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The Blitz Canvas: A Business Model Innovation Framework for Software Startups

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Abstract: Software startups are temporary organizations created with the purpose of bringing a profitable business idea to life. In the initial stages, the commercial viability of any product concept is yet to be proven and until the startup can generate revenue, resources are always in short supply. To this end, this research proposes a process-oriented, competition-aware, metric-driven business model development and innovation framework. The proposed framework is designed to aid this process, by supporting the creation and validation of the business model. A web-based tool is created to demonstrate the working of the proposed model and validation is performed using survey data collected from the usage experience of participants. The data is used to evaluate the research questions and the ability of the proposed framework to overcome the shortcomings of the business model canvas. The results showed that the tool (and by extension, the framework) made the task of business model creation a quick and easy process, while at the same time covering all the required areas to create a holistic business model. The framework contributes to startup success by creating a structured approach to business development, helping to visualize the avenues for product differentiation and planning growth.

Keywords: business model innovation; blitz canvas; process-driven business models; business model canvas; lean startups

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1. Introduction

A startup can be defined as a temporary organization in search of a repeatable and scalable business model, which it finds can work [1]. Startups are important to both their immediate stakeholders and the economy in general, as they are seen as engines of job creation and economic growth [2]. It has been estimated that in the span of 20 years between 1980 and 1999, entrepreneurs created 95% of the new wealth generated during that time period and added 34 million new jobs to the economy [3,4]. Fast-forward to the next couple of decades, and startups added 2.5 million jobs to the United States economy in the year 2015 alone, and 1.7 million in 2017 [5]. In Australia, jobs created by startups accounted for almost all the 1.6 million jobs created in the economy between 2003 and 2014 [6]. However, startups also have a very high rate of failure, with some estimates placing this number between 70 and 90% [7–9]. A study conducted by CB Insights [10] revealed that among startups that manage to stay afloat for over a year and go on to acquire some level of venture backing, 70% of startups in the technology field failed within a span of 20 months after raising their first round of financing. When looking at the startup failure rate according to industry type, the category with the highest failure rate (at 63%) was the information technology industry [11]. These are not insignificant numbers and identifying the reasons for this failure merits more attention.

The traditional business model planning structure provides a "roadmap" for startup founders, which can be used to define objectives and goals, measure progress, and work on milestones [12]. However, the suitability and relevance of this framework in current market

conditions has been debated elsewhere [13,14]. This is primarily due to the reason that business models and products developed using such structures do not verify or validate whether the solution being created will indeed cater to the user's needs or if the product has the potential to be monetized [15]. This provides context for the top reason why startups fail, as discussed earlier in this section, which is that startups fail because they create products that do not have sufficient market demand. The concept of the business model canvas (BMC) was introduced by Osterwalder and Pigneur [16] to overcome some of the shortcomings of the traditional approach since it provided a quicker and easier alternative to traditional business model planning. However, it still had many of the same shortcomings, which included some of the key reasons for startup failures discussed so far, such as a failure to consider the competition and to take into account the core competencies within the startup, among others. This provides the opportunity for a framework to be introduced that will improve the chances of startup success. Such a framework would ideally be based on an agile philosophy (which incorporates validation as part of its core structure), one which takes into account the critical factors for software startup success and overcomes the shortcomings of most business modeling frameworks.

To this end, the current body of work proposes the blitz canvas (BC), which is a process-based, innovation-focused, market/competition-aware, foundationally strong, synergistic and growth-oriented framework for business model development and innovation. Being process-driven, the framework is designed to provide an easy pathway for creating a business model around a product/solution concept quickly, while effectively managing the startup capital (costs) and ensuring differentiation in the offering. The framework is called the "blitz canvas" due to its focus on the speed of development (of the business model).

The blitz canvas also aids in the process of business model innovation (BMI), which is in essence the search for novel means to generate and/or capture value for the involved stakeholders [17]. The approach taken by the BC to achieve this end is by supporting the creation, visualization, and validation of the business model via a process-based mechanism. The process-based mechanism of business model creation and visualization plays a pivotal role here, considering the importance of the BMI in conferring a reliable form of competitive advantage that needs to be explicitly supported and reliably managed [18].

It needs to be highlighted that the target audience of this framework is inexperienced entrepreneurs and first-time start-up teams who are working in the software arena. One of the primary goals of the blitz canvas is to lower the barriers of entry by allowing inexperienced entrepreneurs and first-time startup teams in the field of software development to participate in the startup economy by providing them with a process-driven and end-to-end framework for startup development. Most business modeling frameworks were created to cater for tangible products rather than intangible offerings such as software. The dynamics of creating and monetizing software products can involve a different set of challenges and opportunities. The organizational characteristics that are unique to software startups may include:

- The ability to prototype and test out concepts quickly.
- The ability to change direction quickly with evolving business scope/user problems.
- The ability to accommodate and handle sudden growth.
- A low barrier to entry—not many resources are required besides manpower, computer systems and internet connectivity.
- The ability to leverage SaaS business models to get a product or service up and running quickly.
- The ability to make changes to the product after it has been shipped, based on user feedback.

The next few sections of this work are structured as follows: in Section 2, the groundwork is established by reviewing the related work and providing the potential for this research. Section 3 provides an outline of the research methodology employed for this work. Section 4 proposes an outline of the blitz model and provides a description of each of the model's stages. Section 5 details the validation of the proposed model via analysis of survey data collected from participants who interacted with an online tool, created based

on the proposed model. This is followed by a discussion of the model and a summary of the key contributions of the model in Section 6. Lastly, Section 7 outlines our conclusions and notes the limitations of the current work, suggesting possible directions for future research.

2. Related Work

Business model development is a crucial area of focus for the success of any startup. It should come as no surprise that much literature has been dedicated to understanding this area. This section discusses the relevant literature in the business model development field, starting with understanding the concept of business models and then investigating the BMC framework. The shortcomings of the BMC are also studied, along with the rationale for our proposal of the BC.

2.1. Business Models

Business models have been around for as long as businesses have had the capacity to remain profitable for their investors. As a general understanding of the term, business models can be thought of as a hypothesis developed by a startup's management with the purpose of structuring the organization, in order to determine the requirements or problems of their target customer, how they might want a solution delivered to them, and how much they might be likely to pay to acquire this solution [19]. From another perspective, a business model can be described as "the logic of the firm, the way it operates and how it creates value for its stakeholders" [20]. If we consider the basic concept of the business model at its most fundamental level, a business model is how an organization generates revenue and makes a profit [21]. The typical business model will touch upon a number of concepts in order to demonstrate how it will eventually generate revenue and become profitable, including but not limited to matters regarding the operating mechanisms [20,22], pricing structures [19,20], customer segmentation and how the product generates value for the customer [19,23], among other details.

It must be noted that developments in the field of ICT have majorly contributed to the renewed interest in innovation pertaining to the concept of business models [20]. A subsequent shift has also taken place to adopt methodologies such as the lean startup, which can efficiently aid startup organizations in creating better business models (Hokkanen and Väänänen-Vainio-Mattila, 2015; Ries, 2011). Although relatively new, development philosophies such as the lean methodology have great appeal due to the fact that this inherently reduces waste, in the form of both time and resources.

2.2. The Business Model Canvas (BMC)

The BMC was introduced by Osterwalder and Pigneur [16] as a means to provide structure to the business modeling process. The BMC provides the ability for users to map their ideas onto a base structure of business model elements that is divided into nine segments (see Figure 1). The BMC is perceived differently based on the user profile and its purpose of usage [24]. To add to this framework, there are many variations on how the BMC is used to create new business models, although a common approach is to start from the customer segment, by identifying the target customer for whom the startup intends to create the value proposition [25]. The next segment is value proposition, which describes the solution or overall offering that the startup can provide to the customer, with the intention of adding a certain amount of value for the customer. This offering would be provided to the customer via certain distribution channels. At the same time, the business will need to evaluate how it should maintain its customer relationships so that it can attract new customers, retain its acquired customers, and grow its existing customer base. The key activities segment comprises the critical activities that need to be performed for the smooth functioning of the startup, while the key resources segment represents the critical assets, those that the startup already has and those that the startup will need to possess for the functioning of the business. In the initial stages, most startups might not have all the necessary resources at their disposal or might not be able to perform the required activities

to successfully execute the planned business idea. Hence, these startups can choose to collaborate with key partners to acquire the resources needed and work on critical activities that they might not be able to accomplish on their own at that point in time. Planning the various segments of the BMC can give the startup an idea of the required cost structure to get the business model to work and evaluate the possible options for revenue streams, for generating revenue based on the business idea.

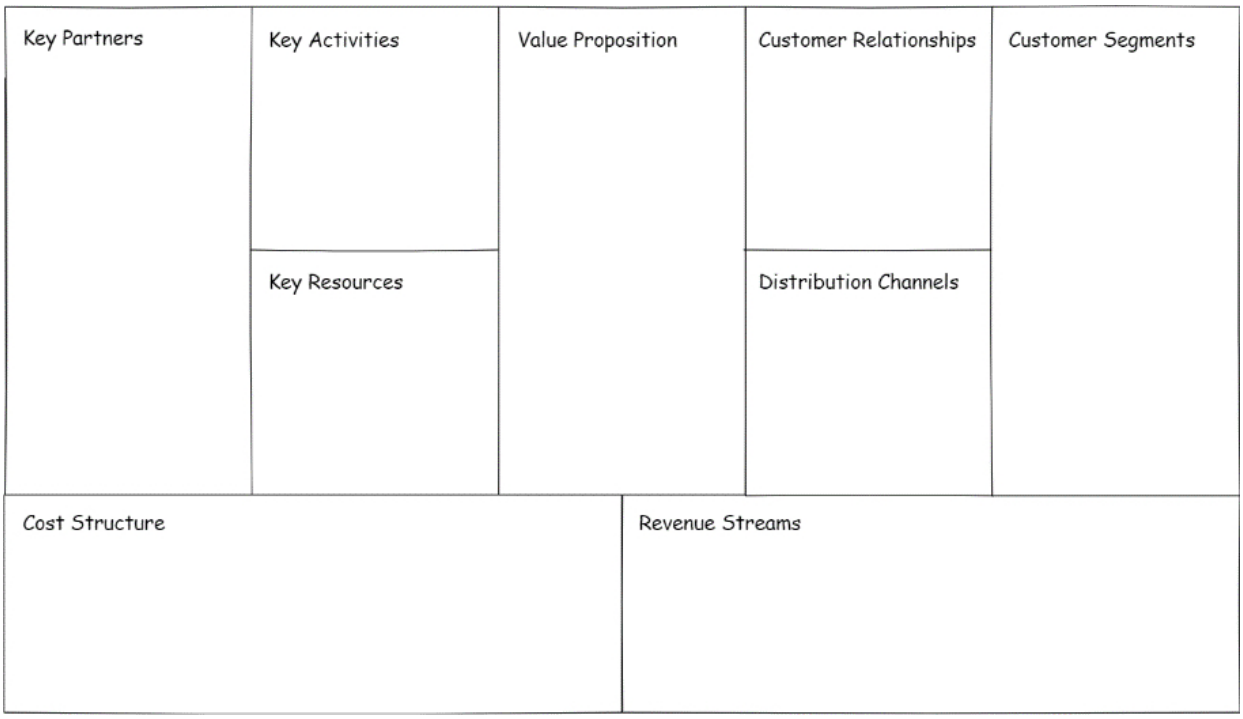

Figure 1. A reconstruction of the Business Model Canvas (BMC) adapted from the works of Osterwalder and Pigneur (2010) [16].

2.3. Shortcomings of the BMC

The BMC serves as a basis for startup teams to build their business model around their conceived product ideas and concepts. It is frequently cited as a good example of great design, mixed with great science, to produce a practical tool for entrepreneurs to work with [26]. While the BMC does a good job of covering important segments of business model planning, it is not without its shortcomings. Fauvel [27] has outlined many of the shortcomings of the BMC, which are summarized in Table 1. Startups who intend to use the BMC as a practical tool to develop their business model will need to further investigate these shortcomings beforehand.

Table 1. Shortcomings of the BMC.

Shortcomings	Source(s)
Consideration of competing entities from the market	(Kraaijenbrink, 2012 [28])
Establishment of the unique selling proposition (USP)	(Maurya, 2010 [29])
Taking into account performance measurement, using metrics such as KPIs	(Spanz, 2012 [30]; Maurya, 2010 [29])
Consideration of synergies within the BMC	(Spanz, 2012 [30])
Formulation of strategic goals or objectives of the startup	(Kraaijenbrink, 2012 [28]; Spanz, 2012 [30])
Consideration of competence for solution development	(Spanz, 2012 [30])

One frequently noted shortcoming of the BMC approach to business model planning is that the study of competing entities is not included as part of the conventional BMC structure [28]. Even though the purpose of this exclusion might evidently have been to

simplify the business model development process, it is vital that the competing forces be taken into consideration during product and business model development and innovation, in terms of product differentiation and analysis for synergies among competing players in the market. Another area where the BMC falls short is the lack of consideration of a differentiation factor in general and the unique selling proposition (USP) in particular for product offerings [29]. From the perspective of startups, getting product visibility among consumers in the modern and highly competitive market can be a hard task. To this end, the presence of differentiation can help provide visibility to the current planned offering and highlight the feature(s) that make the offering unique.

The BMC also does not (at its core) take into account any kind of measurement of performance in the startup's journey to success. The identification of metrics/key performance indicators (KPIs), which can help to monitor if the startup is on the right track to reach its intended goal [29,30], is not a part of the conventional BMC structure. Spanz [30] further points out that business model planning using the BMC does not explicitly involve stating and subsequently tracking goals for startups. This argument is supported by the fact that the BMC excludes from its structure the requirement to mandatorily consider the strategic purpose (including its mission, vision or goals) of the startup [28]. Aside from this, Spanz [30] also argues that the BMC does not check if the startup has the required (core) competence to execute its proposed concept/idea or innovation.

2.4. Rationale for the Blitz Canvas

Although there are many frameworks for business model development and innovation, very few frameworks aid in the planning and creation of the conditions required for success among startups. The BC aims to provide such a base to help develop business models while improving the chances of success for software startups. The BC's framework does not intend to replace but rather extend the BMC model by addressing the key issues (as cited in Section 2.3) with its BMC structure, including the lack of awareness of competing entities and the need for a good foundation, synergy and growth-orientation. In addition, the BC provides a "process-flow" structure for business model development and innovation, with the intent of creating an easy-to-traverse pathway for inexperienced entrepreneurs to follow.

In essence, this involves retaining the strong points of the BMC, such as its simplicity and its ability to create a business model around a product idea, while at the same time tackling many of the shortcomings. One instance of managing the BMC's shortcomings is the introduction of a foundational base that includes the determination of the mission, vision and goals for the startup as part of the business model. Such a consideration can help guide the product and business decisions of the software startup under uncertain circumstances [31,32].

One of the central aims of the BC, as the name suggests, is to get the products in the hands of the customers as quickly as possible. As most startups do not have resources in abundance, unlike established enterprises [33], they may not have the time and money to compete in the field of marketing campaigns in the same manner as their established competitors. Instead, the startup would stand a better chance if they were to outpace the competition by bringing the product to the market before the competition has the chance to develop a competing offering. Other benefits of early time-to-market have been found to include a higher degree of customer loyalty, an increase in the market share for the product, and a reduction in total product development costs [34–36].

In keeping with the best practices from an agile philosophy, the BC considers the customer as a co-innovator of the product, since the startup would consult with the customer during the validation stages. This kind of "co-innovation" improves product/solution acceptability and, therefore, improves the chances of business success [37]. Continuous improvement is at the center of such a validation cycle, ensuring that the evolving product always caters to the customer's needs.

3. Research Methodology

The goal of this research work is to present a process-driven, easy-to-use approach to business model development and innovation with a focus on key success factors (as defined by the triple cornerstone framework), one that overcomes the shortcomings of previous lean-based business modeling frameworks. The research methodology can be outlined as shown in Figure 2. Many lean-based business development frameworks have been proposed, such as the lean startup framework by Ries [15] and the BMC by Osterwalder and Pigneur [16], to guide startups in their business model development journey. As part of this work, the existing literature was reviewed to uncover the challenges faced when using these lean-based frameworks, with the aim of business model development and innovation for software startups. Some of the challenges include the lack of certain elements, such as a strategic foundation for startups, the establishment of a unique selling proposition (USP), taking into account competing entities as part of the business model development and innovation process, the consideration of synergies of the various segments of the business model and the benefits of identifying and using metrics as part of business model development. The reviewed literature is also used to design a new framework for business model development and innovation, with the aim of overcoming the shortcomings of existing frameworks. The proposed framework takes into account key success factors (identified as a part of the triple-cornerstone framework) to ensure that the focus of the framework is directed toward ensuring the success of the software startup. To test out the validity of the framework, a software application or tool is designed and prototyped with the aim of gathering feedback from users. The feedback is collected in the form of end-user surveys and the model is assessed using the (quantitative) data collected as the outcome of these surveys.

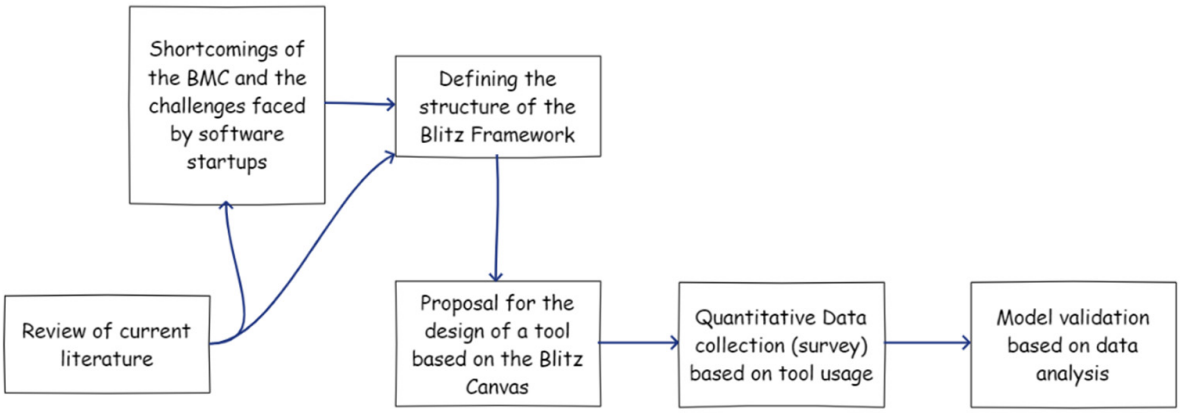

Figure 2. The research methodology.

The major questions that this research work attempts to answer are:

- RQ1: Could an easy-to-use, process-driven framework be proposed to aid in business model development and innovation for software startups around a product concept?
- RQ2: Would the resultant framework provide a foundation for the rapid development of the business model for a clearly differentiated value proposition, while keeping in mind the management of startup capital?
- RQ3: Could the proposed framework be designed to address the shortcomings of the business model canvas outlined in Section 2.3 of this work?

4. The Blitz Canvas—A Proposal

This research proposes the blitz canvas (BC) framework as a model to overcome many of the shortcomings outlined in Section 2.3 of this work. The framework places a focus on the foundation of the startup by identifying the key strategic elements, as part of the early sections of its structure. The framework provides a more holistic perspective for a concep-

tion of the value proposition by contrasting the proposed offering with that of competing entities in the market and the establishment of key differentiator(s). This approach stands in contrast to the siloed approach of most product and business development frameworks. As part of its structure, the proposed framework encourages the identification of key metrics to track various aspects of the product and business development process. The overall framework provides a synergistic and process-driven approach to business development.

By design and intent, the BC is structured to help the user focus on a single perspective in the business development process at any one point in time, at the same time maintaining focus on the broader perspective. The idea is not unlike the one used in *Six Thinking Hats* by Edward de Bono [38]. When one perspective is worked on, all considerations are seen only from that particular perspective. A high-level, conceptual view of the perspectives is shown in Figure 3. The process-driven nature of the BC helps the user to keep track of the current state of progress of business model development and innovation, while at the same time providing context to the development activities with regard to the overall purpose of the business.

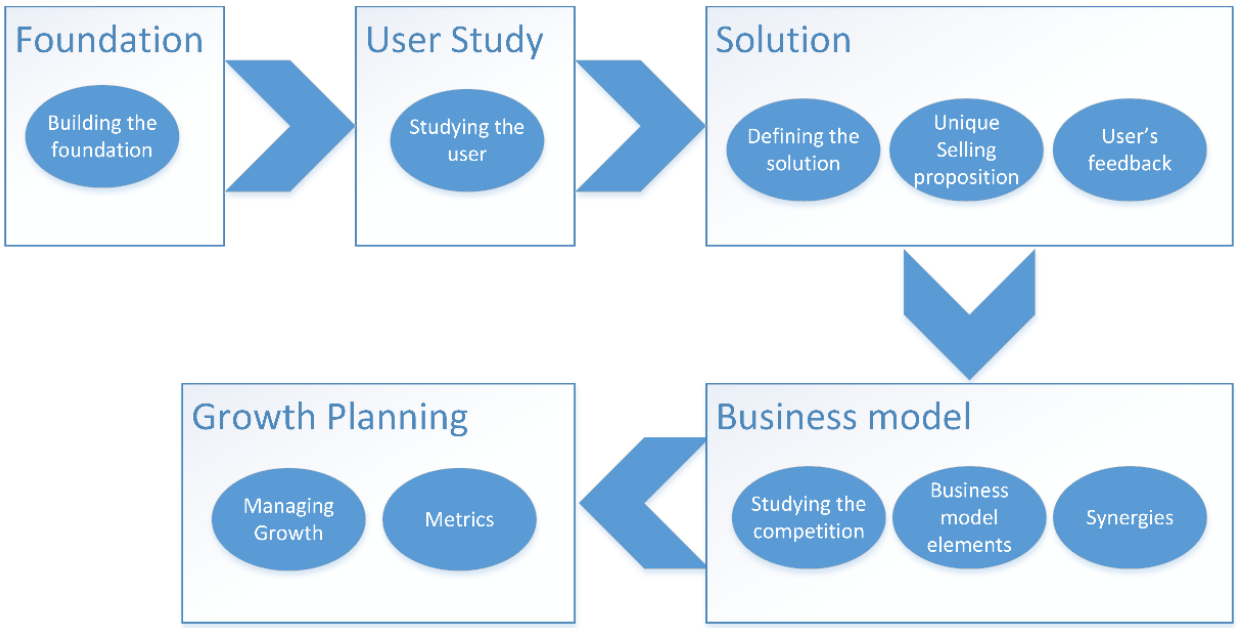

Figure 3. The stages of the blitz canvas framework.

The high-level conceptual view is further broken down into ten stages. This is performed in order to guide the user through the process of business model development while making sure that the complexity associated with the process is reduced by including smaller, numbered steps as part of any single stage. Each stage is divided into sequential steps that the user can follow to complete each stage and begin the next. The sequence of steps primarily serves as a guideline rather than a strict protocol. Hence, the user adopting the framework is encouraged to modify the suggested sequence of steps in the framework to suit their own needs and workflow.

4.1. Stage 1: Building the Foundation

The foundation of an organization begins with establishing the purpose of its inception and continued existence. The first stage, therefore, involves the formulation of the strategic purpose for the startup. The stage starts with the establishment of a mission and vision statement. As a part of the strategic planning process, the mission is considered to be the first step [39]. A clear definition of the term "mission" was provided by Alt and Zimmerman [40], who described it as follows: "a high-level understanding of the overall vision, strategic goals and the value proposition including the basic product or service features". The mission helps the startup group understand why it exists, while the vision

conveys what the startup wants to achieve in a finite duration of time. Maurya [41] highlights the importance of the vision from the perspective of the overall business and suggests that steps should be taken by the business to identify and establish it. Breaking down the vision into individual goals can make it easier to achieve. Goals provide insight into what needs to be done to achieve the vision, after starting out with the establishment of the mission. In fact, defining one or more clear goals along with clear time frames can make it easier for businesses to achieve their vision [42]. These foundational elements are deliberated upon since they provide a general direction for the value delivered to the customer and the growth to be expected in that market [43].

The foundation layer also describes the core culture of the startup, which outlines how tasks are accomplished, with an emphasis on best practices. This is because of how the startup functions; the nature and quality of the outcome and its general evolution are impacted by the organizational culture, which is determined and established during the initial phases of the startup [44]. Lastly, the core competencies of the startup team are also noted during this phase, since identifying these can be vital for the startup's success [45,46]. This would involve listing what skills are needed to accomplish key goals (along with the overall vision) and outlining which skills the startup currently has. Core competence can be a good indicator of which tasks the organization can perform in-house and which tasks the organization can consider outsourcing [47]. As an instance of this, Apple has claimed that its core competence of good design has provided it with a competitive advantage [48]. The identification of core competencies can translate into becoming a sustainable competitive advantage for organizations [49], and certain competencies could be particularly relevant during the early stages of the startup's journey [50]. Establishing these details before delving into the business model can provide much-needed direction for the business in times of uncertainty (such as market turbulence) and help guide the development of future products. As part of this stage, these details are discussed and noted. The elements of this stage are presented in Figure 4.

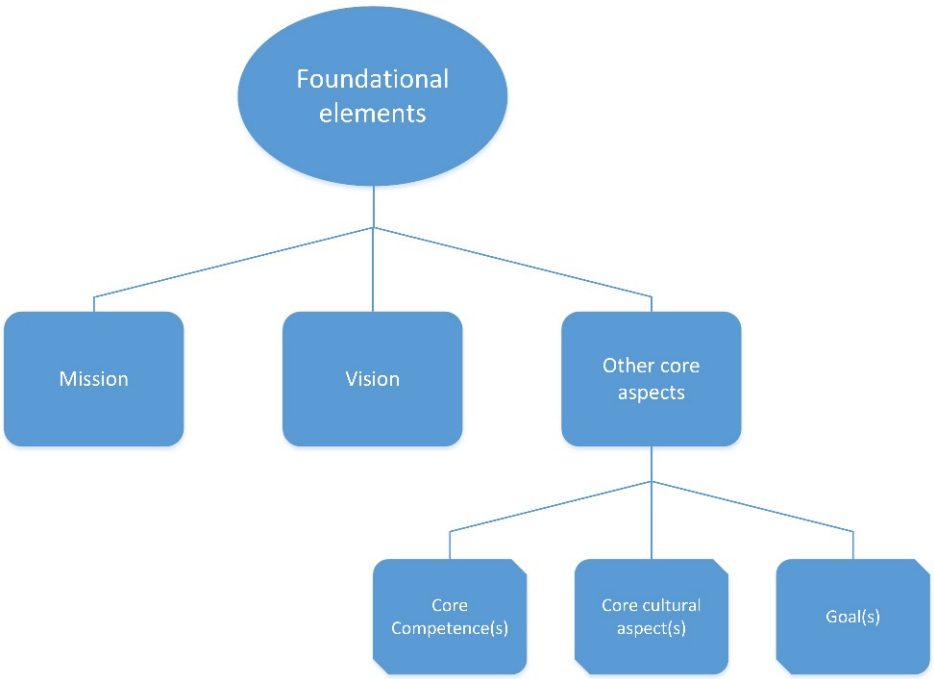

Figure 4. Blitz canvas—foundational elements.

4.2. Stage 2: Studying the User

The establishment of the foundation is followed by a study of the user, who they are and what are their goals, frustrations, and motivations. These details can be outlined by working on a user persona, as applied in the lean approach. In essence, a persona includes

a detailed, articulate description of a fictional customer, along with a fictional narrative of that customer, who is seen as a representation of the target customer base [51]. The description can include demographic, behavioral and psychographic details, along with the needs of the user [52]. Other details include goals, frustrations, and motivations along with their personality traits, etc. The details that go into the persona are derived from user interviews and observations of the user's interactions with the system [53]. A user persona is used primarily because startup organizations and small teams rarely have the resources required to commit to large-scale user studies. In such cases, the focus on one or a few fictitious individuals (derived from user research) who can represent the user base and possess common character traits of that user base can prove to be more effective in any study of the user.

The user can also be the subject of study during the phase when requirements are captured. A common methodology for requirement capture is the user stories technique that was popularized by Cohn [54], since it enables businesses to work collaboratively with the customer. User stories are also popular, owing to their ability to capture requirements in a simple non-technical format and their flexible nature [55]. As outlined by Cohn [54], the essential details of the requirements that are captured include who has a requirement, what features the user expects from the solution and why this requirement is considered necessary or important by the user. Owing to this format, user stories can also provide valuable information on the user's goals and their role in the system of which they are a part. They also detail the functions or features that the user would anticipate will be included in the value proposition provided to them. Establishing user personas beforehand can reduce rework when working on user stories since the goals of the user are clearly defined as part of the user persona. A high-level perspective of the user study stage is shown in Figure 5.

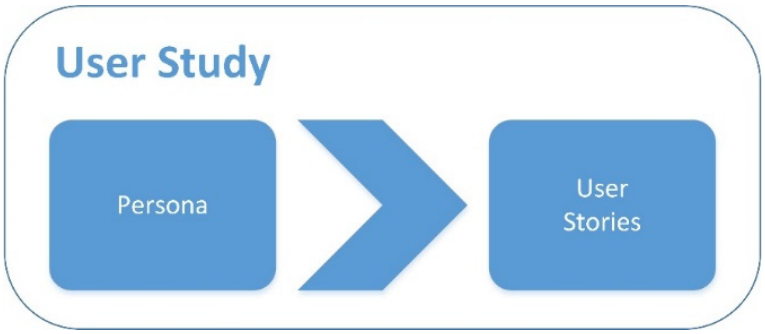

Figure 5. Blitz canvas—user study.

4.3. Stage 3: Defining the Solution

The product goals are then defined for the solution concept, based on the study of the user. As outlined by Betta et al. [56], a successful outcome for product development undertakings becomes more likely when the goals are defined clearly. The defining of goals is also outlined as a best practice in the product development literature [57,58]. The primary purpose is to ensure that the goals of the product are in line with the mission, vision and goals of the organization, as suggested by Barczak and Kahn [57]. Alongside the product goals, product features are determined. The user stories from the previous stage can serve as good indicators for identifying the desired features. This is because at least one feature is captured as a part of every user story [59]. User stories, owing to their simplistic format of requirements capture, have sometimes been accused of lacking contextual clarity [60]. To overcome this, a description of the product feature can be captured alongside the feature itself. The defined features are also prioritized using MoSCoW analysis, which is a commonly adopted technique in the agile school of methodologies [61,62]. As part of this prioritization technique, the feature sets are classified based on "Must-have", "Should-have", "Could-have" and "Won't-have" features. The prioritization and decision-making

process to determine which features need to be included when working with an iterative development methodology is known to be a challenging task [63]. Handling this as part of this stage could allow the development team to prioritize the features optimally for the development process.

A wireframe-based prototype of the solution is created based on the shortlisted set of features. The wireframe itself should initially be low-fidelity in nature and iteratively evolves into high-fidelity wireframes [64]. This is because low-fidelity wireframes are essentially devoid of graphics and resemble simple pencil sketches of a working application, which are important for initial user feedback. The lack of graphics or colors will ensure that the focus of user interaction and feedback remains on the workflow of the application [65]. With this approach, the feedback collected will be related to this workflow, rather than users rejecting the application, for instance, because they did not like the color scheme.

However, since this framework deals with business model development and innovation of the product concept, it is assumed that the product has already undergone an evolution from low to high fidelity and, therefore, will use the evolved high-fidelity prototype for the purpose of gathering user feedback. High-fidelity prototypes possess similar visual traits to the intended completed product [65], which can provide the users with a "hands-on" feel for the completed product and can help with the gathering of relevant feedback. The wireframes are created with the purpose of collecting feedback from potential end-users during the later stages of this framework.

4.4. Stage 4: Unique Selling Proposition

Any proposed solution has a greater chance of standing out, gaining customer interest, and capturing market share when there is a defined, unique selling proposition (USP) associated with the product. A USP can serve as a product differentiator, which is considered one of the most critical success factors for a given product [66], and, in turn, can impact the success of a startup. Maurya [41] acknowledges the need for an unfair advantage, which he defines as one of the structural elements of the lean canvas, as either an asset or feature that competing providers will not easily be able to replicate. The consideration, identification and inclusion of a USP or unfair advantage can provide a form of defense against the competition and new entrants to the field [67].

The key customer touchpoint is also determined during this stage so that the solution concept can identify the most critical interaction, wherein the introduction of a solution can resolve the user's primary pain point. As the development of the value proposition (in the form of the solution) is an ever-evolving process, the needs of the users can be studied during various stages of the product development life cycle. As part of that effort, the various points of interaction when a user comes into contact with the solution can provide valuable insight to the team regarding the needs of the user [68]. These are known as touchpoints and can inform the development team on how the product is being used, along with details that can serve as inputs to the evolving design and development process [69]. This stage encourages the development team to highlight how the solution will help leverage the customer touchpoint and what the anticipated impact of such an intervention might turn out to be.

4.5. Stage 5: The User's Feedback

The solution concept, which was formalized as a wireframe in stage three of this framework, is validated via the collection of user feedback. Potential and prospective users are provided with the interactive wireframe sequence and their feedback when using the solution concept is recorded. The recorded data that is collected is qualitative in nature and is collected with the aim of informing the development team of the usefulness of the current application. Blank and Dorf [31] recommend the gathering of qualitative feedback first, as it provides more clarity regarding the perceptions of the user regarding the product. Furr and Ahlstrom [70] support this approach and recommend the gathering of quantitative data after qualitative feedback. The collected feedback also assists the development team in

the decision-making process [71], such as prioritization for the next set of planned features for future iterations of the product. The process from stages three to five is represented in Figure 6.

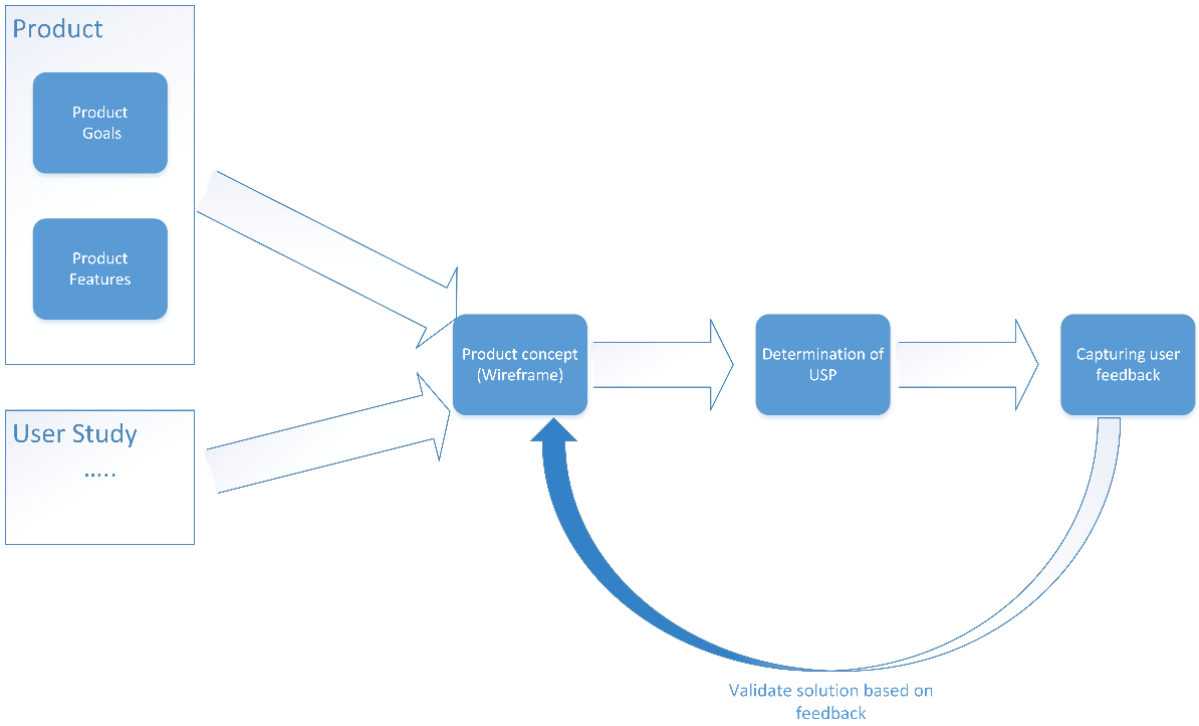

Figure 6. An overview of the solution development process.

4.6. Stage 6: Studying the Competition

A study of the current competition is performed to identify how the market offerings cater to the pain points of the users. Although it is not utilized very often and is a comparatively newer process, the study of competing entities can provide insight into user needs [72] and can contribute to developing better products in a number of ways. Firstly, they can point to the status quo and the features that can help differentiate the startup's offering from that of the competition [41]. In certain cases, a study of the competition can serve as a good starting point for the conception of solutions [72]. A study of the competition can also help the startup to recognize the best time to perform a pivot [73], as well as potential partnerships into which they can enter [74]. However, in the current context, the central aim of this study of the competition is to contrast the current offerings with that of the competition, to improve the current offering by determining the base set of features and establishing a relevant USP.

4.7. Stage 7: Business Model Elements

In this stage, the business model elements are added to the framework. The business model elements included in this section are structured as per the BMC framework. Accordingly, a business model is developed based on a working product concept by creating a value proposition around the target customer segment(s). In order to eventually deliver the products to the customers, the startup gains the help of distribution channel(s). The acquiring, retaining and growth of the customers are planned to achieve this as a part of the customer relationship segment. Revenue streams are designed to monetize the business model, which is developed as a result of planned BMC. The key resources to help build the business are identified. Key partners are chosen to substitute for resources that are not available to the startup. However, the market in general, and potential customers in particular, need to be made aware of the existence of the solution developed by the business.

Key activities are also planned to raise awareness among potential customers via organizing or participating in events or conferences relating to the domain of the solution. The cost structure is built accordingly, taking into consideration all the expenses incurred in the remaining segments and the revenue streams. The segments until this point are congruent to the original BMC, as shown in Figure 1. The BMC framework was the preferred base for the selection of the business model elements, due to its structural simplicity and speed. Although certain shortcomings of the BMC have been identified earlier in Section 2.3 of this work, the BC framework is designed to overcome many of these shortcomings.

In addition to the BMC elements, intellectual property (IP) assets that can be protected by the business are identified. Securing their IP assets enables startups to maximize the value captured from the solutions and products that they develop [75], and the strategic utilization of these assets can serve as a competitive advantage to the organization [76]. Although many startups cannot afford to apply for certain IP assets, such as patents, they might still benefit from protecting other IP, such as copyright or trade secrets. There is evidence to back up the claim that IP assets (other than patents) such as trademarks, trade secrets and copyright have been found to be useful to manage competition in the present-day markets [77]. Identifying such assets at an early stage can help startups to protect their intellectual property and improve their perceived market value, making them more attractive to potential investors.

Apart from IP, startups can also benefit from identifying "As a Service" offerings, such as "Infrastructure as a Service" (IaaS), "Platform as a Service" (PaaS), or "Software as a Service" (SaaS), which can reduce costs and speed up the pace of product development. A decade ago, most software startups would have been required to build their own backend infrastructure if they wanted to offer certain useful features in their applications, such as user authentication or cloud storage. However, the advent of newer innovations, spurred on as a result of market demands, have created offerings that can provide a completely managed platform for the creation and delivery of software-based solution offerings [78]. These include service-based solutions, such as Microsoft Azure, Amazon AWS and Google's Firebase. These services can dramatically lower development costs, decrease the time-to-market for products, and allow the development team to focus on building better user experiences rather than focus on the creation and maintenance of backend infrastructure [79]. SaaS offerings, such as Canva, can lower the barriers of entry for startups by allowing the startup teams to access valuable resources via more economical one-time or monthly costs [80]. Identifying these at the early stages can significantly improve the chances of success for startups since quicker development and deployment can result in faster instances of validated learning [81]. An overview of the business model stage (stage 7) for the BC is shown in Figure 7.

Figure 7. An overview of the business model stage.

4.8. Stage 8: Synergies

One of the identified shortcomings of the BMC was that the model did not have a provision for the identification of synergies between the various segments of the business model [30]. The business model development process is a complex phenomenon, with interdependencies within its various elements or sections [82]. Synergies involve two or more sections of the business model working together to provide more benefits to the

business than they could offer on their own to the startup. The identification of synergies can lead to a reduction in costs and a simplification of workflow [83]. For instance, the customer relationship segment can use the data from publicly provided customer reviews of the product to inform the future development of the value proposition. As part of this stage, the synergies are noted for implementation as part of the business process.

4.9. Stage 9: Managing Growth

After the solution concept has been validated by the customer and the solution is developed in an iterative manner, the planning phase should focus on handling the growth (and related aspects) of usage of the services associated with the product. Planning in advance how this growth will be handled can be beneficial to the development team. The customer development methodology by Blank [1] states that startups are in a state of "search" for a business model that works and that will remain in that state until they find one that can scale and is repeatable and profitable. The lean startup methodology, on the other hand, recommends going for scale only after the product-market fit has been identified [15]. Potential strategies for handling growth, however, are noted as part of this section, in anticipation of the product's eventual growth in adoption and usage.

Along with the management of the growth of the existing solution, additional complementary offerings (to the core offering) can be initiated by the startup to create product ecosystems. Organizations can garner significant benefits from either creating or becoming a part of such ecosystems [84]. The idea of additional complementary offerings is that at some point of iterative solution development, some user stories may be vital to resolving key pain points but may not fall within the scope of the current solution. In such a case, based on the success of the core offering, it would be ideal to develop newer solution offerings that can provide features complementary to the core solution [85], offering a seamless user experience. This can potentially lead to multiple product concepts forming an ecosystem of complementary product offerings, which could also serve as a source of competitive advantage [86].

Having multiple product concepts around the core product offering provides the startup with another advantage in the form of multiple potential directions to explore, should the core product concept fail the test of validation with the customer. As pointed out by Steve Blank [1], few value propositions or business models survive the first contact with the customer. Hence, identifying multiple potential product concepts can provide the team with additional ideas to test out, and to quickly change direction if the core product concept fails to provide enough value to its intended audience, while at the same time working within the user's problem field (as guided by the mission). As part of this stage, a list of such potential solution concepts is brainstormed for review and possible future development efforts. A high-level view of the areas of growth in focus is shown in Figure 8.

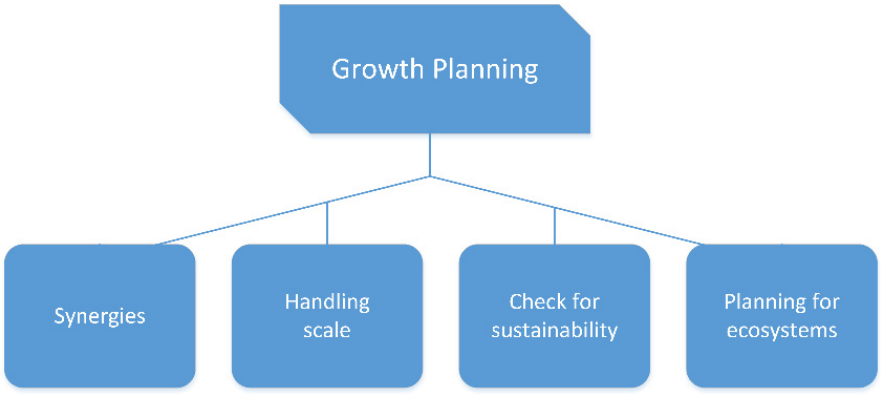

Figure 8. An overview of the business model phase.

4.10. Stage 10: Metrics

Metrics are identified in this section of the framework to track the performance and progress of the various sections of the business. However, gathering metrics that are indeed useful for the intended purpose of measurement to track progress can be tricky, as there are many situations where the team can track incorrect and vanity metrics [87]. These metrics will not provide sufficient information to suggest actionable steps and, therefore, might not be useful to the startup. There are many metric frameworks that provide a basis for collecting metrics at a general level, such as Google's HEART framework, GSM and lean analytics [88,89]. The issue with most frameworks, however, is that they place emphasis on growth and the related aspects of startups. The product and business development fields are not the subject of focus in most frameworks.

The BC primarily identifies one north-star metric, which is intended to serve as a single-point guide for startups. The idea is that since most startups do not have enormous resources, they will benefit if they focus on trying to impact a single critical metric rather than trying to move multiple non-critical ones [90]. In addition, the startup can choose to identify a range of additional metrics for the purpose of tracking performance and quality. To provide a holistic structure to achieve this, the MESOPS model for metric determination, developed by Shanbhag and Pardede [91], was integrated with this section, owing to its consideration of the multiple aspects of both product and business development. The MESOPS model encourages the identification of metrics for the problem and solution spaces, evangelism, scale, evolution and ecosystem aspects of the product and business models (dimensions presented in Figure 9). The MESOPS model, therefore, takes an end-to-end perspective of the metric identification process, which covers a wide range of areas to determine the useful metrics to track and measure.

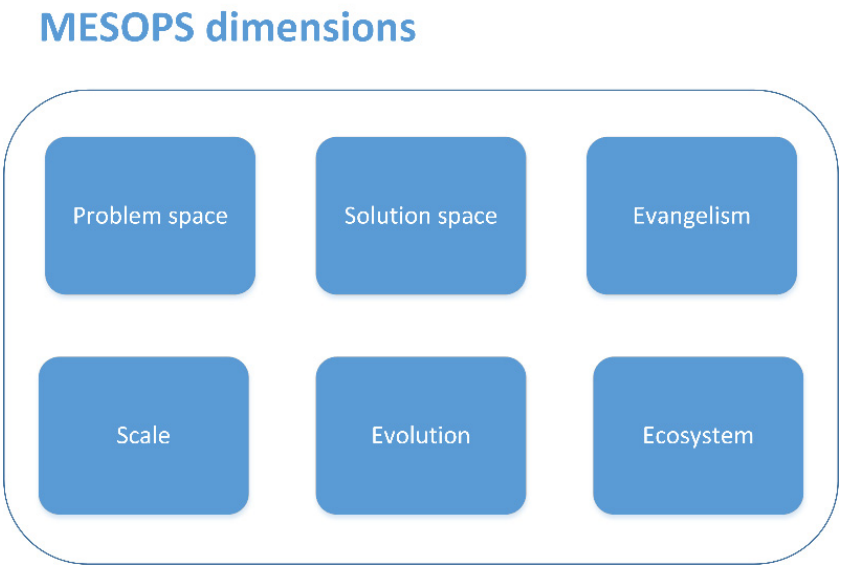

Figure 9. Dimensions for the determination of metrics as per the MESOPS framework.

5. Analysis and Evaluation

This research reviews the usefulness and effectiveness of the proposed BC framework through the use of an online survey instrument. For the purpose of evaluation of the model's effectiveness, a web-based tool named iVenture (link to the iVenture app prototype used for the purpose of concept validation survey: https://iventure-v1.web.app/Bcprocessmodel, accessed on 1 February 2022) was created to take the participants through the ten stages and then present the business model in the form of a dashboard. A survey was conducted based on the interactions with this tool. To reduce the cognitive load of the participants, a business model was created around a fictional to-do list product called "MyToDo", which is aimed at helping users to improve their productivity by improving their task-management

skills. The participants are taken through the process of business model development using the tool and are then requested to answer the questions put forward in the survey. Essentially, the tool presents the users with a pre-built business model for them to interact with and lets the users get a feel for the process of business model development and innovation, using the framework step-by-step through its various stages. Figure 10 shows an overview of the process that the framework uses to develop the business model. From this screen, the participants will need to traverse through the various stages, guided by an application interface, upon completion of which process they will be presented with the business dashboard. Figure 11 shows the developed business model, presented in the form of a dashboard.

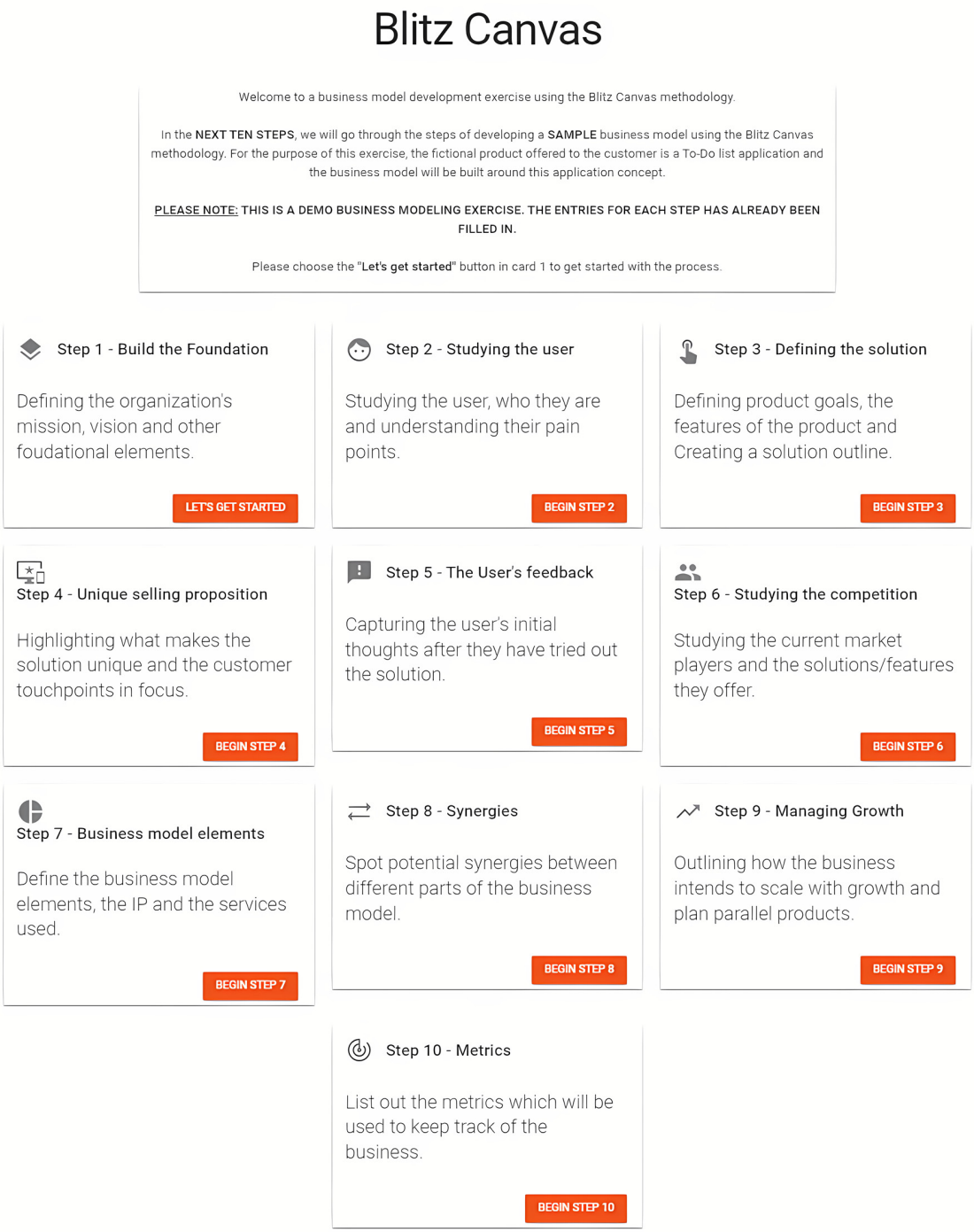

Figure 10. Process flow for the web tool, based on the blitz canvas.

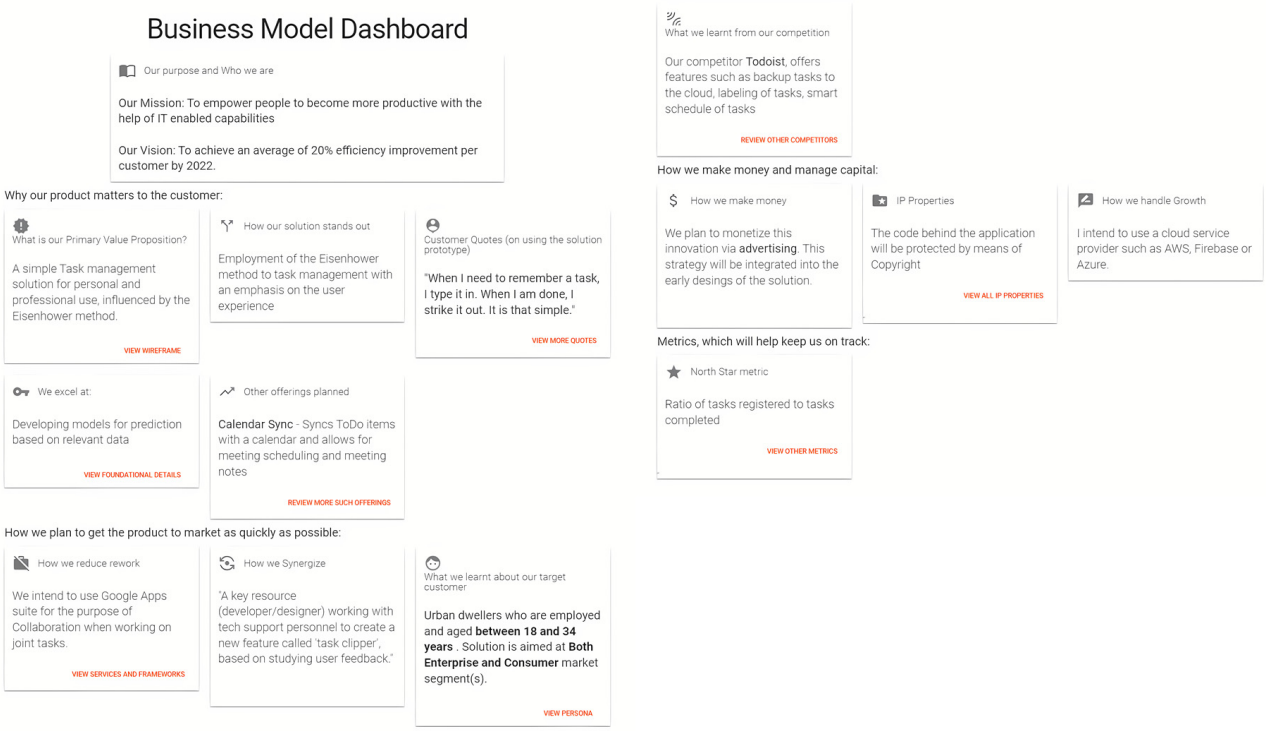

Figure 11. The developed business model, presented as a dashboard.

5.1. Exploratory Analysis of Survey Data (Evaluation)

This section discusses the results of the survey conducted as part of the evaluation of the proposed BC model. The respondents of this survey included students enrolled in a course with entrepreneurship being one of the subjects at La Trobe University and recent graduates from the professional social networking website, LinkedIn. As the target audience of the proposed framework is inexperienced entrepreneurs and first-time startup teams, students and graduates who enrolled in this course and thereby expressed an interest in venturing on the entrepreneurial journey were identified as the ideal audience for the validation efforts of the framework. The survey instrument was developed using the Qualtrics tool and was sent to the students via email, then shared with the recent graduates via LinkedIn. The survey was conducted after being granted permission from the Human Research Ethics committee at La Trobe University.

5.2. Survey Structure

The survey structure contained 10 questions and was distributed in two sections. A URL of the hosted web tool was shared with the participants. The first page of the web tool contained an overview of the tool and instructions on how to access the survey, after going through the tool's functions. The questions included in Section 1 addressed the queries relating to startup success factors (time-to-market, product differentiation and the optimal usage of startup capital) and the shortcomings of the BMC. Section 2 validated the speed and ease of use of the process-driven nature of the tool, using which method the business model was developed. For Section 1 (Q1_1 through Q2_5), the questions were structured as statements and the user was asked for their level of either agreement or disagreement with the statement made. For the single question in Section 2 (Q3_1), the question was worded as a question rather than a statement. For both sections, the options provided a range from strong agreement to strong disagreement. The options presented in the seven-point Likert scale include Strongly Agree, Agree, Somewhat Agree, Neither Agree nor Disagree, Somewhat Disagree, Disagree, and Strongly Disagree. Any value between Strongly Agree and Somewhat Agree is considered to be a valid positive response. The relationship between the research goals and the questions presented in the survey are

discussed in Table 2, while the shortcomings of the BMC mapped to the survey questions are shown in Table 3. The survey questions, along with the pertinent descriptive statistics, are presented in Table 4.

Table 2. Relationship between the aims of this research to the SQs.

Research Questions (RQ)	Corresponding SQ
Could an easy-to-use, process-driven framework be proposed to aid in business model development and innovation for software startups around a product concept?	SQ1_1, SQ3_1
Would the resultant framework provide a foundation for rapid development of the business model for a clearly differentiated value proposition, while keeping in mind the management of startup capital?	SQ1_2, SQ2_2, SQ2_4, SQ1_3, SQ3_1, SQ1_4
Could the proposed framework be designed to address the shortcomings of the business model canvas outlined in Section 2.3 of this work?	Addressed in Table 3

Table 3. Mapping the shortcomings of the BMC to the corresponding SQs.

Shortcomings of the BMC	Corresponding SQ
Formulation of strategic goals or objectives of the startup (Kraaijenbrink, 2012 [28]; Spanz, 2012 [30]), consideration of competence for solution development (Spanz, 2012 [30])	SQ2_1
Establishment of USP (Maurya, 2010 [29])	SQ2_2
Consideration of competing entities from the market (Kraaijenbrink, 2012 [28])	SQ2_4
Consideration of synergies within the BMC (Spanz, 2012 [30])	SQ2_5
Taking into account performance measurement using metrics such as KPIs (Spanz, 2012 [30]; Maurya, 2010 [41])	SQ2_3

Table 4. Survey questions and corresponding descriptive statistics for all sections of the survey.

	Survey Question (SQ)	N	Min	Max	Mean	Std. Dev
SQ1_1	The tool provided a step-by-step pathway for the startup to create a business model from start to completion around their product idea.	174	1	7	6.14	0.91
SQ1_2	The dashboard clearly presented the information, with a focus on why the product should matter to the customer/end-user.	174	1	7	5.94	1.06
SQ1_3	The dashboard clearly presented the information, with a focus on getting the product to market quickly.	175	1	7	5.82	1.14
SQ1_4	The tool covered the required areas needed to build a good business model.	174	1	7	6.01	1
SQ2_1	The tool helped gather information regarding the strategic aspects of a startup, such as the mission of the startup.	175	1	7	6.04	1.04
SQ2_2	The tool clearly highlighted the unique selling proposition (USP) of the product.	175	1	7	5.88	1.08
SQ2_3	The tool helped collect metrics to measure various aspects such as the growth of the startup.	173	1	7	5.91	1.02
SQ2_4	This tool made it easy to gather information regarding competing products and study them.	174	1	7	5.82	1.13

Table 4. *Cont.*

	Survey Question (SQ)	N	Min	Max	Mean	Std. Dev
SQ2_5	Using the tool, synergies between business segments could be captured.	174	1	7	5.88	1.04
SQ3_1	Creating the business model using the tool was a quick and easy process.	173	1	7	6.02	0.9

5.3. Responses and Survey-to-Research Question Mapping

Overall, the survey request was accepted by 209 respondents. After preprocessing and filtering out incomplete survey responses, 175 responses were retained and used in the analysis process. Python and Orange data-mining software were used to carry out the analysis process. Table 2 presents the corresponding survey question/statement (SQ) for each of the research questions (RQs), while Table 3 presents the mapping of the SQs to the shortcomings of the BMC, as listed in Section 2 of this work. The response of each participant, based on the frequency (count) for each option, is presented in Table 4.

Table 4 presents the descriptive statistical information pertaining to the responses collected to the survey questions. Survey questions SQ1_1 and SQ3_1 assess the process-driven nature and the ease of use of the framework, along with its effectiveness in developing the business model from start to completion. Around 94.86% of the respondents (with a mean score of 6.14) agreed that the tool provided a step-by-step pathway for startups to create a business model, from start to completion, around their product idea, while 94.83% of the respondents (with a mean score of 6.02) agreed that creating a business model using the tool (and by extension, the framework) was a quick and easy process.

Survey question SQ1_2 assessed the ability of the tool to clearly define the differentiator for the value proposition. In total, 91.53% of the respondents (with a mean score of 5.94) agreed that the dashboard produced by the tool clearly outlined why the product should matter to the user, which implied the direct indication of a product differentiator. Additionally, survey questions SQ2_2 and SQ2_4 also highlighted additional information regarding the product differentiation aspect of the product and business model. In fact, 89.15% of the respondents (with a mean score of 5.88) agreed that the tool clearly highlighted the USP of the product or value proposition. Around 86.78% of respondents (with a mean score of 5.82) agreed that the tool made it easy to gather information about competing products and study them.

The aspect of making a quicker time to market part of the framework was assessed by survey question SQ3_1, where 94.83% of respondents (with a mean score of 6.02) agreed that creating a business model using the tool (and, by extension, the framework) was a quick and easy process. The optimal usage of capital was assessed by question SQ1_4, to which 92.53% of respondents (with a mean score of 6.00) agreed that the tool covered all the required areas to build a good business model. This assessment directly relates to capital because a good business model converts acquired capital into economic value [19], irrespective of whether the type of capital being referred to is financial, physical or intellectual [92]. In fact, a business model demonstrates how it makes use of these different forms of capital to generate value [92]. Hence, a good business model is a good indicator of the optimal usage of the said capital.

The tools addressing the shortcomings of the BMC were assessed by questions SQ2_1, SQ2_2, SQ2_3, SQ2_4 and SQ2_5. One of the shortcomings of the BMC (noted in Section 2.3 of this work) was the absence of strategic goals/objectives or considerations of competencies being formulated as part of the core BMC structure. SQ2_1 assessed this ability of the tool, with 92.61% of respondents (with a mean score of 6.04) agreeing that the tool helped gather information regarding the strategic aspects of the startup. SQ2_2 assessed the ability of the tool to clearly highlight the unique selling proposition, with 89.15% of the respondents (with a mean score of 5.88) agreeing that it did so. In total, 86.78% of the respondents (with a mean score of 5.82) agreed that the tool made it easy to gather information about

competing products and to study them (question SQ2_4). Similarly, 88.51% of respondents (with a mean score of 5.88) agreed that when using the tool, synergies between business segments could be captured (question SQ2_5). Finally, question SQ2_3 assessed the ability of the tool to identify metrics to measure various aspects of the startup, such as growth, wherein 89.01% of the respondents agreed that it did (with a mean score of 5.91). The graphical representations of the SQs can be seen in Figures 12–14.

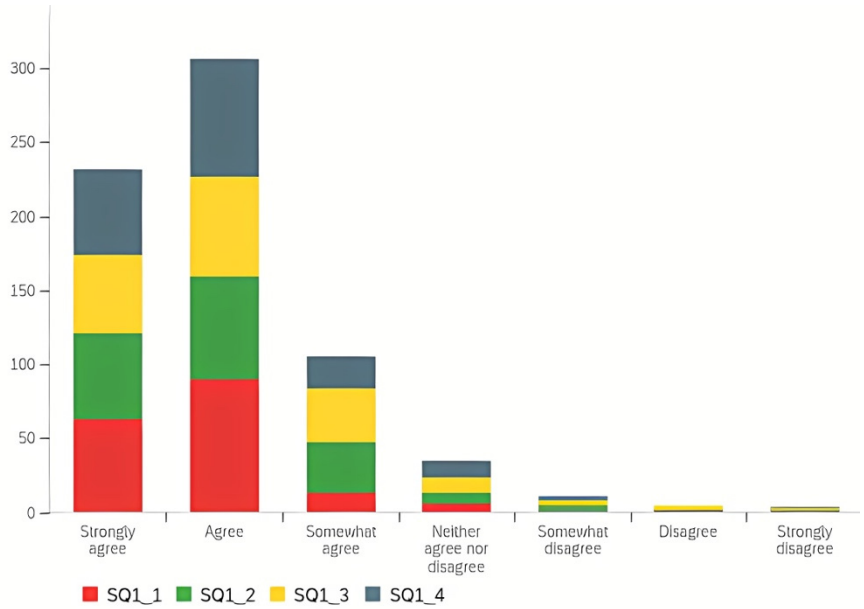

Figure 12. Graphical representation of the survey results for Section 1.

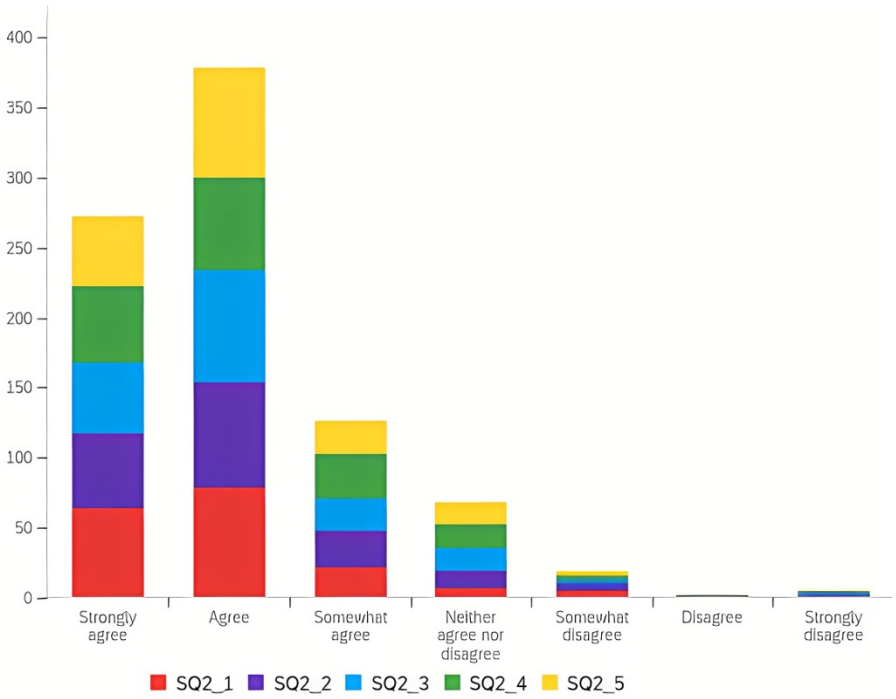

Figure 13. Graphical representation of the survey results for Section 2.

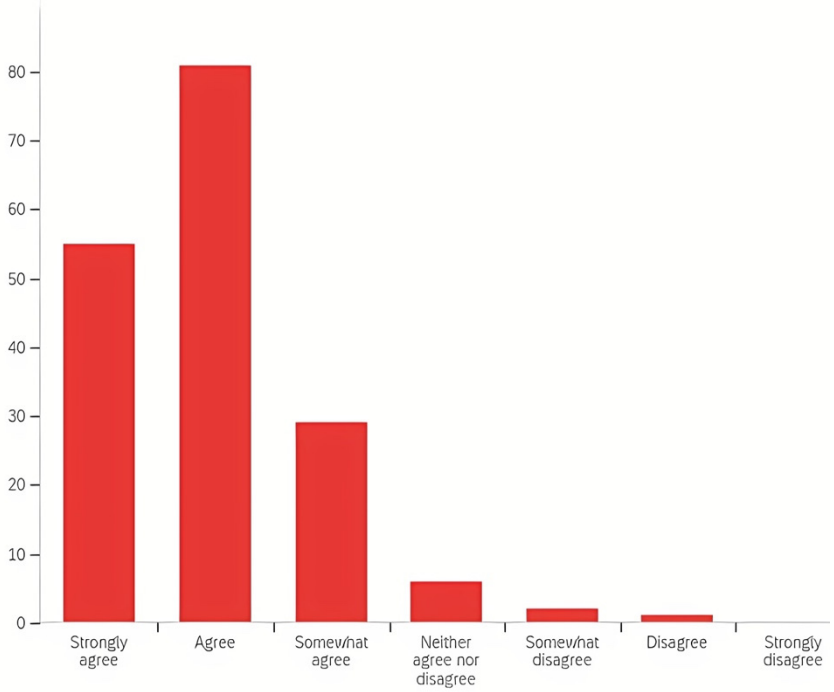

Figure 14. Graphical representation of the survey results for SQ3_1.

On the subject of mean and standard deviations for the survey areas, most of the questions elicited a standard deviation scoring of between 0.9 and 1.14, which would imply that most respondents had opinions similar to one another, with a high level of agreement persisting among the respondents. As per the presented results in the previous sections, it can be clearly stated that the tool and, by extension, the BC framework, provided an easy-to-use, process-driven framework for business model development and innovation for aspiring software startups, which addresses the shortcomings identified in the BMC framework. It also indicates that the BC framework takes into account critical success factors defined in the triple cornerstones model (the presence of product differentiation, quicker time to market and the optimal usage of startup capital).

6. Literature Analysis on the Contributions of BC

Much of the research conducted in this domain has focused on vertical in-depth aspects of individual core dimensions of startups. Instances of this can be seen in work performed from the process perspective, such as agile-based processes for developing products or the business perspective for developing the overall business models [15,87]. This includes research leads with a technical or product-related viewpoint. Most such research undertakings do not provide a clear pathway for startups to go from conception to the realization of the startup idea. The current work proposes a high-level process-driven framework with which entrepreneurs can take their product ideas from the concept to business model realization.

The blitz canvas is structured to overcome the shortcomings listed in Table 1 and in Section 2.3 of this work. In stage 1, the business objectives are established and the goals are listed, which accounts for the formulation of the strategic goals of the startup [28,30]. The potential synergies are identified in stage 8, which accounts for the consideration of synergies within segments of the canvas, which was another shortcoming noted by Spanz [30]. These synergies can serve as a trigger for identifying avenues for further product and/or service innovations. The key metrics listed as part of stage 10 provide an avenue for performance measurement using metrics, as noted by Maurya [41]. Maurya [41] also mentioned the establishment of a USP as a missing element from the original BMC, which is covered as part of stage 4. The key differentiators are identified in part when

studying the competing offerings in stage 6 of the blitz canvas, the consideration of which was noted as a shortcoming by Kraaijenbrink [28]. The study of the competition can further help the organization with a better market positioning of the product and value proposition. Innovation competence, which is noted as another area that needs improvement in the BMC by Spanz [30], is handled in multiple stages of the blitz canvas, starting right at the beginning of stage 1. The identification of core competencies lists the skills available to the startup at inception, and "As a Service" products are sought out in areas where skills or competencies are lacking.

Another central aspect of the blitz canvas is its embedded focus on the important aspects of startup success, such as time to market [36] and product differentiation [93]. The importance of being early to market cannot be understated for startups, as startups do not have the financial or marketing resources to compete with established players [94,95] who have resources in abundance. In such cases where the startup manages to get products out early to the market, resources that would otherwise be spent on marketing (or other activities that raise customer awareness of the product) can now be spent on creating better products or to improve the services built around the existing product. This is because, at an earlier timeframe, there is a higher probability that there is little to no competition in the market for the startup, which creates one of the most optimal circumstances for a product's success.

As discussed earlier, most startups do not have the resources to compete with established players in the market [94,95]. In such scenarios, apart from an early time to market, the best way to distinguish their offerings from that of the competition is to have clear product differentiation. In such cases, the startup positions its offering so as to not be in direct competition with presently established players and, therefore, allows customers to clearly see the differences in the value propositions between competing offerings and its own offering. The blitz canvas is structured in such a way that these factors are identified when working through the framework. For instance, the identification of USP during stage 4 is aimed at helping the startup to differentiate its offering from that of the competition. The selection of "As a service" products and components are leveraged to reduce the time it takes for the product to be built and for it to be released on the market. PaaS services can save startups an immense amount of time and work, as these services handle the technical details of the backend. The prototypes built based on low-/high-fidelity wireframes, along with user feedback (as part of stage 5) help to validate the assumptions that go into the product concepts so that the startup team can subsequently start developing the business model around the product.

The blitz canvas can also serve as a validation tool for the technical and business sections of the startup. The importance of validation has already been well established in both the product and business spheres [15,87]. Not performing validation at any stage would have a domino effect on the subsequent stages in the nascent phases of any startup. For instance, when considering a scenario where the context establishment for a product idea was not validated early on before development commenced, it would subsequently move into development and then the business model would be built around it. This would cost the startup far more to rework the idea at such a late stage, should it find that the developed product does not cater to the customer pain points. It would be far more cost-effective to spot inconsistencies and rectify the gap in the understanding of customer needs early on. In keeping with this finding, the blitz canvas focuses on the validation of the product concept before moving on to the development of the business model.

From the viewpoint of a skeptical investor, the startup is expected to show the progress of the business goals at regular intervals that are consistent with available funds [96]. The blitz canvas can also be adapted to support a goal-based approach to business model development (in the form of iterative business model development), on which the investor can assess the work done and measure it against defined goals (as part of stage 1 or the foundation stage). This can make it easier for the startup as well as potential investors to evaluate, over time, the progress that the startup is making toward reaching its established

goals. This can help investors to make informed decisions regarding the startup, based on data. The research contributions of the blitz canvas include:

- The proposal of a process-driven model that serves as a roadmap for startups in its business model development and innovation efforts.
- The integration of the study of competing market forces as part of the business model development and innovation process, which can help with product positioning in the market.
- The creation of a foundational base for the startup by establishing, as part of the BM process, the entity's mission, vision, values and core competencies.
- Planning for potential synergies within business segments and future growth as part of the core business model innovation process, which can provide a platform for newer innovations in the form of products and services.
- The integration of metrics identification for tracking performance as part of the business model innovation process.
- A data-backed proof-of-concept to present the business model's planning details, with a focus on critical success factors, as defined by the triple-cornerstone framework by Shanbhag and Pardede [66].
- A demonstration of overcoming the noted shortcomings of the business model canvas for business model development and innovation, while ensuring a quick process for said development.

The scientific contributions of this work include:

- The traditional approach meets speed requirements and minimizes cost expenditure. In essence, this research explores the rediscovery of the usefulness offered by a more traditional approach to business model development, while at the same time mitigating its downsides, such as a delayed time to market and the higher costs associated with business model realization. The intent is to have a better understanding of and evaluate the advantages of a holistic approach to business model development rather than a lean approach, in the context of the usability of business modeling frameworks aimed at inexperienced or first-time entrepreneurs.
- The specialization of business model development toward a single industry sector. This research explores the potential to develop a business model development framework to better leverage the qualities of the software market. As indicated in the response to a previous question by a reviewer of this paper, most business model development frameworks are designed to be generic and are applicable across a wide variety of industries. While this can make it useful in many areas from manufacturing to healthcare, it comes with the cost of not leveraging the unique qualities of any one sector and helping the aspiring startup team to reach its potential by making use of key resources. Some examples of these qualities include the ability to quickly change direction by testing product concepts relatively fast, when compared to sectors such as transportation, manufacturing or healthcare, the ability to enter newer geographic market locations with a relatively small amount of effort and the ability to scale and capture a larger user-base by simply increasing the server bandwidth capacity.
- The encouragement of data-driven business model development. In addition to the previously mentioned points, business model development efforts are encouraged from a data-driven foundation. The question of the usefulness of leveraging data to guide decision-making in the business model development world has been discussed for many years. However, very few frameworks explicitly encourage their users to actively use metrics to help with such data-driven efforts. This research explores how a framework that leverages metrics to guide decision-making based on data would function. Besides the outlined contributions, this research evaluates the usefulness of a process-based approach vs. an open-canvas approach to business model development.

In addition to its research and scientific contributions, the proposed framework was created to adapt to the needs and the unique qualities of software start-ups, which were

listed in the introductory section of this work. The corresponding stages of the framework that address the challenges/opportunities (as listed in the Introduction) include:

- Stage 3: Defining the solution, and Stage 5: User's feedback—These stages help guide the team's efforts toward rapid validation of the product concept by first creating an easily testable prototype, using low-fidelity wireframes (as part of stage 3), then collecting feedback from users based on their usage of these prototypes (as part of stage 5).
- Stage 5: User's feedback—At the end of the same stage, when feedback is collected from users, the startup team has the option to change direction if the feedback from the users indicates that the created solution does not solve the user's problem, or if the users generally do not see enough value in the solution that it might not be commercially viable to continue the development process.
- Step 9—Managing growth—The framework encourages the startup team to list possible steps that they can take to ensure they are prepared for growth and how they would manage a sudden increase in the number of users interested in the product offering.
- Step 4: Unique selling proposition, Step 6: Studying the competition, and Step 7: Business model elements—Since the barriers to entry in the software target market can be relatively low, identifying a unique value proposition can help software startups go a long way to retaining acquired and activated customers. Besides this finding, a study of the existing players in the market can also help to plan better strategies to develop and monetize the current product development efforts, along with saving resources by not having to "reinvent the wheel". Lastly, step 7 of the framework helps startup teams to identify possible intellectual property assets that they can leverage to gain an edge over the competition.
- Step 7: Business model elements—to help get the product to the market and into the hands of customers as quickly as possible, the blitz canvas framework encourages the usage of SaaS products that could include third-party components, "Software as a Service" products and rapid application development frameworks, to reduce the time taken to develop the product in question. This is a unique trait of the software target market and one that is leveraged by few business model development frameworks to achieve a quicker time to market, which, in turn, can be important to the success of the product and, in turn, that of the business model.
- Step 10: Metrics—The identification and the usage of metrics in monitoring the relevance of the solution to solving the customers' problems is crucial to the success of software products, as they can be modified after an initial version has been shipped to the customer. Identifying and using the right metrics to keep the solution relevant and useful to the customers can result in the continued success of the product; the blitz canvas framework helps software startups achieve this by incorporating metric identification as part of the core framework.

7. Conclusions and Future Work

The proposed framework provides an avenue for business model innovation for software startups by guiding the entrepreneur through a step-by-step process to realize their business model, along with the validation of the said model. The web-based tool created to help apply the framework assisted with the visualization of the business model, which, in turn, served as a platform by which to study the evolution of the customer problem, get the product to market quickly and plan for growth. Being competition-aware by nature, the framework helped identify key differentiators for the core value proposition, which could help in marketing efforts quickly and more efficiently. The consideration of synergies across business model segments and the identification of metrics supported the business model innovation process.

As indicated by the first research question (RQ1), the proposed model (BC) has been designed to integrate business model development and innovation around the product (concept) to create a seamless process-driven approach for generating business models for

software startups. As reflected in the results of our analysis of the data (from questions SQ1_1, SQ3_1), the proposed framework holds its ground and shows promise of being an easy-to-use and process-driven business model development instrument that software startups can use to base their product concepts on.

When looking at the second research question (RQ2), the results of the analysis (SQ1_2, SQ2_2, SQ2_4) suggest that the tool (and, by extension, the framework) helped differentiate the offering with a focus on why the product in development should matter to the user, highlighting its USP when comparing it to the competition. The analysis (SQ1_3, SQ3_1) also suggested that the process of business model creation was quick and easy when performed using the tool and that the developed business model covered all the required areas (SQ1_4). Lastly, the results of the analysis (SQ2_1, SQ2_2, SQ2_3, SQ2_4, SQ2_5) outlined how the structure of the proposed framework addressed the shortcomings of the BMC (RQ3), which are outlined in Section 2.3 of this work.

This study contributes to the existing body of literature by providing a high-level process-driven framework for startups to develop a solution concept from an idea to a business model in the form of the blitz canvas. Aiding the process of business model innovation, the framework is based on a process-driven structure, with the provision to iterate as required. As part of the process-driven structure, practical and hands-on activities are proposed, such as creating wireframes, prototypes and validations. These are introduced at certain intervals at each stage of the model or framework. A tool was designed based on this proposed framework. The framework was then validated based on the analysis of the usage data of this tool, which was collected using a survey.

Another foundational consideration when developing the BC was that of certain success factors, such as the time to market and product differentiation. Multiple segments within the BC address these success factors, owing to the nature of their importance from the standpoint of startups. The BC has the potential to aid startups in getting their solution concepts off the ground within a short time frame. The proposed design of the tool demonstrates how a possible implementation of the BC concept could work and highlights the possible benefits of such a realization.

At this point, the framework is designed specifically for startups in the software sector. The adoption of the agile philosophy for (software) product development, the identification of platform and infrastructure-as-a-service components, the success factors assessed, and the metric framework adopted were all considered from the viewpoint of the software sector. In the future, these can be adapted to better fulfill the needs of other sectors, such as education or manufacturing. Additionally, in the event that application usage data is collected via an "opt-in" mechanism, machine learning can be used to suggest components, such as a suitable platform-as-a-service, possible areas of IP protection, and possible competing entities, among other fields, which are most suitable for the startup using the tool. Besides these attributes, the framework itself can be extended to include end-to-end product development, which can potentially result in a more holistic framework for software startups to go from product idea/conception to operational realization.

As scope for future study, a functional specification, along with metrics, can be identified for the blitz canvas to aid in the implementation undertakings of the proposed tool design and to study the effectiveness of the framework. The proposed model could also be used to work through a case study by applying the framework as part of the startup development process with an inexperienced startup team. Such an implementation should provide a wealth of insight into the benefits of the model and scope for improvement. Based on such an implementation, further opportunities for refinement can be shortlisted and another iteration of the model can be proposed.

Another scope for future work can be to implement the framework in multiple scenarios in organizations of various sizes, rather than being used by only startups. The principles applied as part of the blitz canvas can be useful to an organization of any size to bring a product idea to the market in a reduced time frame. As noted, the proposed model is crafted to take advantage of the unique qualities of the software and information

technology sector, in terms of the startups' efforts with business model creation. Similar frameworks can be created to benefit startups working in other sectors, such as healthcare or transportation, wherein the framework can be created to take advantage of the unique traits of those sectors.

Finally, similar frameworks can be created to help software startups with other parts of their journey, such as product development, so as to help with the end-to-end startup development process. Such a holistic approach to startup development has the potential to lower the barriers of entry for inexperienced startup teams who might have a good product idea but who are unsure how to develop their concept and create a business model around it.

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References

1. Blank, S. *The Four Steps to the Epiphany: Successful Strategies for Products That Win*; BookBaby: Pennsauken Township, NJ, USA, 2013; ISBN 0-9892005-2-3.
2. Adelino, M.; Ma, S.; Robinson, D. Firm Age, Investment Opportunities, and Job Creation. *J. Financ.* **2017**, *72*, 999–1038. [CrossRef]
3. Sozen, E.; O'Neill, M. An Exploration of the Motivations Driving New Business Start-up in the United States Craft Brewing Industry. In *Craft Beverages and Tourism*; Springer: Berlin/Heidelberg, Germany, 2018; Volume 2, pp. 195–212.
4. Timmons, J.A.; Spinelli, S.; Tan, Y. *New Venture Creation: Entrepreneurship for the 21st Century*; McGraw-Hill/Irwin: New York, NY, USA, 2004; Volume 6.
5. Ryder, J. Startups Are Driving Job Growth in the New Economy. *WorkingNation*. 2019. Available online: https://workingnation.com/startups-are-driving-job-growth-in-the-new-economy/ (accessed on 25 June 2020).
6. Potter, B. Start-Ups Create All New Jobs. Available online: https://www.afr.com/politics/startups-create-all-new-jobs-20160823-gqzh15 (accessed on 28 October 2020).
7. Griffith, E. Startups Are Failing Because They Make Products No One Wants. Available online: https://fortune.com/2014/09/25/why-startups-fail-according-to-their-founders/ (accessed on 25 June 2020).
8. Melegati, J.; Kon, F. Early-Stage Software Startups: Main Challenges and Possible Answers. In *Fundamentals of Software Startups*; Springer: Berlin/Heidelberg, Germany, 2020; pp. 129–143.
9. Rafiq, U.; Melegati, J.; Khanna, D.; Guerra, E.; Wang, X. Analytics Mistakes That Derail Software Startups. In Proceedings of the Evaluation and Assessment in Software Engineering, Trondheim, Norway, 21–23 June 2021; ACM: New York, NY, USA, 2021; pp. 60–69.
10. CB Insights 339 Startup Failure Post-Mortems. Available online: /research/startup-failure-post-mortem/ (accessed on 25 June 2020).
11. Cerdeira, N.; Kotashev, K. Startup Failure Rate: Ultimate Report + Infographic. 2021. Available online: https://www.failory.com/blog/startup-failure-rate (accessed on 25 June 2020).
12. Schneider, T.W. Building a Business Plan. *J. Prop. Manag.* **1998**, *63*, 6.
13. Ghezzi, A.; Cavallaro, A.; Rangone, A.; Balocco, R. A Comparative Study on the Impact of Business Model Design & Lean Startup Approach versus Traditional Business Plan on Mobile Startups Performance. In Proceedings of the 17th International Conference on Enterprise Information Systems—Volume 3, Barcelona, Spain, 27–30 April 2015; pp. 196–203.
14. Kraus, S.; Kauranen, I. Strategic Management and Entrepreneurship: Friends or Foes? *Int. J. Bus. Sci. Appl. Manag. (IJBSAM)* **2009**, *4*, 37–50.
15. Ries, E. *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses*; Crown Publishing Group: New York, NY, USA, 2011; ISBN 978-0-307-88791-7.
16. Osterwalder, A.; Pigneur, Y. *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*; John Wiley & Sons: Hoboken, NJ, USA, 2010; ISBN 0-470-87641-7.
17. Casadesus-Masanell, R.; Zhu, F. Business Model Innovation and Competitive Imitation: The Case of Sponsor-based Business Models. *Strateg. Manag. J.* **2013**, *34*, 464–482. [CrossRef]

18. Lindgardt, Z.; Reeves, M.; Stalk, G.; Deimler, M.S. Business Model Innovation. In *When the Game Gets Tough, Change the Game*; The Boston Consulting Group: Boston, MA, USA, 2009; Volume 118.
19. Teece, D.J. Business Models, Business Strategy and Innovation. *Long Range Plan.* **2010**, *43*, 172–194. [CrossRef]
20. Casadesus-Masanell, R.; Ricart, J.E. From Strategy to Business Models and onto Tactics. *Long Range Plan.* **2010**, *43*, 195–215. [CrossRef]
21. Morris, M.; Schindehutte, M.; Allen, J. The Entrepreneur's Business Model: Toward a Unified Perspective. *J. Bus. Res.* **2005**, *58*, 726–735. [CrossRef]
22. Trimi, S.; Berbegal-Mirabent, J. Business Model Innovation in Entrepreneurship. *Int. Entrep. Manag. J.* **2012**, *8*, 449–465. [CrossRef]
23. Chesbrough, H. Business Model Innovation: Opportunities and Barriers. *Long Range Plan.* **2010**, *43*, 354–363. [CrossRef]
24. Keane, S.F.; Cormican, K.T.; Sheahan, J.N. Comparing How Entrepreneurs and Managers Represent the Elements of the Business Model Canvas. *J. Bus. Ventur. Insights* **2018**, *9*, 65–74. [CrossRef]
25. Cowan, A. The 20 Minute Business Plan: Business Model Canvas Made Easy. Available online: https://www.alexandercowan.com/business-model-canvas-templates/ (accessed on 26 June 2020).
26. Romme, A.G.L.; Reymen, I.M.M.J. Entrepreneurship at the Interface of Design and Science: Toward an Inclusive Framework. *J. Bus. Ventur. Insights* **2018**, *10*, e00094. [CrossRef]
27. Fauvel, C. Criticisms, Variations and Experiences with Business Model Canvas Prof. Hong Y Ching. *Eur. J. Agric. For. Res.* **2013**, *1*, 26–37.
28. Kraaijenbrink, J. Three Shortcomings of the Business Model Canvas. 2012. Available online: http://kraaijenbrink.com/2012/07/shortcomings-of-the-business-model-canvas/ (accessed on 26 June 2021).
29. Maurya, A. Lean Canvas–How I Document My Business Model. 2010. Available online: http://www.ashmaurya.com/2010/08/businessmodelcanvas (accessed on 26 June 2021).
30. Spanz, G. Startup Best Practice: Business Model Canvas. *Retrieved April.* **2012**, *6*, 2015.
31. Blank, S.; Dorf, B. *The Startup Owner's Manual: The Step-by-Step Guide for Building a Great Company*; BookBaby: Pennsauken Township, NJ, USA, 2012; ISBN 0-9892005-4-X.
32. Kantabutra, S.; Avery, G.C. The Power of Vision: Statements That Resonate. *J. Bus. Strategy* **2010**, *31*, 37–45. [CrossRef]
33. Sutton, S.M. The Role of Process in Software Start-Up. *IEEE Softw.* **2000**, *17*, 33–39. [CrossRef]
34. Carmel, E. Time-to-Completion in Software Package Startups. In Proceedings of the Twenty-Seventh Hawaii International Conference on System Sciences, Wailea, HI, USA, 4–7 January 1994; Volume 4, pp. 498–507.
35. Carmel, E.; Sawyer, S. Packaged Software Development Teams: What Makes Them Different? *Info Technol. People* **1998**, *11*, 7–19. [CrossRef]
36. Giardino, C.; Wang, X.; Abrahamsson, P. Why Early-Stage Software Startups Fail: A Behavioral Framework. In *Software Business, Towards Continuous Value Delivery*; Lassenius, C., Smolander, K., Eds.; Lecture Notes in Business Information Processing; Springer International Publishing: Berlin/Heidelberg, Germany, 2014; pp. 27–41. ISBN 978-3-319-08737-5.
37. Lee, S.M.; Olson, D.L.; Trimi, S. Co-Innovation: Convergenomics, Collaboration, and Co-Creation for Organizational Values. *Manag. Decis.* **2012**, *50*, 817–831. [CrossRef]
38. De Bono, E. *Six Thinking Hats*; Penguin UK: London, UK, 2017; ISBN 0-241-33687-2.
39. Pearce, J.A.; David, F. Corporate Mission Statements: The Bottom Line. *Acad. Manag. Perspect.* **1987**, *1*, 109–115. [CrossRef]
40. Alt, R.; Zimmermann, H.-D. Introduction to Special Section-Business Models. *Electron. Mark.-Int. J.* **2001**, *11*, 1019–6781.
41. Maurya, A. *Running Lean: Iterate from Plan A to a Plan That Works*; O'Reilly Media, Inc.: Sebastopol, CA, USA, 2012; ISBN 1-4493-3191-2.
42. Collins, J.C.; Porras, J.I. Building Your Company's Vision. *Harv. Bus. Rev.* **1996**, *74*, 65.
43. Moogk, D.R. Minimum Viable Product and the Importance of Experimentation in Technology Startups. *Technol. Innov. Manag. Rev.* **2012**, *2*, 3.
44. Gralha, C.; Damian, D.; Wasserman, A.; Goulão, M.; Araújo, J. The Evolution of Requirements Practices in Software Startups. In Proceedings of the 2018 IEEE/ACM 40th International Conference on Software Engineering (ICSE), Gothenburg, Sweden, 27 May–3 June 2018; pp. 823–833.
45. Seppänen, P.; Liukkunen, K.; Oivo, M. On the Feasibility of Startup Models as a Framework for Research on Competence Needs in Software Startups. In Proceedings of the 16th International Conference on Product-Focused Software Process Improvement, Bolzano, Italy, 2–4 December 2015; pp. 569–576. [CrossRef]
46. Gupta, V.; Fernandez-Crehuet, J.M.; Gupta, C.; Hanne, T. Freelancing Models for Fostering Innovation and Problem Solving in Software Startups: An Empirical Comparative Study. *Sustainability* **2020**, *12*, 10106. [CrossRef]
47. Prahalad, C.K.; Hamel, G. The Core Competence of the Corporation. In *Strategische Unternehmungsplanung—Strategische Unternehmungsführung*; Springer: Berlin/Heidelberg, Germany, 2006; pp. 275–292.
48. Rothaermel, F.T.; Hitt, M.A.; Jobe, L.A. Balancing Vertical Integration and Strategic Outsourcing: Effects on Product Portfolio, Product Success, and Firm Performance. *Strateg. Manag. J.* **2006**, *27*, 1033–1056. [CrossRef]
49. Nowak, M.J.; Grantham, C.E. The Virtual Incubator: Managing Human Capital in the Software Industry. *Res. Policy* **2000**, *29*, 125–134. [CrossRef]
50. Ahmed, S.Z.F.; Koubaa, M.B. Core Competencies and Phases of the Organizational Life Cycle. *Int. J. Bus. Manag. Stud.* **2013**, *5*, 461–473.

51. Haas, M.; Kunz, W.H. How to Master the Challenges of Service Mass Customization–A Persona-Based Approach. In *Handbook of Research in Mass Customization and Personalization*; World Scientific: Singapore, 2010; Volume 2, pp. 603–621.
52. Perdana, R.A.; Suzianti, A.; Ardi, R. Crowdfunding Website Design with Lean Product Process Framework. In Proceedings of the 3rd International Conference on Communication and Information Processing, Tokyo Japan, 24–26 November 2017; pp. 369–374.
53. Wölbling, A.; Krämer, K.; Buss, C.N.; Dribbisch, K.; LoBue, P.; Taherivand, A. Design Thinking: An Innovative Concept for Developing User-Centered Software. In *Software for People*; Springer: Berlin/Heidelberg, Germany, 2012; pp. 121–136.
54. Cohn, M. *User Stories Applied: For Agile Software Development*; Addison-Wesley Professional: Boston, MA, USA, 2004; ISBN 0-321-20568-5.
55. Silva, T.R.; Hak, J.-L.; Winckler, M. Testing Prototypes and Final User Interfaces through an Ontological Perspective for Behavior-Driven Development. In *Human-Centered and Error-Resilient Systems Development*; Springer: Berlin/Heidelberg, Germany, 2016; pp. 86–107.
56. Betta, J.; Chlebus, T.; Kuchta, D.; Skomra, A. Applying Scrum in New Product Development Process. In Proceedings of the Advances in Manufacturing II, Poznan, Poland, 19–22 May 2019; Trojanowska, J., Ciszak, O., Machado, J.M., Pavlenko, I., Eds.; Springer International Publishing: Berlin/Heidelberg, Germany, 2019; pp. 190–200.
57. Barczak, G.; Kahn, K.B. Identifying New Product Development Best Practice. *Bus. Horiz.* **2012**, *55*, 293–305. [CrossRef]
58. Foroutan, M.; Baski-Reeves, K. Need for Development and Validation of a New Product Development (NPD) Assessment and Improvement Tool: A Review of Literature. *Afr. J. Bus. Manag.* **2017**, *11*, 127–139.
59. Lucassen, G.; Dalpiaz, F.; van der Werf, J.M.E.M.; Brinkkemper, S. Improving Agile Requirements: The Quality User Story Framework and Tool. *Requir. Eng.* **2016**, *21*, 383–403. [CrossRef]
60. Hudson, W. User Stories Don't Help Users: Introducing Persona Stories. *Interactions* **2013**, *20*, 50–53. [CrossRef]
61. Marthasari, G.; Suharso, W.; Ardiansyah, F.A. Personal Extreme Programming with MoSCoW Prioritization for Developing Library Information System. *Proceeding Electr. Eng. Comput. Sci. Inform.* **2018**, *5*, 537–541.
62. Voigt, B.J.; Glinz, M.; Seybold, D.-I.C. *Dynamic System Development Method*; Department of Information Technology, University of Zurich: Zurich, Switzerland, 2004.
63. Racheva, Z.; Daneva, M.; Buglione, L. Supporting the Dynamic Reprioritization of Requirements in Agile Development of Software Products. In Proceedings of the 2008 Second International Workshop on Software Product Management, Barcelona, Spain, 9 September 2008; pp. 49–58.
64. Abdel-Hamid, T.K. The Dynamics of Software Project Staffing: A System Dynamics Based Simulation Approach. *IEEE Trans. Softw. Eng.* **1989**, *15*, 109–119. [CrossRef]
65. Christoforakos, L.; Diefenbach, S. Idealization Effects in UX Evaluation at Early Concept Stages: Challenges of Low-Fidelity Prototyping. In Proceedings of the International Conference on Applied Human Factors and Ergonomics, Orlando, FL, USA, 21–25 July 2018; Springer: Berlin/Heidelberg, Germany, 2018; pp. 3–14. [CrossRef]
66. Shanbhag, N.; Pardede, E. The Dynamics of Product Development in Software Startups: The Case for System Dynamics. *Int. J. Syst. Dyn. Appl. (IJSDA)* **2019**, *8*, 51–77. [CrossRef]
67. Borseman, M.; Tanev, S.; Weiss, M.; Rasmussen, E.S. Lost in the Canvases: Managing Uncertainty in Lean Global Startups. In Proceedings of the ISPIM Innovation Symposium, Boston, MA, USA, 13–16 March 2016.
68. Kawano, A.; Motoyama, Y.; Aoyama, M. A LX (Learner EXperience)-Based Evaluation Method of the Education and Training Programs for Professional Software Engineers. In Proceedings of the 2019 7th International Conference on Information and Education Technology, Aizuwakamatsu, Japan, 29–31 March 2019; pp. 151–159.
69. Sauvola, T.; Rontti, S.; Laivamaa, L.; Oivo, M.; Kuvaja, P. Integrating Service Design Prototyping into Software Development. *ICSEA* **2016**, *2016*, 338.
70. Furr, N.; Ahlstrom, P. *Nail It Then Scale It: The Entrepreneur's Guide to Creating and Managing Breakthrough Innovation*; NISI Institute: Hong Kong, China, 2011; ISBN 0-9837236-0-5.
71. Rasmussen, E.S.; Tanev, S. Lean Start-up: Making the Start-up More Successful. In *Start-Up Creation*; Elsevier: Amsterdam, The Netherlands, 2016; pp. 39–56.
72. Rafiq, U.; Bajwa, S.S.; Wang, X.; Lunesu, I. Requirements Elicitation Techniques Applied in Software Startups. In Proceedings of the 43rd Euromicro Conference on Software Engineering and Advanced Applications (SEAA), Vienna, Austria, 30 August–1 September 2017; pp. 141–144. [CrossRef]
73. Bajwa, S.S.; Wang, X.; Duc, A.N.; Abrahamsson, P. "Failures" to Be Celebrated: An Analysis of Major Pivots of Software Startups. *Empir. Softw. Eng.* **2017**, *22*, 2373–2408. [CrossRef]
74. Tripathi, N.; Seppänen, P.; Oivo, M.; Similä, J.; Liukkunen, K. The Effect of Competitor Interaction on Startup's Product Development. In Proceedings of the 43rd Euromicro Conference on Software Engineering and Advanced Applications (SEAA), Vienna, Austria, 30 August–1 September 2017; pp. 125–132.
75. Fisher III, W.W.; Oberholzer-Gee, F. Strategic Management of Intellectual Property: An Integrated Approach. *Calif. Manag. Rev.* **2013**, *55*, 157–183. [CrossRef]
76. Cho, Y.; Kirkewoog, S.; Daim, T.U. Managing Strategic Intellectual Property Assets in the Fuzzy Front End of New Product Development Process. *RD Manag.* **2018**, *48*, 354–374. [CrossRef]
77. Somaya, D.; Graham, S.J. Vermeers and Rembrandts in the Same Attic: Complementarity between Copyright and Trademark Leveraging Strategies in Software. *Ga. Inst. Technol. TIGER Work. Pap.* **2006**, 1–33. [CrossRef]

78. Joshi, S. PaaS (Platform-as-a-Service). Available online: https://www.ibm.com/cloud/learn/paas (accessed on 1 May 2020).
79. Serrano, N.; Gallardo, G.; Hernantes, J. Infrastructure as a Service and Cloud Technologies. *IEEE Softw.* **2015**, *32*, 30–36. [CrossRef]
80. Mac an Bhaird, C.; Lynn, T. Seeding the Cloud: Financial Bootstrapping in the Computer Software Sector. *Ventur. Cap.* **2015**, *17*, 151–170. [CrossRef]
81. Melegati, J.; Goldman, A. Seven Patterns for Software Startups. In Proceedings of the 22nd Conference on Pattern Languages of Programs (PLoP'15), Pittsburgh, PA, USA, 24–26 October 2015.
82. Loon, M.; Quan, X.I. Theorising Business Model Innovation: An Integrated Literature Review. *Aust. J. Manag.* **2020**, *46*, 548–577. [CrossRef]
83. Nielsen, C.; Lund, M. Building Scalable Business Models. *MIT Sloan Manag. Rev.* **2018**, *59*, 65–69.
84. Van Den Berk, I.; Jansen, S.; Luinenburg, L. Software Ecosystems: A Software Ecosystem Strategy Assessment Model. In Proceedings of the 4th European Conference on Software Architecture: Companion Volume, Copenhagen, Denmark, 23–26 August 2010.
85. Knauber, P.; Muthig, D.; Schmid, K.; Widen, T. Applying Product Line Concepts in Small and Medium-Sized Companies. *IEEE Softw.* **2000**, *17*, 88–95. [CrossRef]
86. Barykin, S.Y.; Kapustina, I.V.; Kirillova, T.V.; Yadykin, V.K.; Konnikov, Y.A. Economics of Digital Ecosystems. *J. Open Innov. Technol. Mark. Complex.* **2020**, *6*, 124. [CrossRef]
87. Klein, L. *UX for Lean Startups: Faster, Smarter User Experience Research and Design*; O'Reilly Media, Inc.: Sebastopol, CA, USA, 2013; ISBN 978-1-4493-3504-5.
88. Croll, A.; Yoskovitz, B. *Lean Analytics: Use Data to Build a Better Startup Faster*; O'Reilly Media, Inc.: Sebastopol, CA, USA, 2013; ISBN 1-4493-3567-5.
89. Rodden, K.; Hutchinson, H.; Fu, X. Measuring the User Experience on a Large Scale: User-Centered Metrics for Web Applications. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, Atlanta, GA, USA, 10–15 April 2010; ACM: New York, NY, USA, 2010; pp. 2395–2398.
90. Carpenter, S. Why Our Startup Needed a North Star Metric (and How We Found It). Available online: https://www.forbes.com/sites/groupthink/2017/04/11/why-our-startup-needed-a-north-star-metric-and-how-we-found-it/ (accessed on 11 June 2020).
91. Shanbhag, N.; Pardede, E. A Metrics Framework for Product Development in Software Startups. *J. Enterprising Cult.* **2019**, *27*, 283–307. [CrossRef]
92. Beattie, V.; Smith, S.J. Value Creation and Business Models: Refocusing the Intellectual Capital Debate. *Br. Account. Rev.* **2013**, *45*, 243–254. [CrossRef]
93. Song, L.Z.; Benedetto, C.D.; Song, M. Competitive Advantages in the First Product of New Ventures. *IEEE Trans. Eng. Manag.* **2010**, *57*, 88–102. [CrossRef]
94. Fayad, M.E.; Laitinen, M.; Ward, R.P. Thinking Objectively: Software Engineering in the Small. *Commun. ACM* **2000**, *43*, 115–118. [CrossRef]
95. Paternoster, N.; Giardino, C.; Unterkalmsteiner, M.; Gorschek, T.; Abrahamsson, P. Software Development in Startup Companies: A Systematic Mapping Study. *Inf. Softw. Technol.* **2014**, *56*, 1200–1218. [CrossRef]
96. Cusumano, M.A. Evaluating a Startup Venture. *Commun. ACM* **2013**, *56*, 26–29. [CrossRef]