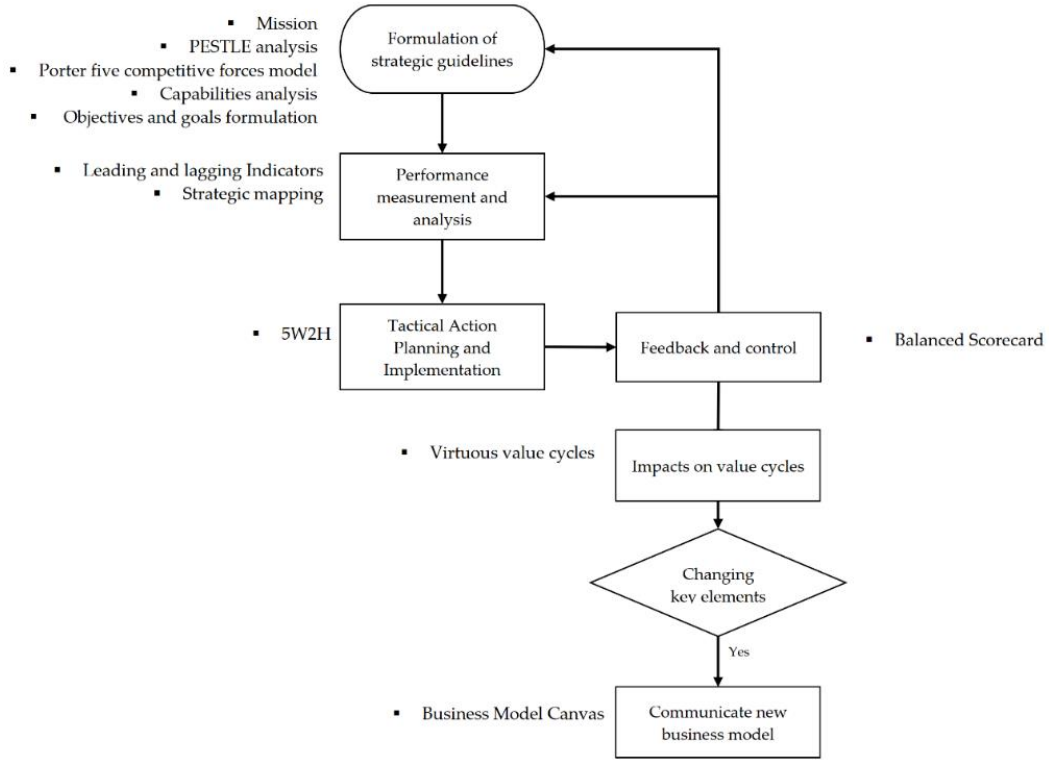


**Figure 2.** Orientation flow for the exploitation environment.

The exploitation flow begins with the formulation of strategic guidelines. This process comprises activities such as defining the business mission [102] and assessing both the external environment, through approaches such as PESTLE analysis [103] and Porter Competitive Forces Model [104], and the internal environment, through capabilities analysis [105,106]. The next step is to create performance indicators, following the Balanced Scorecard. Traditionally, the Balanced Scorecard considers four perspectives: financial, customer, internal processes, and learning and growth [99]. We, however, highlight that companies do not need to limit to those four perspectives, as new approaches begin to incorporate TBL indicators [107]. After creating the performance indicators, they should be related by creating a cause and effect chain relationship between measures [99,108]. This causality relationship is key to elaborate on the strategic map [109].

Measuring the organization's current performance leads to the design and implementation of tactical actions, in which approaches such as the 5W2H [110] are appropriate. This creates an iterative process, continually evaluating the results of the tactical actions, generating knowledge feedback that serves as an input for designing new actions, making necessary strategic reformulation. Until here, the flow is very similar to traditional strategic management approaches.

Despite the existing discussion about strategy and BM in the literature, the relationship between BM and this traditional flow of strategic planning still needs clarification. Thus, we propose that a possible path to building such a relationship is through the company's tactical actions. As previously argued, these actions impact the BM in different degrees, sometimes changing it. Thus, an important question is when do tactical actions change the business model? If we take into consideration Casadesus-Masanell and Ricart [40] conceptualization, where a business model is a set of choices and their consequences, generating a value cycle, then every tactical action would impact some of the BM choices, also promoting a consequence. Therefore, every tactical action would impact at least partially the BM. This definition is important for the artifact and for the practical relationship between strategy and BMs, which is usually limited to the theoretical level.

Finally, the BM representation can take several different approaches, each having their specific goals, which we argue is complementary to one another. The visual tool BM Canvas [49], for example, values the communication, exposing only the key elements of a BM [5], which not necessarily demonstrates the impact of all tactical actions on the BM. While this type of approach limits a BM's exposure to choices and consequences. It helps to broadly understand the company's purpose and value stream.

That said, we can summarize some key contributions of our approach to the exploitation environment:

- We provide a practical application for the relationship between strategy and BMI.
- Considering this relationship, we integrated several traditional strategic management tools into the BMI notion, lapidating to the SME context to search for the operationalization of BMI through tactical actions.
- The approach builds on performance management, which confers guidance for the decision-making process based on data, with the sight of continually improving the BM.
- We discussed the impact of tactical actions on BM, highlighting that this analysis is dependent upon the selected method for representing and communicating the BM.

### *4.2. Creating the Exploration Environment*

To design the exploration environment operationalization, we integrated the available tools and frameworks, also making the necessary adaptations to fit the ambidextrous structure. Figure 3 depicts the designed process flow and associated tools.

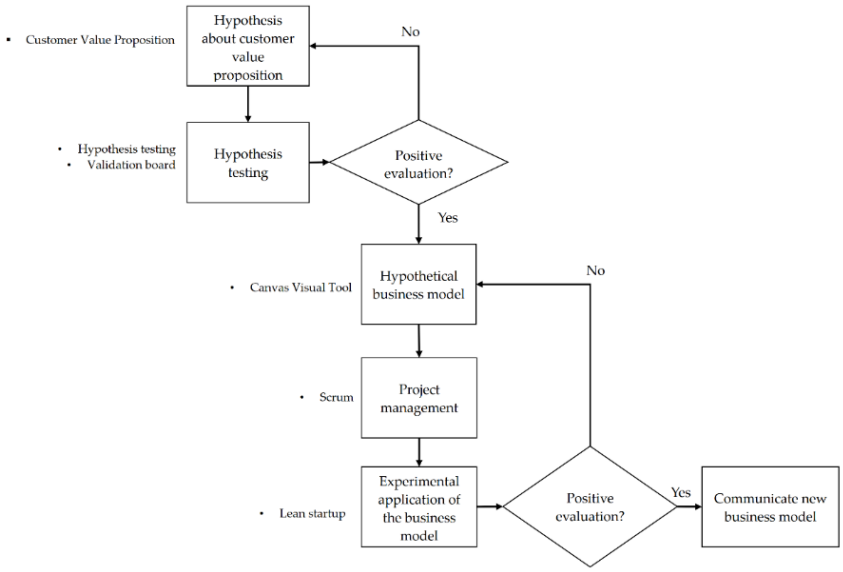


**Figure 3.** Orientation flow for the exploration environment.

To create the "Customer value proposition assumptions" we used Johnson's [48] Customer Value Proposition (CVP) for BM design. The following elements constitute the CVP:

- **Target Customer**: represents the customers that the company intends to serve with the BM. These are real customers who have needs that are still to be met, which Johnson [48] calls the "job to be done".
- **Job-to-be-done**: it is a problem or a need that certain target customers have, but is still not fulfilled or poorly fulfilled. Hilti's case is a good illustration. The company initially sold construction tools for its customers. Nevertheless, Hilti realized that its customers did not need to own the tools to finish and deliver the construction to its customers, only creating unnecessary costs. Thus, by selling the tools, Hilti left a job-to-be-done still poorly fulfilled, because the CVP was to provide the right tools at the right time for its customers. The company then changed to lend the needed tools by demand, charging by use, and, therefore, better fulfilling the job-to-be-done [48].
- **Offering**: Once the problem is identified, or the need is important, it is necessary to offer a solution that will remedy the job to be done.

The focus is to couple an offering to a job-to-be-done before proceeding to design the complete BM. Since the BM success largely relies on the value proposition and the customers, it is important to hypothesize about the core elements of the value proposition before designing the BM. Otherwise, there is a risk of mobilizing resources for a flawed BM. Thus, the fail fast and learn logic through experimentation [111].

In sequence, the "hypothesis testing" phase addresses the initial stages of designing a BM. For this step, we used studies that relate to entrepreneurship and BMI [49–53]. The idea is to create and test hypotheses with every BM element, recalling the idea of BMs as a business research method [29]. There is a need to define what to investigate and how the better perform the tests, defining the purpose of the experiments and the appropriate methodology to improve knowledge creation. Here we propose the application of the validation board tool [112].

The goal is on generating knowledge for the company, not necessarily validating the previous step's hypotheses. If the knowledge acquired in this testing phase is positive, meaning there is a job-to-be-done and a matching offering, then the company can design a value proposition and the flow moves on to the next phase. If the results are negative, the company should leverage the acquired knowledge as a resource to refine the previous hypotheses.

The next stage is to design and represent the "hypothetical BM", using established visual tools, with pre-established elements, such as the BM visual tool Canvas [49]. Designing the BM, even if hypothetically, helps the company studying other BM elements. Here we propose following a project orientation to conduct the hypothetical BM experiments, because of the need to execute in parallel to the other BM. Managing the time between exploitation and exploration activities is a critical contextual ambidexterity barrier [56]. In the small business context, where resources are scarce, the time devoted to each environment needs to be well orchestrated. Hence, the proposition to adopt a project orientation as a possible solution to this barrier. Considering time as an important limited resource allows for a deeper analysis of the dynamics underlying contextual ambidexterity [113].

A project is a temporary effort undertaken to create an exclusive product, a service or a result [114]. The temporary nature of the projects indicates that they have a definite start and end. Thus, this step would be a temporary effort undertaken to explore new BMs. Delimiting your application to a defined period could help better analyzing the results of the application, keeping the focus on knowledge creation. The hypothetical BM, while not transferred to an exploitation environment, would have the characteristics of an innovation project, not assuming the characteristics of a new BM for the company.

Several project management methods are available in the literature. Among these, there are the traditional approaches, such as the PMBoK [114], and the more recent agile approaches, such as the Scrum [115]. There are important contrasts between these paradigms to be considered for the artifact. Traditional project management follows a logical sequencing and requires dense ex-ante planning

and a high degree of control [116]. Often the process is sequential and linear, following well-defined phases of requirements collection, planning, design, execution, testing and implementing [117]. Agile approaches, in turn, put a smaller focus on ex-ante planning and instead operates through an evolutionary process, reducing uncertainty through learning by doing [118]. The agile was born from software development projects and has an iterative non-linear workflow with incremental deliverables based on experimentation and learning.

Naturally, there is a greater match between the agile project management to the BMI exploration environment, because both emphasize experimentation and learning. We, therefore, suggest agile project management, in which the Scrum tool may be the more mature tool available. To improve the process, it is interesting to combine the Scrum with other entrepreneurship tools, such as the Lean Startup [51] and Customer Development [50]. By doing so, companies can cope with uncertainty and leverage experimentation and learning in the road to explore novel BM. The output from the BMI projects will always be learning and, sometimes, a new BM. When a new BM is reached, then it should be communicated and implemented before moving to an exploitation environment.

The summary of the key contributions of this environment are:

- The organization and integration of different startups and new venture creation literature, considering each tool specificity.
- The emphasis on using the project management approach to exploratory BMI, securing the creation of knowledge assets and avoiding high investments in the initial phases of the flow.
- The focus on reducing necessary investment, while also looking for improving current business, which we believe can provide a potential means for SMEs top management team to embrace ambidexterity.

### *4.3. Knowledge Management as the Connection between Environments*

As already exposed, contextual ambidexterity is the ability of a company to exploit and explore in tandem. Thus, after presenting both exploitation and exploration environments, it is necessary to build a connection between them for the in tandem synchrony. We propose the application of KM, which is considered key to increase innovation and organizational performance [119,120]. To "manage" the knowledge, there is a need to promote a creativity-based culture, fostering innovation and amplifying knowledge creation [121], the key to extracting value from experimentation.

Both the creation of hypotheses and the definition of strategic guidelines begin with the company's existing knowledge base. The creation of knowledge is, therefore, always output from both environments. This knowledge, if well managed, become an asset to the company and an input for creating new hypotheses and new tactical actions. This is not trivial, and the experiments' quality is very important, once poorly managed experiments often do not create new knowledge and can even destruct existing knowledge [111]. Thus, KM plays a key role in allowing the company to create and using knowledge to improve innovation performance.

The knowledge created in one environment does not exclude its use on the other since knowledge is a resource of the company. That is, the knowledge obtained through a tactical action can be the input for the creation of a new BM hypothesis, as well as an experimental action can be the insight for new tactical action. KM is, therefore, the integrative element for an ambidextrous company. Figure 4 presents the proposed artifact of this study.

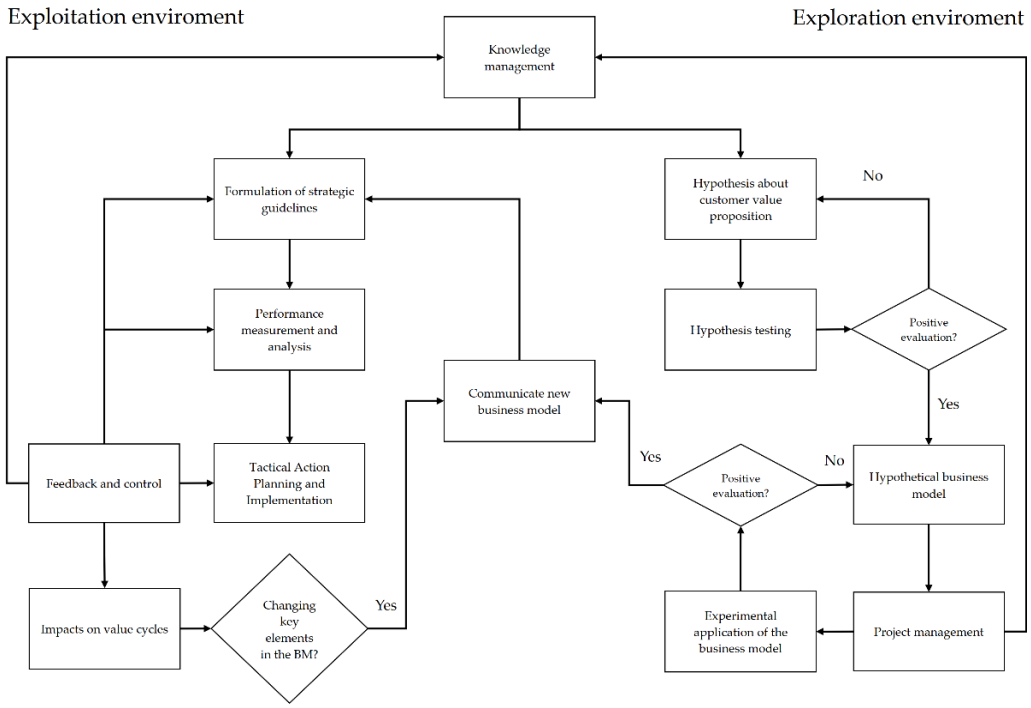


**Figure 4.** The artifact for contextual ambidexterity in small businesses.

In theory, both environments' learning processes have a synergy with the SECI model of knowledge creation [122]. The application of the proposed artifact in a case study will shed some light on KM for contextual ambidexterity, enabling us to observe BMI related knowledge creation. Finally, we summarize our contributions regarding the general structure of the artifact:

- The artifact not only provides exploitation and exploration structures but also promotes the operationalization of both in tandem.
- The understanding that leveraging the created knowledge in both environments, through KM, can be the key to contextual ambidexterity's success.

## 5. Artifact Evaluation—Case Study

The case presentation focuses on aspects that are relevant to understand how the artifact was applied and how contextual ambidexterity was managed. Thus, there is no concern in extensively presenting the step-by-step of each tool application. Thus, only some examples will be shown with greater depth, while the remainder is presented in the appendix as support to the arguments. The intention is to objectively demonstrate the artifact's capability to operationalize contextual ambidexterity. Additionally, the following subsections present the exploitation and exploration environments separately for the sake of comprehension. However, we highlight that both occurred concurrently, as contextual ambidexterity prescripts. Finally, details that might expose the company were omitted and the data was camouflaged for confidentiality purposes.

### *5.1. The Selected Company Current Business Model*

The selected company is a small fashion e-commerce business, founded in 2014, located in Brazil. The company exploits an e-commerce BM, and its products range from clothing items to accessories, such as handbags, purses, passport holders, footwear, and thermal handbags. Its production process has characteristics of sustainability that meet the selection criteria previously presented. The company has an important ecological and social commitment to the raw material and the manufacturing processes.

The creation process is carried out by an employee who designs the pieces, along with the founder who also contributes to this stage. The founder is also in charge of choosing sustainable materials

from raw material suppliers. Pet bottle fibers and cotton are separated by colors, defibrillated and transformed into new fabrics, which are not dyed again, taking advantage of their previous color. Transforming waste into new materials, with low use of water and chemicals. This strict selection of materials and suppliers is due to the brand's positioning as a vegan fashion.

Although the term vegan is often associated with food, especially when discussing its positive impact on sustainability [123], it can also be associated with the fashion market. Vegan, in this sense, refers to the production approach that deliberately rejects the use of any raw material of animal origin [123]. From this raw material, the products are sewn by hand by small artisans, because of social commitment to encourage manufacturing with small producers. Especially considering the recent cases of accusations of exploitation of labor in the fashion industry in Brazil and worldwide [124].

Once the product collection is ready, the founder, with the collaboration of company interns, communicates with its customers and users mainly through social media networks. In this dissemination process, the brand also seeks to make an effort to raise awareness among its customers about sustainability, conscious consumption, and support for small traders, while also spreading veganism and sustainable ideas.

Thus, in line with the defined boundaries for the analysis unit selection, the company seeks the triple-bottom-line [125], because it has responsibility for the environmental, the social and the economic dimensions. Moreover, the company is small, with few employees, besides the work of the founder herself and the company already has a current BM to exploit. When the contact was made and the study proposal presented, the founder was open to experimenting with the artifact. One key expected result from the company was to improve its economic dimension because the company was struggling to compete in the market, especially with the large companies that have an economy of scale capacity, which is important in this industry. However, although open to changing its BM in search of greater economic sustainability, the company would not give up its TBL values.

Following the basis of e-commerce, its revenue flow was the sale of products available on its website. The customer segment adopted by the company was quite broad, defined by the founder herself as contemporary women (women who want to be up to date on fashion). Thus, the company's social media was developed to communicate with this target audience. The company saw its exclusive design and novelty (timely launching new collections) as the core value proposition. To support these propositions, the company develops its own products and suppliers.

### *5.2. Exploitation Environment*

The artifact's application on the exploitation environment resulted in changes in the company's BM. We provide on the supporting materials and outcomes in Appendix A. The changes on the BM resulted from the exploitation environment lead to the build-up of potential virtuous value creation cycles [40], as shown in Figure 5.

Evidently representing all the BM choices and their consequences using Casadesus-Masanell and Ricart's [40] tool becomes too complex. Thus, this tool is better suited for analyzing specific parts of the BM, searching for synergies and complementarities. When considering the communication of the BM, it may be important to represent only the main choices of the organization, using visual friendly tools, such as the Canvas visual tool [49]. Figure 6 depicts this new BM configuration, with the new BM choices are highlighted in yellow.

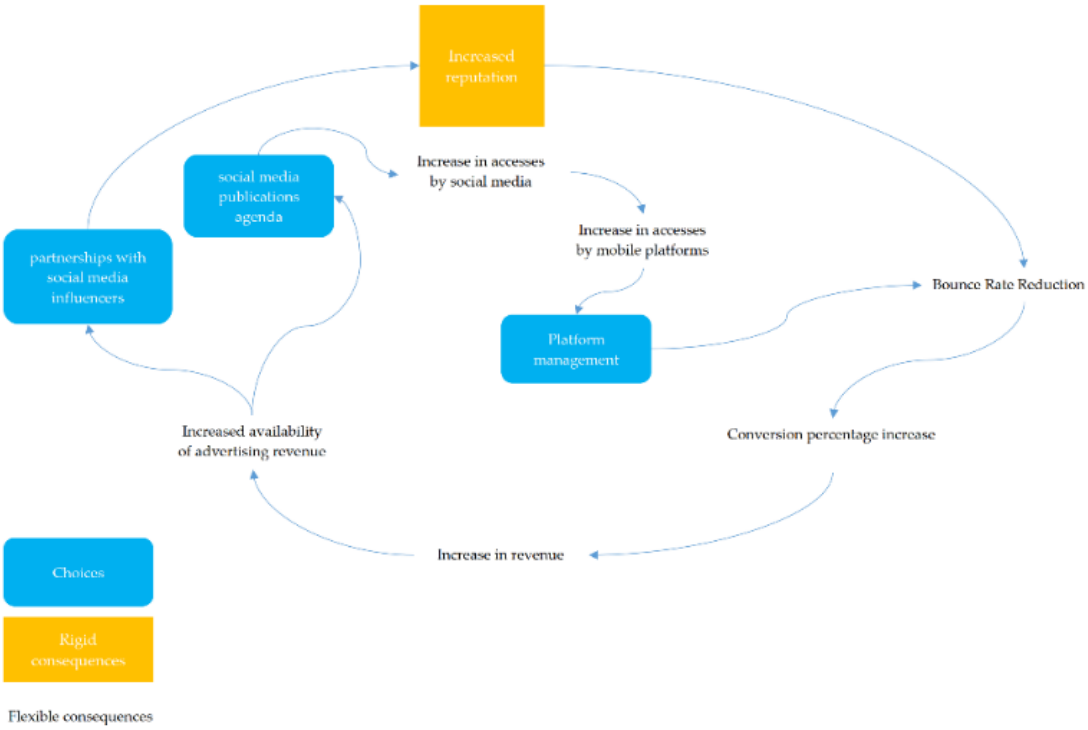


**Figure 5.** The business model (BM) virtuous value creation cycles developed after the artifact's application on the exploitation environment.

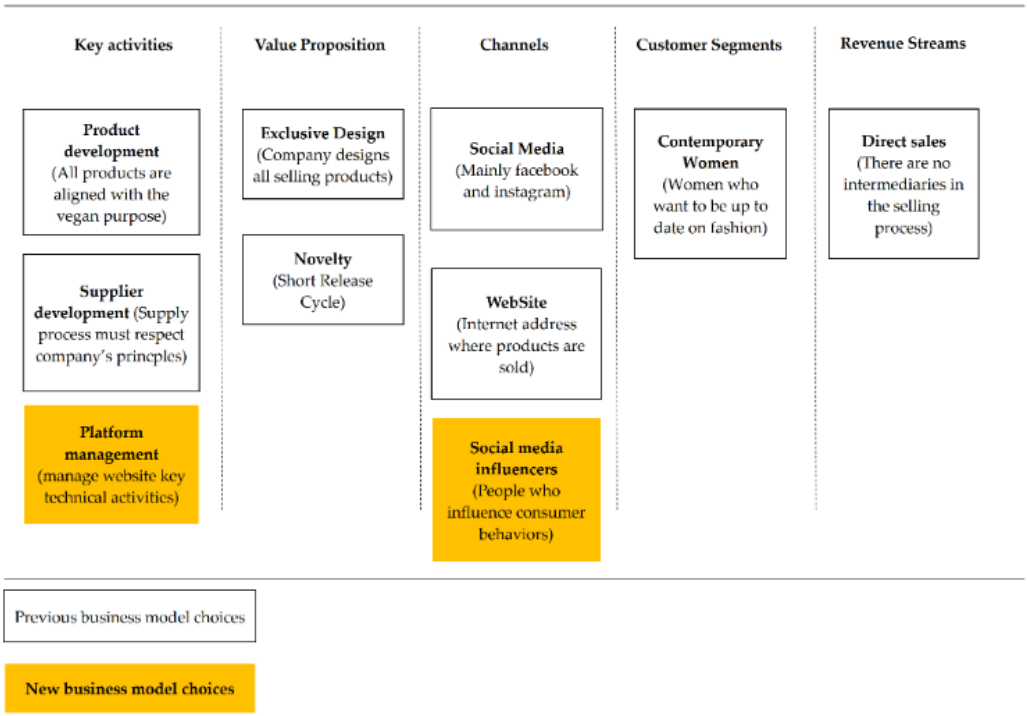


**Figure 6.** The evolution of the company BM after implementation of exploitative tactical actions.

The company learned from the tactical actions that the management of the website platform is an important value creation element for its BM. This activity was outsourced to a company specialized in e-commerce creation. Although it is not necessary to internalize the platform management function, it comes to be understood as a key activity. Neglecting this activity may have an impact on the company's bounce rate, which directly impacts the company's conversion percentage and the overall performance.

Another suggestion for a new BM choice was to explore social media influencers as a new channel. This channel can help the company to be linked to influential people in the fashion industry, having, as a rigid consequence, an increase in the company's reputation. The effect is a potential reduction in the bounce rate. In addition to the data analyzed through analytics, the company reported an increase in transactions after the influencers' campaign presenting the company's products. There were, of course, differences in performance between the influencers, which may suggest a future tactical action to select influencers.

Other examples of actions implemented by the company that subsequently resulted in changes in its BM, could be presented. Nevertheless, the focus was to demonstrate the dynamic surrounding the exploitation environment, and the application of this part of the artifact. As previously argued, the strategy would have the capacity to enhance the BM. Through the artifact's application of strategic planning practices, it was possible to uncover neglected choices in the current BM, suggesting choices that can lead the company to perform better. In this regard, the selected examples serve this purpose. In addition, it was also important to demonstrate the functioning of the artifact in the exploitation environment and its stages to provide a better understanding of the application in this case study. Figure 7 represents a graphical abstract containing key circumstances for each stage. The exploitation flow is shown in white boxes and a summary of its development is shown in gray boxes.

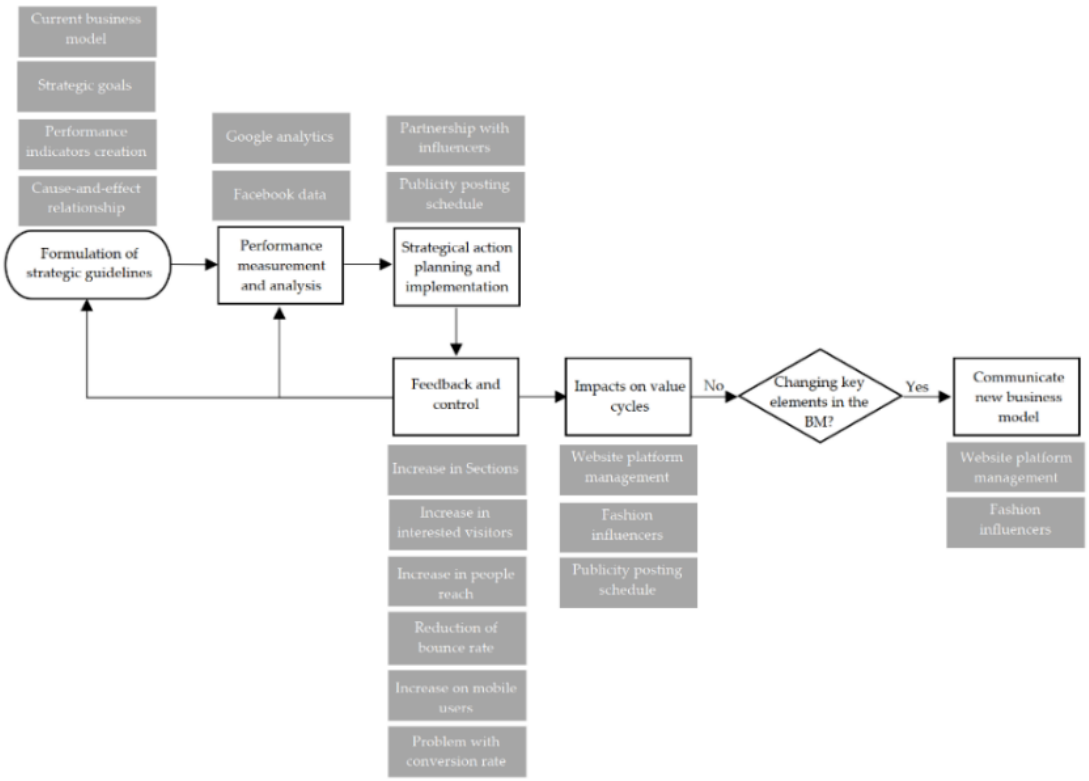


**Figure 7.** Graphical abstract of the exploitation environment; The exploitation flow is shown in white boxes and a summary of its development is shown in gray boxes.

### *5.3. Exploration Environment*

The artifact's exploration environment led to the design of a hypothetical new BM, parallel to the company's current BM. We provide the supporting material in Appendix B. This environment's flow begun with the company brainstorming the CVP hypothesis. These were supported by the empathy map tool, used to create stories about potential customer segments, improving the knowledge about them, and inducing creativity for solutions. The main hypothesis was that there were a few high quality and sustainable oriented suppliers of sewn corporate gifts. The company believed that the companies

that effectively supplied corporate gifts usually had a low-cost, pure profit-oriented approach and that there could be potential differential in their sustainable oriented offering.

With this initial CVP hypothesis, the company moved to the testing phase, building questionnaires and the contact strategy to conduct the experiments to create knowledge. During the investigation, the company learned that events agencies had an interest in the sustainable oriented value proposition, also highlighting the scarcity of qualified suppliers to fulfill this demand. Even though the investigation's purpose is on learning, and not on profiting, the process resulted in a corporate gift request for the company to supply. The event agency in question was organizing an event for a multinational from the chemical industry and needed a supplier for corporate gifts. Based on this initial CVP and offering, Figure 8 depicts the designed hypothetical BM.

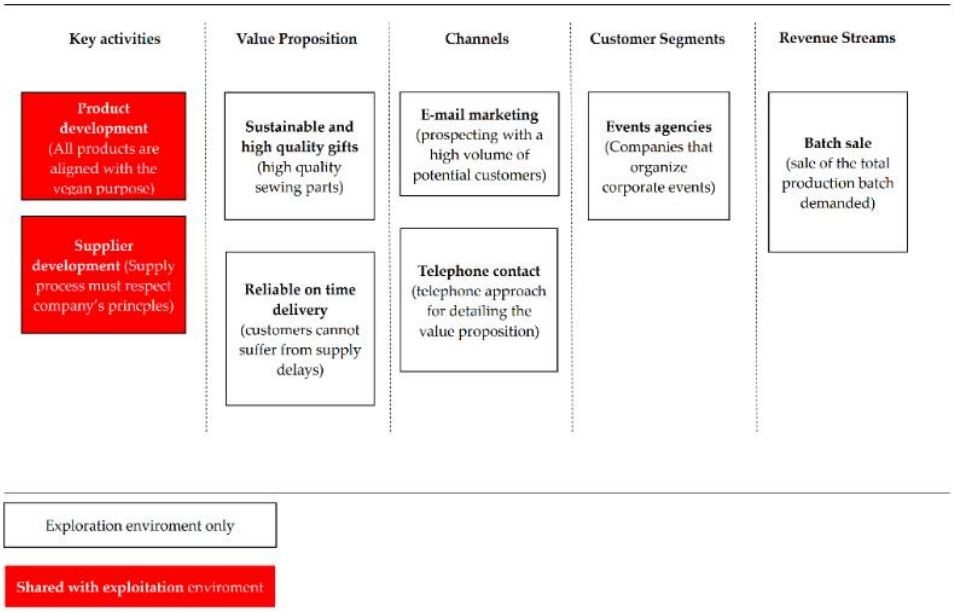


**Figure 8.** The initial hypothetical BM design for the exploration environment.

Based on this new BM, the company experimented by addressing the events agency requested demand. This allowed the observation of all the BM choices in action, as detailed below:

- **Key activities:**
  - **Product development (on demand):** unlike what happens in the e-commerce BM, the company will only produce on-demand and the orders are subject to customer wishes. However, even now starting from the initial briefing provided by customers, it will be necessary to develop the concept of the product also on demand. Thus, the competencies regarding product and supplier development are also important. Nevertheless, some adaptation will be necessary to adapt the company to work on demand.
  - **Supplier development**: this element will also be important and is an important synergy between the two BM. In the other BM, there is certain flexibility since supplier failures often resulted in delaying a new collection launch, which is something internally manageable by the company. In this corporate gifts BM, however, delays will affect one of the value propositions: the reliability in delivering demand.
- **Value proposition:**
  - **Sustainable and with high-quality gifts:** this value proposition concerns the level of quality with which the gifts will be delivered. As noted throughout the development of the exploration environment, this proposition is one of the differentials of the company to

operate in this field. For this reason, it is essential that this value proposition is brought to its target customers.

- **Reliability on-demand delivery:** this BM aims to serve the event agencies, but they will have large corporations as end customers, who demand not only quality in the delivery of gifts, but also have a very low degree of flexibility with respect to deadlines.

- **Channels:**
  - **E-mail and telephone:** the experimentation of the company's offers in this first hypothetical BM study was carried out only via electronic mail and telephone calls. However, it is necessary to expand these channels in new tests, so that it is possible to reach a larger volume of potential customers.
- **Customer segments:**
  - **Event agencies:** the event agencies were the only of the contacted customer segments that offered the possib–ility of testing the new BM in this initial study. This does not necessarily mean that others are discarded.
- **Revenue stream:**
  - **Batch sale:** unlike the e-commerce BM that makes its sales in the form of retail, these BM revenues come from the sale of the total demanded production batch.

The experimentation process was managed as an agile project using the Scrum tool. For this first new BM test, there was a satisfactory result. However, before moving this BM to an exploitation environment, some points need better observation. The first one concerns the segmentation of customers and the channels. Observing BM development, there was a possible understanding of classifying large corporations as customers and event agencies as channels. However, when trying to contact these large corporations, it was found that there are barriers to access these institutions. The events agencies have a broad network of relationships as a key resource of their BM and have better contact with these companies. In addition, it was also noticed that the events agencies' BM serves the corporations more satisfactorily, as it focuses on developing the entire event.

The knowledge creation through the artifact's application in practice helps to further improve the new BM. That is, the application of the hypothetical BM leads to knowledge of positive situations, that must be reinforced, and points that must be improved. As a result, it may become premature to take a hypothetical BM to an exploitation environment. New tests create knowledge about the BM to fine-tune it and increase maturity. Figure 9 depicts the graphical abstract of the exploration environment. The exploration flow is shown in white boxes and a summary of its development is shown in gray boxes.

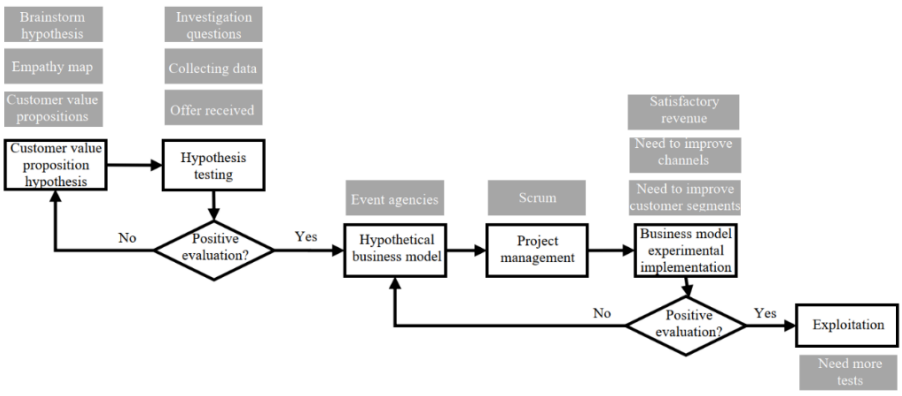


**Figure 9.** The summary of the exploration environment actions and effects; The exploration flow is shown in white boxes and a summary of its development is shown in gray boxes.

### *5.4. Knowledge Management*

Following the SECI model (Socialization, externalization, combination, internalization) [122], it is possible to observe the process of socialization, especially during the meetings held in the company. The meetings were held on average once a week. When we started our visit to the company, we only addressed the exploitation environment, observed the data and discussed the progress of tactical actions. After that, we followed the rest of the day observing the work that was done in the company. Near the end of the company's business hours, there was time set aside for us to discuss the exploration environment and understand how tasks were taking place regarding the design of the new model. According to Lawson et al. [126], team meetings are mechanisms of socialization in KM. In these, all participants shared their experiences and provided ideas for project development. These projects could be related to the exploitation environment, for example, the need to determine tactical actions to achieve the previously determined objectives. In addition, the projects related to the exploration environment exemplified in the meetings aimed at discussing opportunities for new BMs.

Converting tacit to explicit knowledge, it is possible to determine that the elaboration of hypotheses, whether related to a new BM in the exploration environment or to new tactical actions, would characterize the externalization process. Chou and He [127] argue that through externalization, individuals make knowledge more understandable to the group. Becerra-Fernandez and Sabherwal [128] argue that externalization is demonstrated through analogies, metaphors, or problem-solving systems.

In the combination phase, where there is explicit to the explicit transfer of knowledge, coding can be achieved in a number of ways. They can be characterized as possibilities for coding, for example, organizational knowledge in formulas, codes, spreadsheets, budget information. Or also expressed in natural language formats such as reports, memos, policies. There is also the possibility of incorporating knowledge into objects such as prototypes and technologies [129].

At this point, it is observed that the combination of knowledge occurred through different systems in the studied environments. In the exploitation environment, it may be suggested that the Balanced Scorecard operates as a system that combines the knowledge generated during the phases of strategic planning. From the establishment of objectives to the consequences of tactical actions, there are several records that are grouped into the performance management system.

In turn, the exploration environment has most of its records stored when planned the application project of the hypothetical BM. This application could be compared to the creation of prototypes for the combination of knowledge. Scrum, as exposed, will store various information related to the application, for example, the activity listing. It is thus possible to suggest that the project management system operates as a combination of knowledge.

Finally, execution in both environments would characterize the internalization phase. That is, the application of the tactical actions in the exploitation environment would provide new knowledge in the analysis unit from the point of view of its current BM. Meanwhile, in the exploration environment, the application of the hypothetical BM would provide insight into a new BM. Even if the tactical actions or hypotheses of the BM do not produce positive results, it is also possible to extract tacit knowledge from these experiences. Regardless of the results, from the experiences acquired, the SECI KM model [122] is restarted.

## 6. Discussion

Our findings demonstrate in practice the relationship between strategy and BMs, something that has been theoretically explored in the literature [29,32,40], but with few recommendations on how to integrate them into management environments. By applying the proposed artifact, we demonstrated a company potentiating its BM through tactical actions, which has been poorly shown in empirical studies. Additionally, the organization of a flow diagram that combines tools from the startups and new ventures literature [49–51,53] for BMI, should also be seen as an important contribution. This flow

helps the company to search for new BMs, seeking to adapt to the constantly changing needs and demands, while seizing opportunities for BM success.

As an initial experiment, we focused on metrics related to the economic dimension within a case study company that has environmental and social commitments. The artifact structure is, however, considered flexible. It is possible to move further to include environmental and social metrics [107]. Nevertheless, our study provides an important step in the direction of a better understanding of contextual ambidexterity and BMI in the SME context. Thus, shedding light into potential future research lines that will incorporate TBL metrics into the artifact and purposefully work with SMEs from different backgrounds to support their BMI actions towards sustainability.

Moreover, another important contribution is the development of this toolbox that constitutes the artifact. By doing so, it was possible to discuss the use of different methods for creating BMs and their characteristics. Typically, BM studies adopt a single type of method to approach BM. In our study, the characteristics of different methods such as Johnson [48], Osterwalder [49] and Casadesus-Masanell and Ricart [40] were observed in different contexts of use. This is important once it does not select which tool is better, but understand why, when and how to leverage the strong side of each tool.

The work also contributed by demonstrating KM as an important link in ambidexterity, which we characterize using the SECI model [122]. Both environments, in the present proposal, have knowledge assets as input and output (Figure 10).

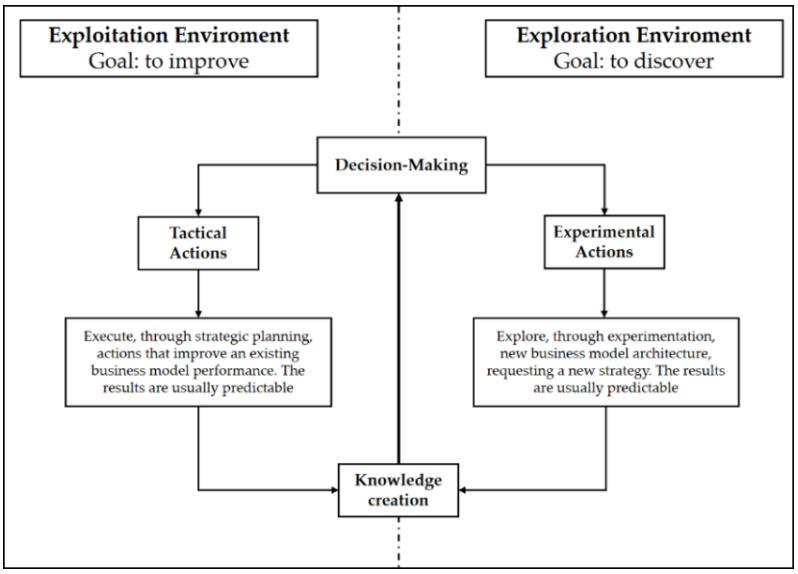


**Figure 10.** Strategic and experimental actions for business model innovation (BMI) decision-making based on contextual ambidexterity.

There are few studies dealing with ambidexterity processes for BMI [21], and an operational approach on how can SMEs perform it not clear in the literature. This is in line with recent studies that do highlight the importance of ambidexterity for the innovativeness of SMEs [22]. The authors also demonstrate that one key barrier is resistance from SMEs' top management teams. Our findings do align with this idea, once our proposition is a potential path to solve this issue. Since we focus on BMI and the current BM performance, cognitive barriers are reduced by performance improvement and by the initial investment's reduction. We achieve this by dividing BMI into two different schools thought. However, given their complementarity, we brought them together to be the theoretical basis of the artifact.

The observation and development of this procedure naturalistically allowed the visualization of important elements that would constitute the BMI process. Inspired by the metaphorical model called "Lean House" [130], the key elements were organized in the form of a "house", represented in

Figure 11. This is relevant because there is also a gap in the literature about the key elements regarding the BMI process [26].

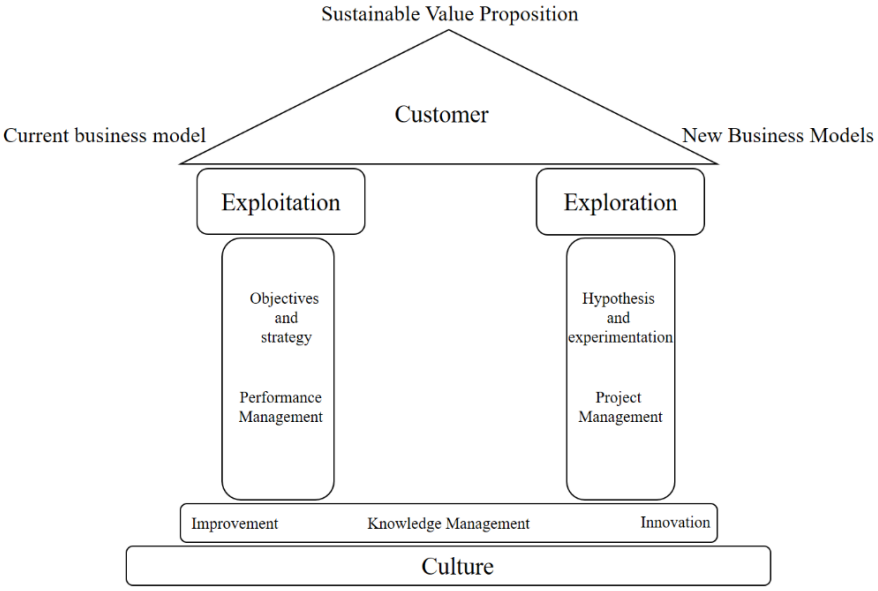


**Figure 11.** The "house" of BMI, and the elements that underlie the artifact.

To create sustainable value propositions, it is necessary to improve the current BM, seeking for a sustainable organization on the one hand, while, on the other, explore new BMs that may adapt the company to customer demands that are constantly changing also respecting social and environmental needs [67]. Nevertheless, whether exploiting or exploring, the artifact's decision-making process is customer-driven. This is not to say that it is limited to changes related only to the customer segment. It means that to be sustainable, and search for SD goals, the business must be economically effective.

The pillars of the house rely on the bases of innovation, improvement, and KM. Understanding and conceptualizing improvement and innovation was an important part of this study since it overcomes potential confusion and ambiguity existent in the BMI literature. KM supports both pillars. Its importance is related to the ability to leverage both exploitation and exploitation environments. As for the knowledge, as exposed throughout the work, it can have as its source the internal environment of the company, using the personal experiences of the employees, as well as learning from the experiments.

The basis of the metaphorical model, constituted by the culture, was relevant in some points of the study, even though its observation was not the focus of this proposal. As an example, there was, of course, some resistance on the part of the company to make changes in the choices of the BM at the beginning of the application. However, as the process was carried out, and improvements in organizational performance were reported, a greater predisposition to conduct experiments with the BM was observed. Thus, shifting the company's management view of innovation, which is considered a key cognitive barrier for BMI related to cultural aspect [131]. It was not possible to identify the factor of organizational inertia, perhaps because of the small company characteristics of the analysis unit. However, as explained, there was some difficulty in overcoming the current logic of the BM. Nevertheless, mainly on the part of the founder, there was a tendency to understand the need for a long-term perspective.

## 7. Conclusion

This study sought to address an important gap, providing a practical artifact to SMEs, which operationalizes BMI in the organizational ambidexterity environments. The proposition is that SMEs cannot be held hostage by the exclusive dedication of exploiting their current models, but they also need to explore new BMs. We argue that, on the one hand, the ability to sustain the organization is necessary,

exploiting the company's current BMs. On the other hand, to be able to search for innovations given the shorter BM life cycles and the pressures for aligning BMs to the emerging imperative for organizations to advance towards SD.

As practical implications, the artifact helps SMEs dealing with this conflictive situation. In the exploitation environment, the performance management-based approach helps SME to make data-driven decisions. At this point, the organization can choose traditional indicators, if greater economic stability is required, or indicators aligned with the concept of SD if greater balance is needed in its actions. Similar decision-making must be carried out in the choice of experiments that the organization defines in the exploration environment, in order to create new BMs.

As an important theoretical implication, the work contributes to advance the relationship between BMI and ambidexterity. Especially in the exploitation environment relating to BMI theories and strategy, and in the exploration ordering theories related to studies of startups for the creation of new BMs. Additionally, we demonstrate KM as a link between ambidextrous environments. The application in an in-depth case uncovered several important elements to BMI, which we organized in the form of the BMI house.

In short, both in practice and in theory, the work contributed towards a solution where organizations can sustain their operation while seeking alignment with the dimensions of sustainability. In practice, an artifact was proposed to operationalize both the ability of a company to endure business success, as well as to carry out experiments that can propose models in balance with social, environmental and economic aspects. The transition to sustainability is an important path for businesses to follow to achieve SD. Our artifact provides interesting means to pursue this goal, leaning companies to the SD direction, helping to input not only the economic dimension but also the social and the environmental dimensions as part of the BM. In theory, the construction of this artifact was only possible by adapting and integrating tools and concepts specific to the literature on BMs and organizational ambidexterity.

The study took the direction of theoretical construction, rather than generalizability. Future research should be conducted with new case studies. For example, a multi-case study could help to elucidate the understanding of the use of the artifact, as well as the relationship between contextual ambidexterity and BMI. In addition, new cases using other TBL performance metrics, addressing environmental and social dimensions could provide important contributions to artifact advancement.

Finally, there are also opportunities for artificial assessments of this study. The understanding of BMs as particles of a swarm that are oriented to reach a goal can bring new paradigms for the understanding of BMI. Thus, from this other nature of assessment, a path is built towards greater assertiveness for the creation of BMI, reducing the guesswork process that is sometimes preponderant related to this theme.

**Author Contributions:** Conceptualization, V.M.; investigation, V.M. and M.F.; writing—original draft, V.M., M.F., O.D.; writing—review and editing, V.M., M.F., M.H., R.Q. and O.D.; supervision, R.Q., M.H. and O.D.; methodology, V.M., M.F., R.Q.; project administration, A.B. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research was funded by the Brazilian Agency CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior), grant numbers 1344471 and 33003017.

**Conflicts of Interest:** Declare conflicts of interest or state "The authors declare no conflict of interest".

## Appendix A The Exploitation Environment

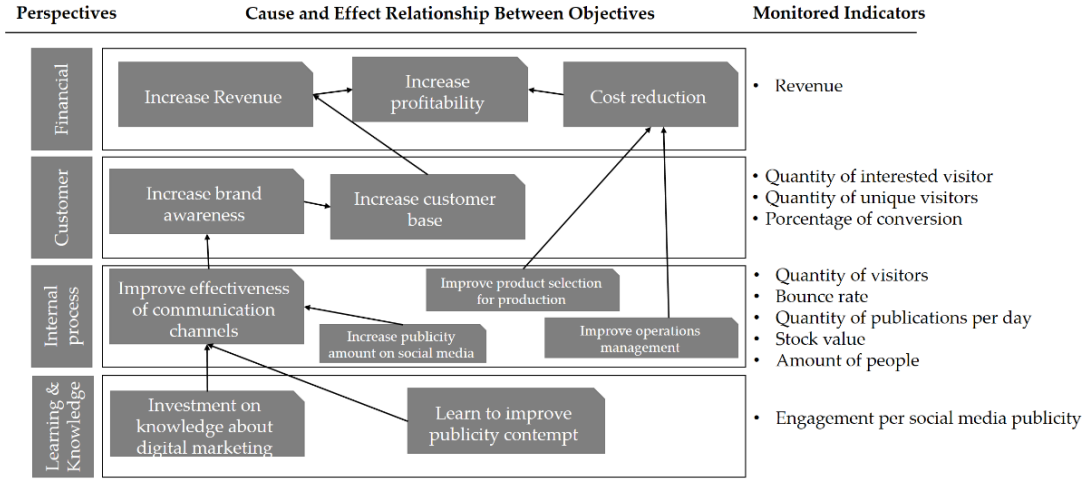


**Figure A1.** The company's strategic guidelines, the objectives cause and effect relationship and the monitored indicators.

**Table A1.** Examples of tactical actions implementation.

| Objective | Tactical Action | Description | Effect |
|---|---|---|---|
| **Increase the volume of publications** | Creation of a social media publications agenda. | The purpose of this action was to make the company's publications on social networks more frequent and regular. | The progressive increase in posts over the last quarter of 2016, started to accompany the growth of indicators, as shown in Figure A2. As shown in Figure A4, there was an increase in the number of users after the implementation of this tactical action. There was also a change in the users' access platform. Analyzing the devices used to access the e-commerce, it was noted that, while new users from mobile platforms grew, their conversion rate did not. At the same time, on the other hand, the conversion of desktop users grew. One possible explanation for this situation is that e-commerce was not optimized for mobile access. |
| **Improving the effectiveness of communication channels** | Partnerships with social media influencers | The purpose was to pursue partnerships through permutations, that is, the company provided products to influencers, in exchange for producing publications promoting the product. | There was a greater control of the rejection rate, while access to e-commerce through social media grew, as shown in Figure A3. |

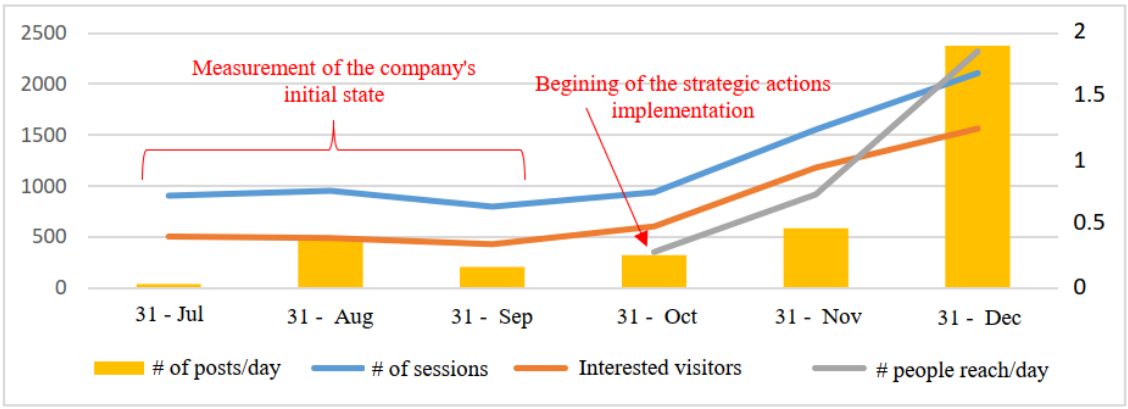


**Figure A2.** Measurement before and after exploitation of environment actions.

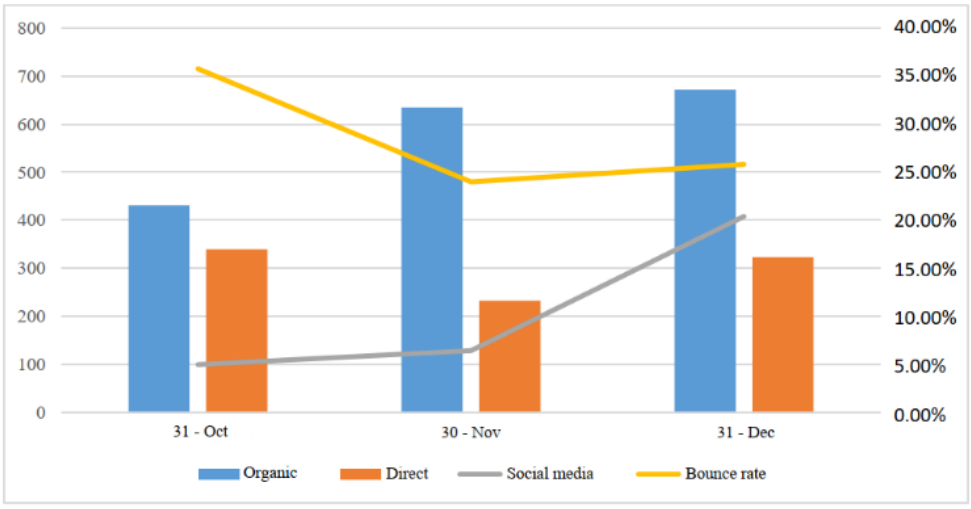


**Figure A3.** The change on customer access to e-commerce from desktop to mobile and the conversion rate of each technology.

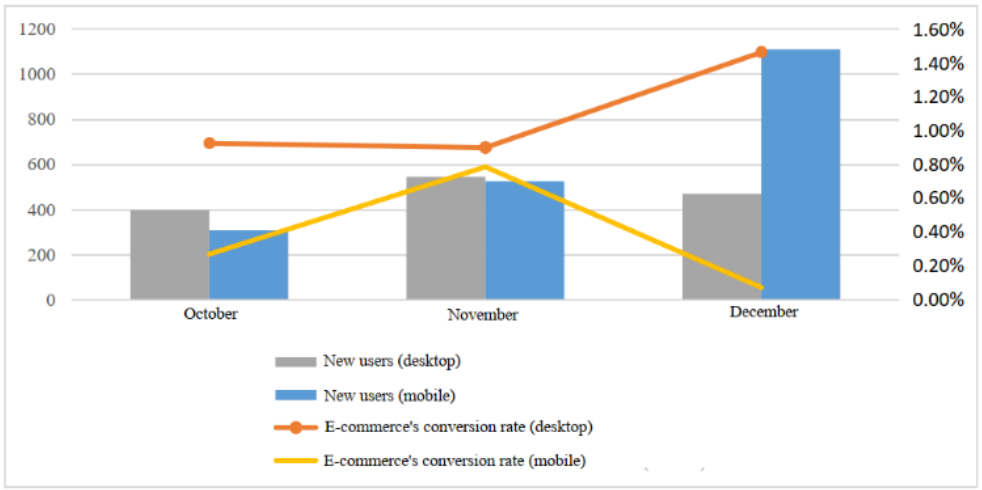


**Figure A4.** Type of devices used to access e-commerce.

## Appendix B The Exploration Environment

**Table A2.** The summary of the hypothesis about Customer Value Propositions.

| Hypothesis about CVP | Description | Decision |
| --- | --- | --- |
| **Business model to serve wholesale groups** | The company members discussed the possibility of developing a business model to serve wholesale groups, keeping their vegan production process, striving for sustainability. | The company did not feel safe to explore this opportunity. It was argued that it would be a big step, to deal with a large volume of production. |
| **Business model within the concept of Circular Economy (CE)** | The company raised the opportunity to seek a business model within the concept of Circular Economy (CE). CE is a recent concept in the literature related to sustainability, where the aim is a closed loop, eliminating all resource inputs and waste of the system [132]. CE requires the adoption of new business models, beyond the principles of "reduce, reuse and recycle" [133]. | The company's idea would be to replace its input resources with used clothes, to recreate products, changing its production process. However, again the company didn't feel safe to implement this change, arguing that they were not prepared for creating a new production process. |
| **Business model for manufacturing and trading corporate gifts** | Based on the founder's experience, who had already participated in many corporate events, there was an idea that the available products for sewn corporate gifts had low quality and were not sustainable-oriented. The founder argued that joining these corporate events, and communicating with people playing in this market, showed her that there could be a job to be done here. | The company decided to explore this new business model. Some potential target customers were established. The company used the empathy map tool to understand the context of these customers. Often used by Stanford University in its design institute [134], it is a visual tool for organizing information about the potential customers and create their personas. The first version of this tool was adapted, and as an example, the persona named event agency will be demonstrated in Figure A5, based on the founder's knowledge about this type of persona. |

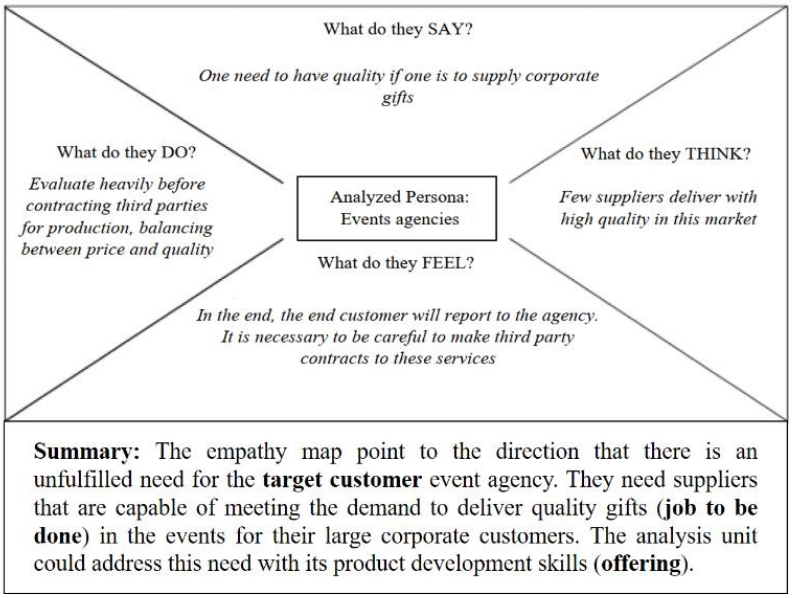


**Figure A5.** The designed empathy map.

**Table A3.** The summary hypothesis testing and business model experimentation process.

| | Company Type | | | | |
|---|---|---|---|---|---|
| | **Consultancy Firms** | **Events Agencies** | **Exchange and Travel Agencies** | **Gym** | **Language Schools** |
| **Contacted companies** | 16 | 96 | 31 | 27 | 22 |
| **Contacted companies that work with gifts:** Considering the companies that would be contacted, which ones offered gifts to their customers? Some companies to strengthen their relationship with their customers offer free gifts. Others, however, hold corporate events where they provide their guests and participants with souvenirs of the occasion. | 3 | 53 | 18 | 11 | 9 |
| **Companies that have demand for gifts:** That is, is there a demand for this type of offer, in the case of the elaboration of a business model aiming to meet this type of market need? | 1 | 16 | 5 | 4 | 3 |
| **Companies with an interest in knowing the value proposition:** Important to note the real need to have such a supplier in the market. It would be the case that there is already a supplier, or that the market is already satisfied with the offers they have at the moment. | 0 | 6 | 3 | 1 | 1 |
| **Gift production request:** The founder made a presentation and sent it to the interested companies. As a result, some meetings were scheduled, and the founder had the opportunity to better demonstrate the offering. A few weeks later, one of the contacted companies, an event agency, requested a gift production for an event demanded by a large multinational in the technology industry. With that, it was noted that a hypothetical new business model could be designed, to be managed in parallel to the current one. Thus, as demonstrated in the construction of the artifact, a project orientation was adopted. This initial demand made by the event's agency, was for a batch of a standardized sewn cell phone holder as shown in Figure A6. The demand was for 400 pieces of this product, which would be distributed to guests at the multinational's event. | 0 | 1 | 0 | 0 | 0 |

**Figure A6.** Representation of the developed product.

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