

# The Role of the Business Model and Business Model Innovation as Essential Components to Commercialization, Entrepreneurship, and Strategic Renewal

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## Abstract

Business models are a cornerstone of innovation for both startups and established firms. The term exists as part of the management lexicon, as media and scholars devote significant attention to it, especially with Internet-based and tech businesses exploiting innovative new models. This review aims to address the current knowledge regarding the concepts of the business model and business model innovation. Starting with the business model, the paper examines the diversity of definitions that scholars offer, mainly related to its scope (e.g., firm, network) and conceptualization (e.g., activities, value). The narrative delves into a systematic review and components of the business model. It segues to examining links with the lean startup and associated canvases that encompass components to define value creation, delivery, and capture. This section closes by highlighting the diverse multitude of business models, including fifty-five common patterns, and finally considers the assessment of the construct, most notably Teece's seven questions. The business model innovation section delves into its diverse characterizations by scholars, leading to identifying common themes- value, process, novel, change, activities, core elements, model, and discovery. The section discusses two relevant systematic reviews that highlight gaps for further exploration. It then dives into multiple approaches, such as business model development, reconfiguration, discovery-driven planning, customer discovery, parallel play, and reinventing-the-wheel. This discussion closes by examining the role of business model innovation in the organizational learning process, particularly experimentation. Finally, it addresses evaluation, featuring Amit and Zott's six questions. Themes to draw for the business model involve that it (1) is essential to define a path to innovation and successful commercialization; (2) embodies the creation, delivery, capture, and apportionment of value; and (3) encompasses exploration and exploitation functions. For business model innovation, a notable extraction involves a critical organizational learning process fashioning a model that offers novelty and value to the firm and its ecosystem of customers, investors, and partners.

**Keywords:** Business model • Business model assessment • Business model canvas • Business model development • Business model innovation • Business model reconfiguration • Discovery driven planning • Innovation approaches • Lean canvas • Lean startup • Parallel play • Reinventing the wheel

## Introduction

Novel business models have been a cornerstone of innovation for both startups and established firms. They have provided the ability to change an industry's nature and define the competitive playing field and standards. Such is the importance of the business models that scholars have viewed them as, or even more, important than a particular idea or technology [1,2].

The concept of a business model emerged as a manifestation of the strategy field [3]. Several management philosophies (e.g., resource-based view, transactional cost economic, system, and strategic network theories) influenced its development [4,5]. This term has existed as part of the business vernacular for many decades, emanating from Peter Drucker's writings [3]. However, scholars, practitioners, and the media ingrained the term within the business lexicon during the late 1990s, resulting from the surge of Internet-based businesses during the dot.com era [6]. Since this time, both the academic and general business communities have devoted significant interest towards the business model, along with the process of business model innovation [2,7-9].

This review aims to examine the current knowledge regarding the business

model construct and business model innovation. The narrative breaks down these two interrelated entities into several component sections. For business models, the paper starts by exploring the diverse range of definitions around the concept. It continues by discussing a systematic review, the components, ties to lean startup, and types of business models. It closes out with considerations around the assessment of the business model. The paper then transitions to discuss the area of business model innovation. This section starts by exploring various definitions and systematic literature reviews. This discussion segues to examine several approaches, such as business model development, business model reconfiguration, parallel play, and reinvention of the wheel. The business model innovation section closes by exploring the role of this process with learning and strategies for assessment.

## Business Model Definition

In general, academics proffer a diverse collection of definitions (Table 1) [3,8]. Unfortunately, no agreed-on or universal definition exists [9]. This lack of consensus reflects a diversity of disciplines interested in this multifaceted concept [10].

Several definitions provide a broad view that exists among academicians. For example, a literature review by Zott and Amit [10] highlights definitions such as a statement, a description, a representation, architecture, conceptual tool or model, a structural template, a framework, a pattern, and a set. Further, in this analysis of 103 papers, these authors note that 37% define the concept, 44% fail to conceptualize or describe all its components completely, and 19% refer to other scholars' works [10]. To this end, according to Ghezzi [11], current research lacks clarity, consistency, and direction.

Various contributions support the conceptual underpinnings of the business

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**Table 1:** A cross-section of significant business model definitions [8].

Characterization	Scope		Conceptual Focus	
	Network	Organization	Activities	Value
A system of interdependent activities that transcends the focal firm and spans its boundaries. The activity system enables the firm, in concert with its partners, to create value and to appropriate a share of that value (Zott and Amit 2010) [10].	✓	✓	✓	✓
The set of which activities a firm performs, how it performs them, and when it performs them as it uses its resources to perform activities, given its industry, to create superior customer value (low-cost or differentiated products) and put itself in a position to appropriate value (Afuah 2004) [22].		✓	✓	✓
A description of the roles and relationships among a firm's consumers, customers, allies, and suppliers that identifies the major flows of product, information, and money and the major benefits to participants (Weill and Vitale) [21].	✓	✓		✓
Describes the rationale of how the organization creates, delivers, and captures value (Osterwalder and Pigneur 2010) [14].		✓		✓
Defines how the enterprise creates and delivers value to customers, and then converts payments received to profit (Teece 2010) [2].		✓		✓

model. Foss and Saebi [12] describe the business model as a "unit of analysis" to characterize how the enterprise works. Others depict it as an overarching framework that coalesces internal and external components enabling the venture to function effectively [13-16]. Casadesus-Masanell and Ricart [16] define it as the "logic of the firm" [3]. Margetta [16] characterizes it as an articulated story on how a firm operates.

Amit and Zott [17], in another of their contributions, observe that the business model depicts the content, the structure, and the governance of transactions fashioned to create value via the seizing of business opportunities. In 2010, they include an interdependent system [10], and in 2013, add how the firm conducts its business [18]. Several researchers see it as a reflection of strategy and an instrument that a firm can use to analyze and articulate such choices [3,19]. Chesbrough and Rosenbloom [20] characterize it as a bridge that connects innovation, technology, and economic value creation [20].

A cross-section of definitions begins to classify how scholars view the business model based on conceptual (e.g., activities, value) or scope perspectives (e.g., network, enterprise) [8,19]. First, from a network activity perspective, Zott and Amit [10] describe it as an interdependent activity system, which others commonly cite. This interdependent system transcends and spans the focal firm's boundaries to other ecosystem players (e.g., partners, customers), enabling the firm, along with its partners, to create, deliver, and distribute value [10]. From a network value perspective, Weill and Vitale [21] view the business model as the varied roles and relationships among a firm's customers, partners, and suppliers that identifies the significant flows for the product, information, and currency, and the primary benefits to all such participants. Others view it from an enterprise activity perspective [10,22]. Such includes (1) the set of activities a firm performs; (2) the how and when it performs them in using resources, given its industry; (3) the creation of superior customer value (low-cost vs. differentiated products); and (4) the ability to distribute value [10,22]. Finally, from an enterprise value perspective, other scholars define it as the rationale of how a firm creates, delivers, and captures value [2,10,14].

A 2010 literature review by Zott and colleagues [15] coalesces several emerging themes concerning a business model. Such could stimulate a more unified use of the term. First, it is emerging as a new "unit of analysis," distinct from, yet centered on, the firm, its products, industry, or network [15]. Second, the business model emphasizes a system-level, all-inclusive approach to describing how firms "do business" [10]. Third, firm activities enact a vital role in the proposed business model conceptualizations [15]. Finally, business models explain how a firm creates and captures value [15].

Interestingly, Teece [2] refines this concept by describing it as the value architecture of the firm. He characterizes it as how a firm creates and delivers value to customers and then converts revenues to profit [2]. Others cite this definition throughout the literature [12,23-25]. This scholar [2], along with Chesbrough [1], argues that it enables the commercialization of new technology.

Adding a more current perspective are insights shared during a 2016 debate

on the topic [22,26]. This discussion adds to the formal description of the firm's architecture to include that it represents attributes of a "real firm" and cognitive/linguistic schemas [22].

Overall, one can characterize a business model as the firm's architecture that engages with the external ecosystem (or network) and explains how the organization "does business" [2,8,10]. This structure supports and facilitates the business delivery system, which involves activities and resources within the firm and with external players (customers, partners, suppliers), all of which play a vital role [10,27]. The model defines the logics through which a firm identifies, creates, captures, and appropriates value (and profits) [2,5]. Finally, the structure supports and facilitates a business learning system [27].

## Published Literature Review

In their systematic review, Lambert and Davidson [8] analyze the empiric research from 1996 to 2010. In their evaluation of 69 empirical papers, culled from 375, these authors find that 67% of the papers emanated from the business and management fields, 44% covered information, media, and telecom industries, and 43% emerged from European sources [8]. They report that 73% of the studies collected data to add to the business model concept; the remaining 27% use the business model concept as a "unit of analysis" for collecting information [8]. These scholars observe increased evidence for the business model as a "unit of analysis" [8]. They add that the business model moves beyond considering how relations with network participants, partners, and customers connect with a firm's performance [8].

This review offers three themes. The business model is (1) the basis for enterprise classification, (2) enterprise performance, and (3) model innovation [8]. For enterprise classification, they find that business model components and their relationships are specific to industry, venture, and/or region [8]. Further, these authors report that studies identify relationships between business model (or business model innovation) with success; however, they caution that definitions for performance varied among studies from financial metrics transfer ability of the model to new markets [8]. Finally, in examining business model innovation, they highlight that the importance of a firm's focus, motivation, ability, and adaptability to forces (e.g., technological, market), and changing conditions (e.g., factor, conflict) that raise the potential to improve performance [8]. However, these scholars observe that case studies define much of the evidentiary support [8].

## Components and Frameworks

Consistent with their lack of a consistent definition for a business model, scholars maintain divergent views on the elements that a business model should contain. The literature reflects significant efforts to translate the business model concepts to its basic building blocks [25].

One review by Bortolini and colleagues [9] highlights the analytic dimensions

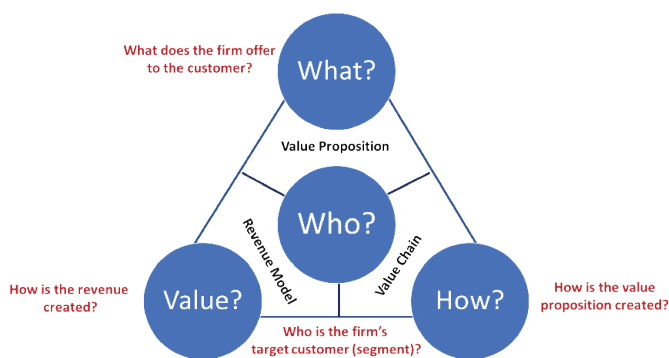
related to value in the business model [9]. These authors characterize the various pieces. First, they define the value prop as what the firm offers and value creation as the internal characteristics (e.g., resources, activities, processes, and skills) [28]. Next, Bortolini and colleagues describe value delivery as the firm's organization to deliver (e.g., distribution), and value appropriation as the venture's ability to capture value and profits [9]. Finally, these authors refer to networking as to how the firm coordinates with partners to create value [9].

One framework by Hamel [29] conceptualizes four essential elements, including (1) strategy (Porter's generic strategies), (2) strategic resources (competencies, strategic assets, and critical processes [inputs and outputs]), (3) user interaction (user interaction, feedback, customer relationship dynamics), and (4) value network (company relationships with partners) [29]. Connecting these elements are activity (1) configuration (unique combinations of competencies), (2) benefits to customers (linking strategy to customer needs), and (3) enterprise restrictions (which defines the firm's independent activities, direction, and partners) as significant bridges [29]. Finally, considering that profit is the purpose of a business model, the framework includes efficiency, uniqueness, fit, and profit generators as vital benchmarks [25,29].

Alt and Zimmerman [30], provide further perspective on what the framework should include. One highlights mission, structure, processes, revenue, legal issues, and technology as essential elements. Petrovic and colleagues [31] elaborate on seven sub-models, including value, resource, production, customer relations, revenue, capital, and market model [31]. The "four-box business model" ties together proposal values, profit formula, vital resources, and essential processes as the critical pieces [32].

Another common conceptualization is the business model framework [33]. This construct ties together the five dimensions of the value process—proposition, communication, creation, delivery, and capture [33].

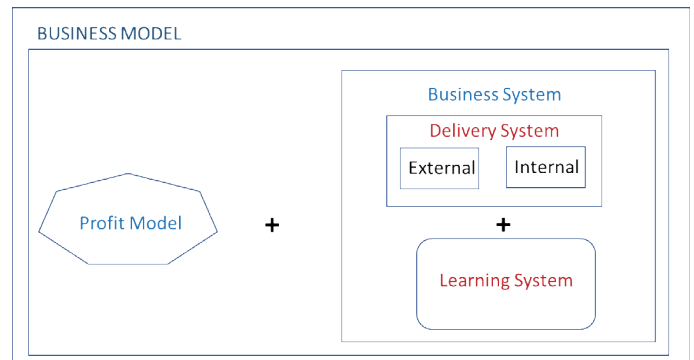
One striking depiction of a business model, offered by Gassmann and colleagues [6], is the "magic triangle" (Figure 1) [6]. This framework considers (1) who (target customer or segment), (2) what (value proposition), (3) how (creation/delivery of the value proposition), and (4) value (creation of revenue)? [6]. The who situates at the center of the pyramid [9]. It is the point that connects with the what (the value proposition), the how (value chain), and the value (revenue model) to complete the framework [6].



**Figure 1:** The "Magic Triangle" describing relationships among primary business model elements [6].

A final perspective, offered by Itami and Nishino [27], engages the concept of the business model to include a learning system (Figure 2). These authors conceptualize the business model from both its shared view, that of exploitation to include profit generation, to a broader view to include exploration [27]. They include in its description that of a business system divided into delivery and learning components [27]. It is the delivery system that exploits to create value and generate profit in the short term [9]. However, these authors emphasize that it also includes a learning system that allows the firm to identify value creation and growth opportunities for future exploitation [27].

When considering the different views on the business model concept and composition, several essential elements stand out. The value proposition, resources, processes, and profit model make up the short-term business

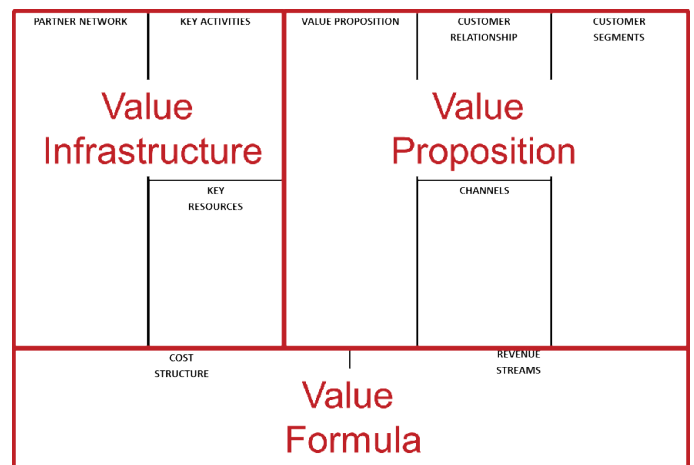


**Figure 2:** Depiction of a "basic" business model involving a profit model and business system for exploitation and exploration (learning) [27].

delivery system to exploit opportunities [25]. However, some scholars emphasize that a business model should also include a learning system [27]. The inclusion of this element provides for a long-term view that allows for the identification and development of new opportunities to provide for sustained growth.

## Ties with the Lean Startup: Business Model Canvas, the Lean Canvas, and the Lean Acceleration Canvas

One of the most significant and popular frameworks is the business model canvas (Figure 3), which some equate to the metaphorical equivalent to a "map" of reality [14,25,34]. This framework results from Osterwalder's doctoral thesis, in which this scholar initially characterizes as business model ontology [28,35]. Further, much of the work involving customer discovery and programs utilizing lean startup activities (customer discovery and lean startup) utilize this framework [24,34,36,37].



**Figure 3:** Business model canvas [11,28].

The canvas by Osterwalder and Pigneur [25] comprises nine pieces covering four significant business areas customers, supply chain, infrastructure, and financial structure [25]. One can divide the canvas into two major segments (value and operations) or three pillars (value proposition, value infrastructure, and value formula) [26,38]. Others have tied these three pillars to risks that entrepreneurs and managers need to assess with their business models—desirability for a value proposition, feasibility for infrastructure, and viability for value formula [39].

Specific to the value proposition or desirability, the upper right-hand side consists of four significant pieces. Two essential components are (1) customer segments (different people or organizations a firm wants to engage and serve,

and (2) value propositions (the value created for customer segments through a firm's products or services) [14]. The next two focus on engaging the target audiences with the value proposition via (1) customer relationships (types of relationships the firm establishes with the customer segment and how it creates, keeps, and expands them, and (2) channels (how a business delivers the product or service) [14].

The value infrastructure or feasibility, in the upper left-hand side, supports the value proposition [14]. It consists of three components. First, there are key resources [14]. These are assets to make a business work, including people, intellectual property, physical, and capital. Second, there are key activities [14]. This piece delineates the essential activities a firm needs to make the business model work. These can include, for example, research, manufacturing, sales, market, and distribution. The final piece involves key partnerships [14]. This section defines the supply chain and partners to operate the model) [14].

To account for the inflows and outflow of funds to support the business is the value formula or viability. This component situates at the bottom of the canvas in two sections: (1) revenue model (sources of income for each segment); and (2) cost structure (defines all fixed and variable costs in implementing the business model) [14].

Maurya [40] offers a second canvas, the lean canvas, that some use with the lean startup (Figure 4). This author explains that this canvas helps entrepreneurs to deconstruct their ideas into their essential assumptions [40]. It consists of nine elements, similar to that in the business model canvas, and breaks them into three sections: (1) product, (2) market, and (3) accounting. On the canvas's left side, the product section is unique from the business model canvas. While it shares the value proposition, this section includes, unlike the business model canvas, the following elements: (1) the existing problem; (2) the solution; and (3) key metrics [40]. In the market section on the right side of the canvas, the lean canvas shares (1) customer segments and (2) channels [40]. It does, however, contain a new element [40]. The unfair advantage element defines the point of difference versus the competition [40]. Finally, the accounting section situates at the bottom and consists of cost structure and revenue streams, instead of revenue models; these elements are similar to what is in the business model canvas [40].

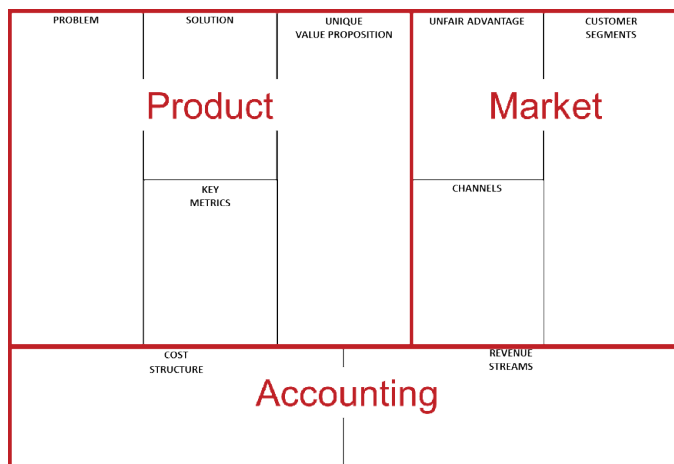


Figure 4: Lean canvas [40].

lazzolino and colleagues [41] recently introduced a new model, the lean acceleration canvas [41]. This framework is specific to the needs of academic spin-offs, embraces the spirit of the lean methodology, and draws from elements of the lean canvas [41]. The methodology attempts to address spin-out challenges, notably: (1) excessive attention to the technology; and (2) a mechanism to evaluate all risk areas and identify market misalignment [41]. Further, it addresses areas that neither the business model canvas nor the lean canvas fully considers related to (1) governance and organization; (2) networking and stake holders; (3) management skills; (4) motivation and commitment; (5) scientific research or underlying technology; and (6) project timing [41].

These scholars explain that the "lean acceleration canvas" addresses five fundamental risk areas (Figure 5). The first involves the problem/solution fit, which considers market risks (product and customer) [41]. The second is innovations fit, which takes on technological risk [41]. The third piece encompasses operations fit, which address the risk of implementation [40]. The fourth is stake holders fit, which engages the risk of governance [41]. The final piece considers economic fit, which takes on economic and financial risk [41].

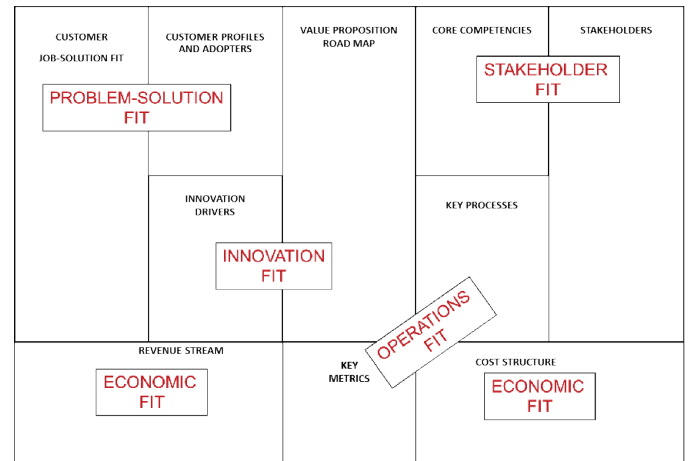


Figure 5: Lean accelerator canvas and the five fits [41].

Each piece contains essential performance indicators for startups to monitor [41]. Also, critical factors of learning and development (that determine success in learning and implementing a sustainable and scalable business model) tie in with these key performance indicators (that depict the improvements in each area concerning the seeking of such a model) [41]. In their discussion, lazzolino and colleagues [41] use these quantitative metrics and qualitative data to monitor, evaluate, and offer supportive recommendations concerning program spin-outs.

## Types of Business Models

There are multiple permutations of the business model that firms can utilize to target and engage customer segments, and to deliver value through their internal capabilities or external partnerships.

Gans and colleagues [42], characterize four broad business is under the context of strategic approaches (Figure 6). The first involves intellectual property to control the innovation and to identify a path to create value within an established market via licenses or outright sale (i.e., building a moat and collaborating with others) [42]. The second encompasses developing and controlling a new value chain while protecting intellectual property, via a platform business (i.e., building a moat and competing) [42]. The third considers creating value within the existing value chain (i.e., storm a hill and collaborate) [42]. The final compass direction embraces disruption by competing directly with incumbents vis-à-vis the actions of surprise and rapid execution (i.e., storm a hill and compete).

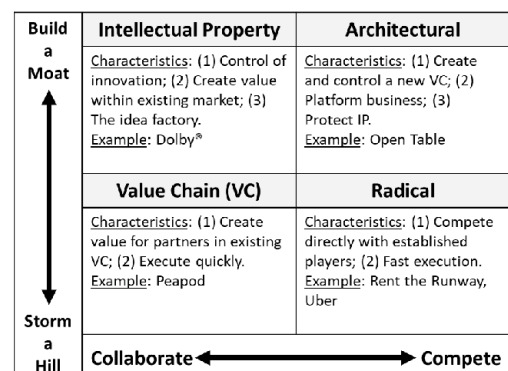


Figure 6: Entrepreneurial strategy compass [38,42].



However, others highlight that more than four exist [6,43]. Stemming from the traction gained in using the term during the late 1990s, various business models exist for digital enterprises on the web. Rappa [44] has grouped forty-two models into nine broad categories. The first three involve (1) brokerage (e.g., marketplace exchange, buy/sell fulfillment, demand collection systems, auction broker, transaction broker, distributor, search agent, virtual marketplace); (2) advertising (e.g., portal, classifieds, user registration, query-based paid placement, contextual advertising/behavioral marketing, content-targeted advertising, intracommercials, ultracommercials); and (3) intermediary (e.g., advertising networks, audience management services, incentive marketing, metamediary) models [44]. The next three include (1) merchant (e.g., virtual merchant, catalog merchant, click and mortar, bit vendor); (2) manufacturer/direct (e.g., purchase, lease, license, brand integrated content); and (3) affiliate (e.g., banner exchange, pay-per-click, revenue sharing) models [44]. The final three encompass (1) community (e.g., open-source, open content, public broadcasting, social networking); (2) subscription (e.g., content services, person-to-person networking services, trust services, internet services provider); and (3) utility (e.g., metered usage, metered subscriptions) models [44].

More recently, Croll and Yoskivitz, two entrepreneurs turned authors, elaborate on six standard digital business models as part of their book on metrics titled "Lean Analytics" [45]. The first two involve e-commerce (i.e., website shopping, Amazon) and a two-sided marketplace (i.e., platforms attracting buyers and sellers, eBay, or Angie's List) models [45]. The next two are software-as-a-service (i.e., cloud-based software products, Qualtrics, or Hootsuite) and free mobile app (i.e., web-based programs obtained via the Apple and Android app stores for engagement and consist of payment tiers such as Google Drive or Candy Crush) models. The final two engage media (i.e., syndicated subscription information and publications such as the New York Times) and user-generated content (i.e., an engaged community that creates content such as Wikipedia, Reddit, or Quora) [45].

Interestingly, in many ways, there may be no real need to develop something new but instead look to one's industry and past models. Per Ghezzi [6], the term "reinventing the wheel" describes the repurposing of historical or current models when developing a business model.

Gassmann and colleagues [46] report such recurrences from a study examining industry innovations over the last hundred years [46]. Their research maps out over a hundred of significant business model events or revolutions [46]. Interestingly, these scholars identify fifty-five unique, repetitive business model patterns [6]. These represent one of the most comprehensive lists of business models. The diversity of business models include: affiliation; aikido; auction; barter; cash machine; cross-selling; crowdfunding; customer loyalty; crowdsourcing; digitalization; direct selling; e-commerce; experience selling; flat rate; fractional ownership; franchising; freemium; from push to pull; guaranteed availability; hidden revenue; ingredient branding; integrator; layer

player; leverage customer data; licenselock-in; long tail; make more of it; mass customization; no-frills; open business model; open-source; orchestrator; pay per use; pay what one wants; peer-to-peer; performance-based contracting; razor and blade; rent instead of buy; revenue share; reverse engineer; reverse innovation; robin hood; self-service; shop-in-shop; service provider; subscription; supermarket; target the poor; trash-to-cash; two-sided market; ultimate luxury; user-designed; and white label [6].

Interestingly, Abdelkafi and colleagues [33] highlight that the replication of business models use the five value dimensions (proposition, communication, creation, delivery, and capture) [33]. They note that such can lead to the systematic generation of multiple business model permutations, which they illustrate in their investigation of the electric mobility industry [33].

## Assessment of a Business Model

Considering the number of definitions and types of business models, such would require some type of assessment or model against which to benchmark. Two leading scholars put forth an early model with four indicators, NICE (Novelty, Lock-In, Switching Costs, Efficiency), which define value in the e-business space that some can use ex-ante [4]. First is Novelty, which considers new transaction structures and content, and partners [4]. Second is lock-In, which involves switching costs and positive network effects [4]. The third involves Complementariness between products and services for customers, on-line and off-line assets, technologies, and activities [4]. Finally, there is Efficiency, which encompasses search costs, selection range, symmetric info, simplicity, speed, and sales [4].

Another framework, as described by Muehlhausenn [47], is from The Business Model Institute. The premise that successful firms provide a unique offer, capability monetization, and sustainability underlies this framework [47]. Muehlhausenn [47] offers multiple criteria for assessment, including market attractiveness, unique proposal value, profit model, model success selling, sustainable competitive advantage, stage innovations, avoid the obstacle, and plan to leave [47].

The most notable involves questions (Table 2) that Teece [2] offers in his 2010 treatment of business models. Related to this framework, Matteu and March-Chorda [48] develop a five-point Likert scale that draws on the above questions and uses defined examples as anchors for ex-ante business model assessment. These scholars discuss how its use and testing within a business model training workshop [48]. They find that indicators one (value proposition utility to the customer) and three (market size in terms) are statistically significant and represent 59% of the intuitive assessment models weight, 33% and 26%, respectively [48]. Further, these researchers find that indicator four (explaining the value proposition benefits to the customers) and indicator five (customer readiness to pay) are significant and represent 22% of the model, 11% each [48].

**Table 2:** Teece's essential questions for business model assessment [2].

No.	Area	Questions
1	Utility	<ul style="list-style-type: none"> <li>How does the product or service bring utility to the consumer?</li> <li>How likely will customers use it?</li> <li>Since innovation requires the provision of complements, are the necessary complements already available to the consumer with the convenience and price that is desirable (or possible)?</li> </ul>
2	Value Proposition	<ul style="list-style-type: none"> <li>What is the 'deep truth' about what customers really value and how will the firm's service/product offering satisfy those needs? What might the customer 'pay' for receiving this value?</li> </ul>
3	Market Size	<ul style="list-style-type: none"> <li>How large is the market? Is the product/service honed to support a mass-market?</li> </ul>
4	Competition	<ul style="list-style-type: none"> <li>Are there alternative offerings already in the market?</li> <li>How is the offering superior to them?</li> <li>Where is the industry in its evolution?</li> <li>Has a 'dominant design' emerged? Strategic requirements are likely to be different in the pre- and post-paradigmatic periods.</li> </ul>
5	Partner Obligations	<ul style="list-style-type: none"> <li>What are the (contractual) structures needed to combine the activities that must the firm or partners perform to deliver value to the consumer?</li> </ul>
6	Costs	<ul style="list-style-type: none"> <li>What will it cost to provide the product/service? How will those costs behave as volume and other factors change?</li> </ul>
7	Distribution of Value	<ul style="list-style-type: none"> <li>What is the nature of the appropriability regime? How can imitators be held at bay, and how should value be delivered, priced, and appropriated</li> </ul>

## Business Model Innovation

### Characterizations and Definition

As with the business model, the ability to define business model innovation is just as challenging. No one agreed definition exists (Table 3). While smaller in scale (as compared with that of the business model), the business model innovation literature is vast and confusing [12,49].

To this extent, Foss and Saebi [12] proffer a broad array of definitions (Table 3). Such emphasize different aspects of business model innovation. An examination of each definition's content leads to several themes (Table 4). The

most common with multiple citations include value, process, novel, change, activities, core elements, model, and discovery.

Amit and Zott [50] describe business model innovation as transforming one or more foundational pieces to create, deliver, and capture value [50]. They continue that such gives the firm the ability to embrace unnoticed internal opportunities or new, hard to replicate capacities [50]. Some characterize it as a creation-oriented activity involving the implementation and validation of the new model [51]. Foss and Saebi [12] view it as the significantly defined, novel changes that a firm makes to the essential elements to the business model and/or the underlying architecture linking these pieces. Amit and Zott [50] define it as the reconceptualizing of the model's structure, content, and governance.

**Table 3:** A cross-section of selected business model innovation definitions [12].

Citation	Definition	Key Themes
Aspara et al. [76]	Initiatives to create novel value by challenging existing industry-specific business models, roles, and relations in certain geographical market areas.	Activities (initiatives) Creation, Challenging, A novel, Specific Markets, Value
Khanagha et al.2014 [55]	Activities can range from incremental changes in individual components of business models, the extension of the existing business model, introduction of parallel business models, right through to disruption of the business model, which may potentially entail replacing the existing model with a fundamentally different one.	Activities, Processes
Amit and Zott [50]	Redefining (a) content (adding new activities), (b) structure (linking activities differently), and (c) governance (changing parties that do the activities).	Activities, Change, Core elements Process, Redefining
Gambardella and McGahan [7,77]	When a firm adopts a novel approach to commercializing its underlying assets.	Adoption, Approach, Commercialization Novel
Casadesus-Masanell and Zhu [53]	Refers to the search for new logics of the firm and new ways to create and capture value for its stake holders. It focuses primarily on finding new ways to generate revenues and define value propositions for customers, suppliers, and partners."	Approaches Novel Value
Aspara et al. [78]	A change in the perceived logic of how value is created by the corporation when it comes to the value-creating links among the corporation's portfolio of businesses, from one point of time to another.	Change Value
Sorescu et al. [79]	A change beyond current practice in one or more elements of a retailing business model and their interdependencies, and modifying the retailer's organizing logic for value creation and appropriation	Change, Retailing, Value
Abdelkafi et al. [33]	Happens when the company modifies or improves at least one of the value dimensions	Change, Core elements, Value
Bucherer et al. [52]	Innovation as a process that deliberately changes the core elements of a firm and its business logic.	Core elements Process
Markides 2006 [80]	Discovery of a fundamentally different business model in an existing business	Different model, Discovery, Process
Yunus et al. [81]	Generating new sources of profit by finding a novel value proposition/ value constellation combinations.	Discovery, Novel value
Berglund and Sandström [54]	The introduction of a new business model aimed to create commercial value	Introduction, New model, Value
Mitchel and Coles [82]	Process of developing these novel replacements as business model innovation.	Novel, Replacements, Process
Santos et al. [83]	Reconfiguration of activities in the existing business model of a firm that is new to the product service market in which the firm competes.	Process Reconfiguration, Reinvention

**Table 4:** Common themes emerging from common definitions of business model innovation.

Multiple Citations		Single Citation
Value	7	Adoption
Process	6	Challenging
Novel	5	Commercialization
Change	4	Creation
Activities	3	Introduction
Core elements	3	Reconfiguration
Approach	2	Redefining
Model	2	Reinvention
Discovery	2	Replacements
		Retailing
		Specific Markets

Bucherer and colleagues define it as a process that changes a firm's core pieces and business logic [52]. Casadesus-Masanell and Zhu [53] observe that it involves searching for new business logic and avenues to create and capture value, focusing on new revenues and value propositions. Abdelkafi and colleagues add that it occurs when a firm either changes or improves a value dimension [33]. Berglund and Sandstrom [54] view it as introducing a new model that focuses on creating commercial value. Finally, Khanagha and colleagues portray it as several processes ranging from incremental changes of components to extensions to new parallel models, and finally to the disruption and replacement of the existing framework.

Nevertheless, when considering these points, business model innovation comprises three essential pieces, all of which tie into the business model concept [2,56]. First, there is a value proposition as related to what is of importance to a specific customer group [56]. Second, there is value creation and delivery that considers how a firm develops and brings the value proposition to the customer [56]. Finally, there is value capture, which is related to how the firm captures, profits, and distributes the value [1,2,56,57].

Finally, Amit and Zott [57] emphasize three essential design elements that characterize a business model system. These parts include the content (refers to activities a firm and other system participants perform), the structure (defines how the activities connect), and the governance (identifies who is performing the activities) of a system [57]. In essence, these are the what, how, and how of a system. These three pieces are highly interdependent and define the transactions that create value by exploiting opportunities [57]. Leveraging these elements, either individually or together, facilitate the process that leads to innovation of the business model [57].

## Systematic Literature Reviews

Two systematic reviews help to consolidate and define the research streams of business model innovation. The first review, by Schneider and Spieth [49], highlights three critical streams of literature that involved 35 articles. These themes include (1) prerequisites of conducting, (2) the elements and process, and (3) the effects achieved vis-à-vis a business model innovation [49]. The second stream highlights the challenges in defining a distinction between the intertwined process and the content of business model innovation and the definition of the elements [49]. They also observe a range of approaches to process, emphasizing the leadership role, and noting similarities to product development [49]. These authors characterize most of the work here as exploratory [49]. The third stream categorizes the studies in this space within three types of effects that business model innovation exerts: (1) on industry and market structures; (2) individual firm results; and (3) on firm capabilities [49].

A second and more current review, by Foss and Saebi [12], examines 150 articles. These authors critique the present literature and identified gaps by noting "deep ambiguity" in defining the concept (e.g., process versus outcome) and reflecting a lack of specificity among many of the definitions [12]. They add that the literature covers vast differences in the definition and the conceptualization of the construct [12].

Foss and Saebi [12] identify four distinct literature streams: (1) conceptualization and classification of; (2) business model innovation as a process; and (3) business model innovation and organizational implications/performance. They highlight the ambiguity in the literature in defining what a business model innovation is and shares a broad range of definitions [12]. The first stream offers definitions and conceptualizations [12]. The second stream covers the organizational change process and discusses extensively: (1) different stages; (2) organizational capabilities and process to support change; (3) the importance of experimentation and learning; and (4) process management tools for practitioners [12]. The third stream examines case studies that claim an unprecedented change in the model; however, it notes that these contributions fall short of building on prior streams or providing any robust criteria for the novelty [12]. The final stream addresses the organization's performance aspects. It discusses a few examples in which the innovation translates to performance, and others empirically evaluated performance with

new business models [12]. These authors comment that the existence of only a few studies looking rigorously at performance might be due to the complexities involved with tying the two pieces together [12].

This review by Foss and Saebi [12] identifies several significant research gaps. The first involves defining and dimensionalizing the construct (e.g., the "unit of analysis") [12]. It is noteworthy that the literature contains vast differences in the definition and conceptualization of the essential construct [12]. The second considers the congruence and identification of antecedents and outcomes (e.g., performance) [12]. These authors note few articles that critically evaluate the theoretical basis in prior literature [12].

Further, these authors comment on the paucity of literature that discusses how business model innovation directly enhances performance, such as competitive advantage, innovativeness, profitability, or other organizational success factors [12]. They add that all of these considerations might be due to the sheer complexity involved with connecting these two phenomena [12]. The third involves contingency and moderating variables (e.g., organization capabilities and leadership, learning and experimentation, cognition, organizational design, and other organizational factors) [12]. In this case, these authors highlight organization capabilities, leadership, cognition, organizational design, and other factors (e.g., strategic flexibility) [12]. They emphasize the concept of strategic agility and three metacapabilities supporting it- (1) strategic sensitivity; (2) leadership unity; and (3) resource fluidity [12,58]. These authors recognize the literature's extensive coverage in the areas of learning and experimentation [12]. The final gap involves boundary conditions, which the authors note that the literature does not directly address [12]. However, these scholars note the importance of providing such since they recognize the variabilities among firms and industries to address (e.g., entrepreneurial/incumbent, high-tech/traditional, young/old, single industry/diversified) [12].

## Approaches to Business Model Innovation

Milovanovic and colleagues [25] relate the concept of business model design to creating a new business model from nothing, which occurs commonly with startups [25]. They observe that this effort involves strategic choices concerning the value proposition, customer segments, marketing mix, organization design, cooperative networks, resources, and activities [14,25].

Some academics recognize the increasing attention towards business model design, despite its inherent theoretical foundation issues, within the entrepreneurship space [24,59]. Others emphasize that the design and changes are essential to technology-based firms and rapidly changing uncertain environments [60,61]. Further, for within the technology space, scholars explain that the business model as the focus of innovation and competitive advantage [62].

The discovery-driven process offers an integral approach to designing, developing, and innovating a business model and strategic thinking [7]. McGrath [7] indicates that search and discovery drive the design process. She elaborates that experimentation and learning are essential to this process and its success [7]. This academic continues that the process involves bringing the customer in, engaging in critical conversations, defining a unit of business, experimenting, employing metrics, and utilizing failure and learning [7]. She contrasts this approach with the more traditional "black hole" investment strategies [7]. This scholar explains how it provides investors "real options" to make small investments and manage risk as the startup learns and earns its way into a novel and encouraging area [7]. She and others emphasize that the business model is not final initially, but rather develops out of this experimentation and development process that involves customers, partners, and other stake holders [7,25,63].

Customer discovery developed by Blank [64] emanates from the discovery-driven approach. This process is one of the best-known efforts to develop a business model [64]. It utilizes search and discovery methods with customers to test hypotheses and to learn from the market [64]. Scholars explain that its value is that customer discovery considers the ambiguities that entrepreneurs

encounter when starting a business [7,25,63]. Ghezzi and colleagues [24] add that it obviates an initial business plan. The development of customer discovery includes the incorporation of the business model canvas [24,63]. Practitioners and academics widely utilized this tool [1,14]. Blank [36] explains that step 1 involves populating this tool with hypotheses. He adds that step 2 requires the entrepreneur to "get out of the building" to interview customers to get to know them, test their hypothesis, and learn [36]. Then, he continues that step 3 involves validating or disproving these "guesses" [36]. He and others emphasize the need to continue this process until the entrepreneur has validated all the canvas and product assumptions concerning customer needs, leading to a state of product/market fit [36]. Ghezzi [26] observes that this effectuation-like approach is, in essence, a pre-business plan planning process that solidifies assumptions to allow for the next phase, which involves developing a business plan to raise capital and to scale the venture.

Teece [2] explains that successful new or refined business models can result in reduced costs or increased customer value provided competitors cannot easily replicate it. In essence, the model establishes a sustainable competitive advantage. This scholar outlines several steps for a competitively sustainable business model [2]. First, one needs to segment the market, creating a value proposition for each segment and mechanisms to capture value [2].

Teece [2] emphasizes that the firm would need to identify, develop, and implement means, or isolating mechanisms, to stem or block competitor imitation and cut out intermediaries. He elaborates on three critical characteristics: (1) hard to replicate assets, elements, systems, and processes; (2) opacity that competitors and outsiders find difficult to discern or understand; and (3) constraints on incumbents around product cannibalization or customer relationships [2].

Concerning reconfiguration, Johnson, and colleagues [32] define it within the context of a more established and successful firm. Such activity, according to Schneider and Spieth [49], is part of the strategic planning process within firms to respond to business environment dynamics. Through this process, as pointed out by Massa and Tucci [51], firms seek competitive advantages vis-à-vis the exploration of new opportunities using present capabilities and resources [51]. In defining a leadership agenda, Doz and Kosonen [58] observe that agility is essential to success and requires strategic sensitivities, extraordinary leadership, and flexible resources. Teece [2] adds that successful reconfiguration requires creativity, solid insight into the current business, substantial customer, competitor, and supplier information. However, Chesbrough [1] observes that this effort requires firms to overcome several internal barriers, including cognitive, structural, lack of understanding for the need, and general resistance to change.

Business model reconfiguration can range from the changing of a least one essential element to stretching the boundaries of one or more pieces to revisions throughout the whole model. Interestingly, a few scholars articulate the rule of three [10,65]. Zott and Amit [10,15] highlight that a firm can reconfigure the business model through: (1) the addition of new activities; (2) the connection of existing activities in a new way; or (3) by changing those performing the activities. In discussing how to innovate the business model successfully, Giesen and colleagues [65] classify such changes into three models: (1) industrial innovation (i.e., innovating an industry's value chain from the perspectives of entering, redefining, or creating new industries); (2) revenue innovation (i.e., revenue generation via value proposition revision or reworking, new pricing, new revenue models, or customer encumbrances; and (3) enterprise (i.e., changing role of a firm within a value change in existing business segments).

Berends and colleagues [66] offer another consideration regarding the intertwining of cognitive and action-based learning modes with the business model innovation processes over time. Through case study research in established firms, these investigators identify two patterns that involve experiential learning and cognitive search processes, both of which are organizational learning processes [66,67]. They observe that it involves multiple steps and mechanisms and can facilitate radical business model innovations [66]. These researchers add that the innovations will vary based

on whether the model emanates from an existing one and the point of which it begins to operate [66].

The first pattern Berends and colleagues [66] describe involves that of "drifting," an effort that initiates with experiential learning and then progresses to more of a cognitive endeavor. They characterize the process as prompting the reconceptualization of the firm's existing business model by reusing multiple components and medication of several via experiential learning [66]. These scholars add that operationalization starts early, and the scaling process triggers the shift to cognition to evaluate the configuration systematically [66].

Berends and colleagues [66] characterize the second form as "leaping," a process that takes the opposite direction, starting with cognition and shifting to experiential learning. These researchers explain that it is a process triggered by the definition of a new value proposition and "off-line" development [66]. They continue that the operationalization of the business model, which occurs later in the process, facilitates the transition to the experiential mode, in which the process necessitates adaptation components within the initial model setup [66].

Bojovic and colleagues [68] examine the process of experimentation relative to business model innovation. Using a qualitative approach with two startups involving in-depth interviews with executives, archival data, and observations around their business modeling processes, they learn that experimentation is essential to determining the sensibility of business and its business model before venturing forth [68]. More significantly, these researchers explore the different roles involved with experimentation [68]. These scholars find that their data translate into three second-order concepts: (1) learning from the environment; (2) signaling intent; and (3) convincing others (e.g., customers, investors, partners) to engage with the firm [68]. These authors explain that the latter two are symbolic of the processes of strategic legitimization and enactment [68]. They add that legitimization is essential during the venture's nascent period [68]. Bojovic and colleagues [68] also report that the three roles interact throughout the business model development process in a simultaneous and complementary fashion. These scholars highlight two interactions with the environment that the three roles participate in impacting the business model [68]. They elaborate that learning engages the environment to validate, abandon, or modify the business model, whereas signaling and convincing enact the environment to gain strategic legitimization [68].

Further, Bojovic and colleagues [68] report other valuable learnings from their research. Most notable, these scholars identify two forms of experimentation: (1) purposeful interactions and (2) experimental projects [68]. They note with purposeful interactions, the entrepreneurs start with a question about the business model, then follow with hypotheses that they test in the market and learn [68]. Such a process, these scholars indicate, allows the entrepreneur to validate, modify, or abandon the model or parts of it [68]. The authors note that these are small, personal interactions with stake holders, and continuous in the individual's daily work [68]. With experimental projects, they characterize these as more extensive, purposeful, time-bound, and multi-stake holder endeavors [68]. They add that such efforts test multiple hypotheses [68]. Finally, these authors explain that these two forms support the roles of experimentation in a slightly different fashion [68]. Purposeful interaction supports learning and signaling, whereas projects engage all three roles [68].

Another business model innovation approach, per Ghezzi [46], involves using already established business models, the "reinvention of the wheel" business model innovation paradigm. Gassmann and colleagues [6] report the existence of fifty-five recurring business models. Ghezzi [46] explains that some firms use the lens of the past to see the future when developing innovations [46]. He indicates that this approach, which firms can use with other innovation strategies, involves a mindset that draws on past ideas and resources applied to future opportunities offered through new trends [46]. The approach brings a combination of approaches including bricolage, blue ocean strategy, and the lean startup [46,61,69,70].

Ghezzi [46] describes the traits, steps, and considerations with an approach. Shared traits among firms that use this approach include: (1) past resources and assets for repurposing or reinvention; (2) digital technologies in the



reinvention process; (3) the customer experience/journey at the reinvention's core; and (4) a new wheel emerging due to different connections and a novel value architecture [46].

Further, the process involves five steps. Ghezzi [46] explains that it begins with a critical survey of the "old wheel" to learn which assets to keep and leverage (and those to drop). These lead to disclosing the reinvention by viewing the present (i.e., new markets, technologies, and trends) through the lens of the past [46]. Next is the leveraging of current, up-to-date components that pattern past processes and combine with past resources and models to minimize resistance [46]. The experimenting or learning that occurs is from the past rather than the future [46]. Then, there is the reinterpreting of traditional models to obtain a reinvented wheel that combines old ideas with new shapes [46]. Finally, firms considering this approach should examine the industry's "history," firm's traditions, customer and customer journey/connection characteristics (e.g., nostalgic and revampable), and the ability to gain organizational support for assets and business model [46].

MacDonald and Eisenhardt [71] offer a more contemporary business model innovation practice that involves "parallel play." This approach defines a process to help firms formulate strategies and business models for nascent markets, in which competitive forces are continually changing [71]. This approach (an alternative that has challenged conventional strategy and focused commitment) mimics how young children (three to four years of age) explore, play, and learn, as individuals; it draws on what their peers are doing and imitates them [71]. It reflects a natural behavior when one enters uncharted markets without much knowledge [71].

MacDonald and Eisenhardt [71] find that three "parallel play" behaviors distinguish high-performing enterprises in new or emerging markets [71]. The first involves the astute borrowing of ideas from peer firms, rather than trying to differentiate from these competitors [71]. The second engages relentless experimentation with various templates for creating and capturing value (via the testing of hypotheses rather than an early focused commitment) and learning from these tests [71]. Finally, the third practice consists of reflection—pausing, watching, and waiting [71]. This behavior entails committing to a general business model template (and several essential elements) but leaves it unfinished and irresolute [71]. Such firms postpone optimizing the business model for flexibility as nascent markets are unpredictable and present surprises [71].

## Business model innovation learning and assessment

The common theme with business model innovation involves that of learning [2,7,12,72]. Foss and Saebi [12] identify business model innovation as a process that includes learning mechanisms [12]. These scholars and others highlight the importance of experimentation and learning and the complexities of different learning approaches [12,72,73]. Teece [2] highlights the importance of business models and learning. In this piece, he emphasizes how experimentation, learning, and adapting are requisite in the business model innovation process [2]. This reality is because the business model is amorphous at the outset. Such is due to the ambiguities and dynamics that involve customers, market, society, competition, and cost structure that the entrepreneur/manager needs to be understood [2]. He emphasizes the importance of the entrepreneur being fast in the learning process to make the required adjustments in evolving one's business model [2].

Further, McGrath [7] emphasizes the importance of experimentation and learning. For ambiguous, complicated, dynamic, and uncertain environments, she emphasizes rapid experimentation, and evolutionary learning skills are as vital of skills to have as those involved with traditional planning and execution [7]. This scholar also highlights the importance of failure as part of this process, as such efforts enable a final model [7].

Finally, other academics discuss these points in the context of organizational learning [72]. They make note learning and experimentation as part of the entrepreneurial exploration process [72]. They continue by noting how entrepreneurs make conscious choices of action using the lean startup to conduct experimental trials (versus experiential learning) learning [72]. Such efforts help to inform future design efforts as the venture seeks product/market

fit, which involves the confirming of a repeatable business model [36,74,75].

To aid this learning process (whether it be the need to design a new model, reconfigure an existing one, reinventing the wheel), entrepreneurs and managers must have some guidance. Several considerations drive this need. First, several scholars emphasize different dimensions of business model innovation: leadership role, mental models, organizational culture, strategy, technologic impact, and value creation [1,2,14]. Second, the combination of insufficient foundations and the lack of an integrative framework can lead to unclear comprehension leading to risky trial and error when engaging the process [2,34,74]. To this end, Amit and Zott [57] offer the following six questions (Table 5) on the process. Such offer insight around business model innovation in defining the delivery and capture of a value proposition, including that of a firm's activities, structure, governance [57].

**Table 5:** Amit and Zott's six critical questions to use when evaluating business models and business model innovation [57].

No	Area	Questions
1	Needs to address	<ul style="list-style-type: none"> <li>What perceived needs should the new model design meet?</li> </ul>
2	New activities	<ul style="list-style-type: none"> <li>What new activities are needed to meet these perceived needs?</li> </ul>
3	Novel lineages	<ul style="list-style-type: none"> <li>How can the necessary activities be linked in new ways?</li> </ul>
4	Actors, responsibilities, and management	<ul style="list-style-type: none"> <li>Who should perform each of the activities that are part of the business model?</li> <li>Will it be a business, partner, or customer/client?</li> <li>What kind of management system is required given to the new structure of the business model?</li> </ul>
5	Value creation	<ul style="list-style-type: none"> <li>How is value created for each participant in the new business model?</li> </ul>
6	Revenue model and appropriation	<ul style="list-style-type: none"> <li>Which revenue model fits in with the new business model, with a view to appropriation to the company, as much of the newly created value as possible?</li> </ul>

Considering assessment criteria, Allegretti and colleagues highlight several integral elements for business model innovation when looking at the issue through the prism of success factors [56]. Their test areas include: (1) innovation culture; (2) clear value proposition; (3) clear product advantage; (4) acquisition of technology and knowledge; (5) innovation competence; (6) business model innovation process; (7) customer orientation; (8) customer retention; (9) network and partner collaboration; and (10) price management [56]. Their hierarchical component model (using partial least squares structural equation modeling approach) draws on survey data involving 58 respondents (mechanical engineering, chemical engineering, pharmaceutical and chemicals, construction, automotive, metalworking), with 30 into the "successful" cluster and 27 in the "less-successful" cluster [56]. Their analysis identifies four statistically significant factors. These include: (1) clear value proposition; (2) clear product advantage; (3) acquisition of technology and knowledge; and (4) price management [56]. In comparing the two clusters, the investigators report higher scores in the "successful" versus the "unsuccessful" group [56]. Important areas from this comparison include: (1) the emotional dimension of the customer's perceived value; (2) the points of product differentiation; (3) the professional acquisition of technology and knowledge for the innovation; and (4) the customer's price sensitivity and perceived product value due to a value-informed-pricing approach [56].

## Conclusions

This review aims to address the current knowledge regarding the business model concept and business model innovation concepts. This analysis elucidates several essential learnings around the business model and business model innovation. Concerning the business model, one essential

conclusion relates to its essentialness in defining a path to innovation and successful commercialization. While multiple scholars offer diverse definitions, this discussion identifies perspectives around scope (e.g., firm, network) and conceptualization (e.g., activities, value). Further, it observes that the business model functions as the "unit of analysis" and captures the identification, creation, capturing, and apportioning of value. Most components tend to fit within these realms. While the model addresses the who, what, and how, it also encompasses both a business and learning system addressing short- and long-term needs. This research finds that the use of the model enhances the commercialization of technologies. Also, the business model canvas is the most common to use with lean startup and customer discovery. However, the lean canvas and the lean acceleration canvas offer additional tools to utilize. Noteworthy is the finding that fifty-five different recurring models exist. Finally, it identifies that users should evaluate the effectiveness of the model by using Teece's seven questions [2] and Mateu and March-Chorda's assessment tool [48], with a particular emphasis on the value proposition and market size.

Concerning business model innovation, this review identifies several vital considerations. It recognizes the diversity of definitions that scholars use to characterize the concept; however, this analysis culls several common themes within these descriptions- value, process, novel, change, activities, core elements, model, and discovery. Furthermore, it identifies gaps for further exploration based on two extensive systematic literature review. Moreover, it identified multiple approaches, such as business model development, reconfiguration, discovery-driven planning, customer discovery, "parallel play," and reinventing-the-wheel. Finally, this analysis finds that business model innovation, a critical organizational learning process connected with experimentation, along with its components of learning, signaling, and legitimization. This discussion observes that the business model innovation process, and its activities, when appropriately fashion, could lead to a model that offered novelty and value to the firm and its ecosystem of customers, investors, and partners. Finally, this review identifies critical questions to evaluate success with the construct featuring six questions posed by Amit and Zott [50].

In closing, further work needs to unify the definition and characterizations of these concepts, the canvases that represent the business model, and the process for its development. Additional research would benefit scholars and practitioners around the gaps identified concerning business model innovation that, in particular, Foss and Saebi [12] identifies such areas in their review. Finally, further work should build on refining evaluation questions. Accordingly, more outcomes studies, as Mateu and March-Chordareport [48], using a tool with questions to evaluate the robustness (and resilience) of a firm's model and the process involved with developing the construct. Such learnings would further the science, understanding, and utility of both the business model and the innovation efforts to develop novel and valuable constructs in the future.

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