

DISSERTATION

DEVELOPING AND TESTING OF A
THEORY OF THE BUSINESS MODEL CONCEPT

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ABSTRACT

DEVELOPING AND TESTING OF A THEORY OF THE BUSINESS MODEL CONCEPT

Business models are a popular term for describing how businesses create, deliver, and monetize the value of their products and services. However, research on the underlying business model concept appears to be primarily based on conceptual frameworks and design tools, rather than a published theoretical framework. The purpose of this study was to address the inadequacy of theoretical research on the business model concept by developing and testing of theoretical framework that makes explicit a theory of the business model concept. The study used Dubin's eight-step theory-building methodology, a theory-then-research strategy, and a quantitative hypothetico-deductive approach to applied theory building. The findings included a theoretical framework for the business model concept, a scientific model with empirical indicators of the units of the theory, and quantitative testing of the independence of indicators of the units. This research study contributes to the existing body of knowledge on business models and the scientific investigation of the business model concept.

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CHAPTER ONE – INTRODUCTION

A business model is a fundamental concept that underpins every business. Whether the business model is intentionally developed by company leaders or pragmatically applied by business practitioners, it is a universal way of thinking about how a business functions as a system (Osterwalder et al., 2005). Osterwalder et al. defined a business model as “an abstract concept that allows [for] describing what a business does” (p.6). Since the term 'concept' implies a high level of abstraction, the business model concept has two main research areas: defining what is a business model and conceptualizing what elements belong in a business model. (Osterwalder et al., 2005). In recent years, the most common response to defining what is a business model has been the description Teece (2010) provided: it is the process by which a business creates value, delivers value, monetizes value, and turns a profit. Using this description as a guide, one should focus on value, customers, infrastructure, and profit as the four elements of a business model. Over the past 25 years, scholars have also repeatedly identified these four core elements in scores of definitions, dozens of conceptual frameworks, and a few overtures at theory development. Perhaps due to the numerous definitions, well-received conceptualizations, and universal nature of the business model concept, research on business models has not relied on the topic's deficient theoretical research.

Despite the copious definitions and insightful conceptual frameworks—both of which have made significant contributions to the ontological and epistemological knowledge about the business model concept, the theoretical research on the topic remains notably inadequate. In a recent survey of 21 business model experts and

scientists, Wirtz et al. (2016) found that theoretical deductive research was the most recommended research methodology for future business model research, followed by large-scale surveys, case studies, in-depth interviews, and small-scale surveys. It appears that business model scholars and researchers believe there is a need for theory development around the business model concept, which is the fundamental way of viewing business models.

Organization of this Research Study

The organization of this research study lays out the chain of reasoning (Krathwohl, 1998), literature review, research methods, research results and discussion of a study on developing and testing of a theory of the business model concept. Chapter One introduces and explains important components of the research study's background, problem statement, purpose, significance, methodology, research questions, hypotheses, objectives, and outcomes, limitations, delimitations, assumptions, and key definitions. In Chapter Two, the literature review examines the breadth of scholarship in three informing bodies of knowledge on business models (i.e., business model concept, business model innovation, and business model patterns), as well as the depth of knowledge in theory-building literature. Chapter Three explains the research methods used in the study, including the research approach, data collection, and data analysis activities. Chapter Four presents the results of theory development, research operation, and theory evaluation. The research study concludes with Chapter Five discussing a summary of the results, implications for future research, and conclusion from the study.

Background and Research Context

Background

The business model concept's background is inseparably linked to the dot-com boom and the emergent e-commerce economy of the late 1990s. During the dot-com boom, which lasted from 1995 to 2001, many business leaders attempted to articulate their e-commerce strategies for investors and stakeholders, as well as leverage information and computer technologies at the turn of the millennium (Osterwalder et al., 2005). Along with internet-related uses, businesses also discovered organizational uses for business models, such as a source of organizational innovation (Teece, 2010), a means to connect strategy to organizational structures (Osterwalder et al., 2005), and a conceptual representation of how a business functions (Massa et al., 2017). Because of these various applications in practice, scholarly research on business models grew rapidly (refer to Figure 1), providing much of the research context for the proposed study.

Figure 1

Increase of Business Model Articles and Books Published Per Year from 1995 to 2021

Note. Source: World of Science (2022).

Research Context

As Figure 1 shows, research on business models increased noticeably over the past 25 years. The proliferation of business model articles began around the turn of the millennium and has since grown to become a popular topic in business journals, with several hundred articles published each year (Massa et al., 2017; Wirtz et al., 2016). Wirtz et al. (2016) described the topic's proliferation in three stages: (a) concept formation (from 1997 to 2002), (b) differentiation (from 2003 to 2013), and (c) consolidation (from 2013 to 2016). It is worth noting that the business model's informing body of knowledge is divided into several areas of research, including business model concept, business model innovation, and business model patterns.

In 2010, Osterwalder and Pigneur (2010) published a seminal book explaining the Business Model Canvas (BMC), a conceptual framework and design tool that employs nine building blocks for business models. The nine building blocks include value propositions, customer segments, channels, customer relationships, key resources, key activities, key partnerships, cost structures, and revenue streams (Osterwalder & Pigneur, 2010, p.17). The BMC's legacy is profound and difficult to overstate; it is the most used business model design tool in research and in practice to date (Fielt, 2014; Massa et al., 2017). Since 2010, the majority of scholarly attention appears to have been focused on two areas of research that Osterwalder and Pigneur categorized business model innovation (processes and outcomes) and business model patterns (archetypes). While research in these two areas undoubtedly informs business practice, few theoretical articles exist to inform research—and there is currently no scientific model or theory of the business model concept to support scientific inquiry. The lack of a scientific model or

theory suggests that, while current business model literature informs business practice, it does not appear to contribute to scholarly research on the underlying business model concept.

Problem Statement

Despite the business model's prominence in business journals, the underlying concept remains enigmatic, resulting in a value problem in terms of an undesirable state of its theoretical foundation. On the one hand, the business model has widespread prominence in business journals and application in practice. Yet, on the other hand, it appears that the research on the underlying business model concept is based solely on conceptual frameworks and lacks a methodologically developed theoretical framework for its foundation (Wirtz et al., 2016). Tension exists between these juxtaposed propositions, resulting in a speculative proposition that theoretical research (i.e., “unit theories and relevant theoretical and applied research”; Berger & Zelditch, 1993, p3) on the business model concept is notably inadequate without a theoretical framework nor published theory. Figure 2 illustrates the problem statement, culminating in the explicative statement: the purpose of this study is to address the inadequacy of theoretical research on the business model concept by developing and testing of theoretical framework that makes explicit a theory of the business model concept.

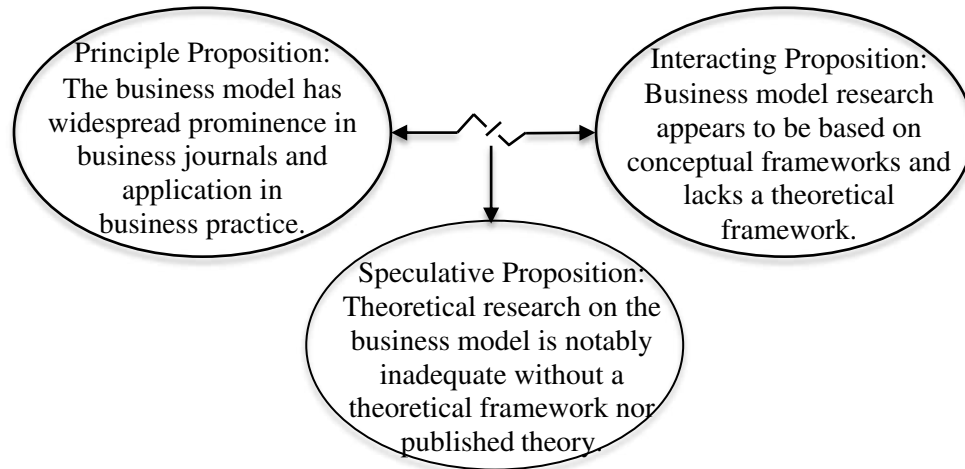


Figure 2

Problem syllogism for the development of a theory for the business model concept

Note. Adapted from Clark et al. (1977); Jacobs (2011)

Purpose of the Study

To address the inadequacy of theoretical research of the business model concept, the purpose of this study was to conduct structured theory-building research on the topic and to answer several research questions. The study used scholarly literature and Dubin's (1978) applied theory-building methodology with the intent to generate transferable knowledge for both business practitioners and scholarly researchers. An additional rationale for this theory-building study is that it contributes an empirically test theory to the body of knowledge on business models as well as promotes an interrelated system between practitioners and researchers where practice stimulates research, research generates theory, and theory informs both research and practice (Lynham & McDonald, 2011). Figure 3 illustrates this practice-research-theory system in the synergistic concept of Praxis (Lynham and McDonald). Additionally, the goal of the study is to provide researchers with a deeper understanding of the phenomenon by answering research

questions such as what is the theoretical framework of the theory of the business model concept, and what critical research tests the empirical indicators of the theoretical constructs of the theory?

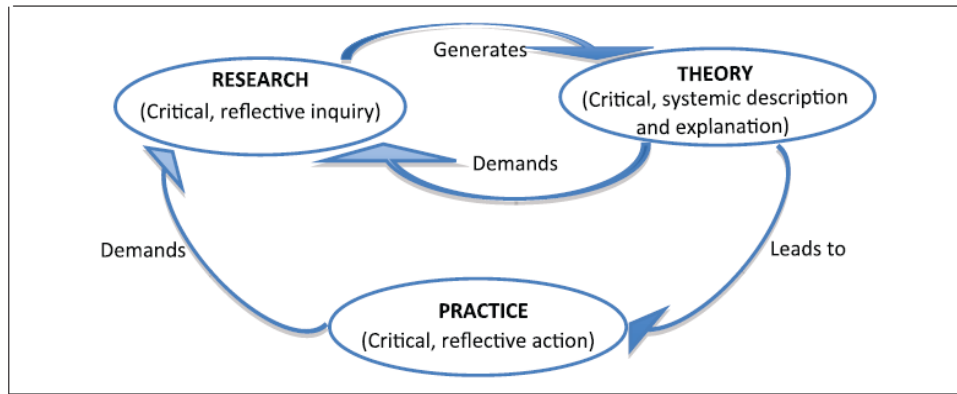


Figure 3

Concept of Praxis

Note. Lynham and McDonald's (2011) illustration of the interacting synergistic nature of practice, research, and theory in applied fields. Adapted from Topp, 1995, 2000.

Significance of the Study

This study is significant for its potential contributions to the business model body of knowledge in the areas of theory building and empirical research. Specifically, the scholarly activity of theory building has the potential to produce three types of knowledge—theoretical, process, and outcome knowledge (Dubin, 1978; Lynham, 2002b). This study's theoretical knowledge output is significant because it produced a midrange theory (Swanson & Chermack, 2013) to explain a theoretical framework as well as the constructs and relationships believed to exist in business models. The process knowledge communicates how the phenomenon of a business model works and how it can be applied in practice. Last, the outcome knowledge discusses the meaning of the

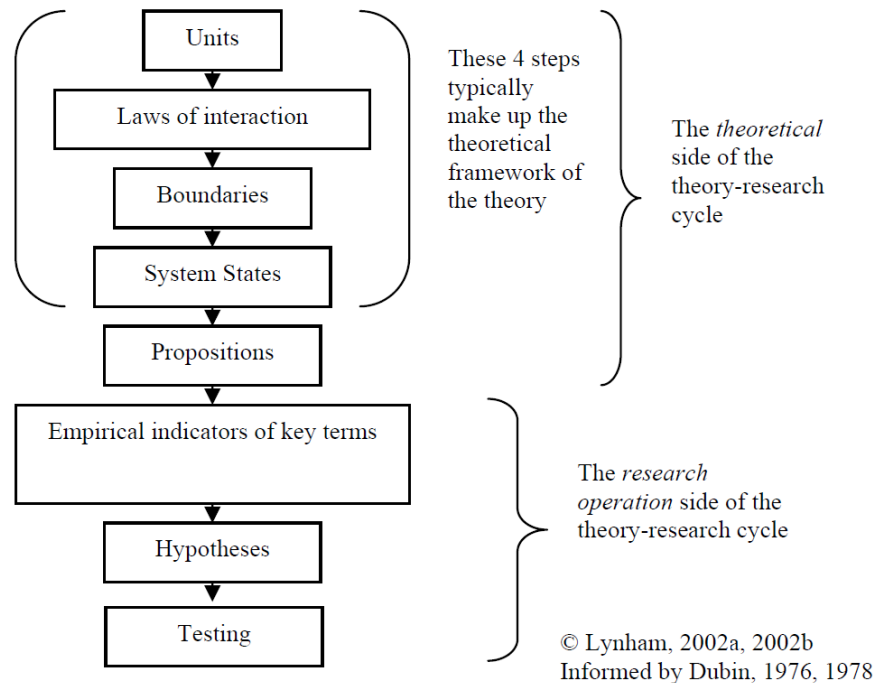
study and the implications for future research (Dubin, 1978; Lynham, 2002b). Beyond theory-building knowledge, the research operation employed empirical evidence for the units developed in the theory, conducted hypothesis testing, and reported the results for empirical evidence of the theory. The thesis here is that the study has significance for contributing knowledge, theory, and research to the business model body of literature.

Overview of Dubin's Methodology

A substantial portion of this study's significance is attributable to its application of Dubin's (1978) methodology of applied theory building. Dubin's methodology is based on a hypothetico-deductive approach to knowledge construction, which is grounded in an empirical-analytical approach to science (Hultgren & Coomer, 1989, as cited by Lynham, 2002b). A hypothetico-approach involves making general statements about a phenomenon, developing hypotheses based on those statements, and testing empirical indicators of the statements to confirm or disprove the researcher's hypotheses (Inwood & Honderich, 1995; Lynham, 2002b). Torraco (2005a) stated that this type of quantitative research to knowledge construction aims to explain, predict, and control the phenomenon of interest. Furthermore, due to the practical nature of the business model concept, it was necessary to use an applied theory-building system of methods, such as Dubin's methodology, which consists of eight steps divided into two phases of theory development and research operation.

In particular, Dubin's (1978) methodology is comprised of five steps devoted to theory building and three steps of research operation. The five steps of theory building require "stipulative" descriptions (Priem & Butler, 2001) of the units of the theory, laws of interaction, boundaries, systems states, and propositions. The initial four steps in this

phase result in a logically deduced theoretical framework, and the fifth step (i.e., stipulating propositions or truth statements) bridges the theory development process to the research operation for the theorist-researcher (Lynham, 2002b). In the research operation phase, the final three steps involve identifying empirical indicators of key terms, constructing hypotheses to test the theory, and empirically testing the hypotheses, culminating in the confirmation or disconfirmation of the trustworthiness of the theory (Lynham, 2002b). Figure 4 presents Lynham's illustration for Dubin's theory-building methodology.



Research Questions

The research questions for this study serve as a nexus between the substance of the study (i.e., what the study is about) and the research methodology (Calabrese, 2006). Indeed, the substance of the study is about developing and testing of a theory for the business model concept. The research questions, in turn, function as the basis for the research strategy and as guidance for the selection of the methodology (i.e., Dubin's methodology for applied theory building). Another point of consideration was that the questions needed to be pertinent, understandable, and researchable (Calabrese, 2006). With these considerations in mind, three primary research questions guided this study, and they were:

1. Research Question 1 (RQ1): What is the theoretical framework of the theory of the business model concept? A question of theory development.
2. Research Question 2 (RQ2): Is there an association between the individual empirical indicators for each theoretical construct? An overarching question of empirical indicator association using Chi-square inferential statistics to begin testing the theoretical framework of the theory.
3. Research Question 3 (RQ3): What is the reflexive evaluation of the content and construct validity of the theory of the business model concept? A question of theory evaluation based on Patterson's (1986) formal criteria.

To address RQ1 and RQ2, and in consideration of the key outputs of Dubin's (1978) methodology, eight research sub-questions were also developed based Lynham's work (2002a, 2002b) and on the quantitative nature of testing the emergent theory. Table 1 lists the primary research questions in the left column, the corresponding steps in

Lynham's Model of Dubin's Methodology in the middle column, and the research sub-questions in the right column.

Table 1

Research Questions (RQ), Lynham's Model of Dubin's Methodology, and Research Sub-questions

Research Questions	Lynham's (2002a, 2002b) Model of Dubin's Methodology	Research Sub-questions
Theory Development phase 1. RQ1: What is the theoretical framework of the theory of the business model concept? A question of theory development.	<pre> graph TD Units --> Laws[Laws of interaction] Laws --> Boundaries Boundaries --> States[System States] States --> Props[Propositions] Props --> Indicators[Empirical indicators of key terms] Indicators --> Hypotheses Hypotheses --> Testing Testing --> Indicators Testing --> Props Testing --> States Testing --> Boundaries Testing --> Laws Testing --> Units </pre>	1. What are the units of the theory? 2. What are the laws of interaction of the theory? 3. What are the boundaries of the theory? 4. What are the system states of the theory? 5. What are the propositions of the theory? 6. What are the empirical indicators of key terms/units of the theory? 7. What are the hypotheses of the theory?
2. RQ2: Is there an association between the individual empirical indicators for each theoretical construct? An overarching question of empirical indicator association using Chi-square inferential statistics to begin testing the theoretical framework of the theory.		8. (RQ2-SQ1) Is there a Chi-square association between individual empirical indicators for the theoretical construct of <i>value</i> ? (RQ2-SQ2) Is there a Chi-square association between individual empirical indicators for the theoretical construct of <i>customer</i> ? (RQ2-SQ3) Is there a Chi-square association between individual empirical indicators for the theoretical construct of <i>infrastructure</i> ? (RQ2-SQ4) Is there a Chi-square association between individual empirical indicators for the theoretical construct of <i>profit</i> ?
Theory Evaluation phase 3. RQ3: What is the reflexive evaluation of the content and construct validity of the theory of the business model concept? A question of theory evaluation based on Patterson's (1986) formal criteria.		

As Table 1 shows, Research Question1 (as well as the sub-questions 1-7) is addressed at the completion of steps 1-7 of Dubin's (1978) methodology. Subsequently, after the performance of step 8 of Dubin's methodology, Research Question 2 (as well as

research sub-questions RQ2-SQ1-4) is addressed. Finally, Research Question 3, which is designed to evaluate the content and construct validity of a theoretical model (Lynham, 1998), is answered at the conclusion of the results portion of the study. “Content validity”, as defined by APA Dictionary of Psychology (2015) is “the extent to which a test measures a representative sample of the subject matter or behavior under investigation” (p.242), and “construct validity” is defined as “the degree to which a test or instrument is capable of measuring a concept...or other theoretical entity.” (p.240)

Research Hypotheses

A distinctive aspect of Dubin’s (1978) methodology is that research hypotheses are generated during the second phase or research operation (i.e., step 7), coming after both the propositions are developed and the empirical indicators are identified for the units in the theoretical model. Because the units of the theory must be developed first, Dubin defined the research hypotheses as “the predictions about values of units of a theory” (p.206). The author noted, “all theoretical models need to be testable by converting some of their propositions to hypotheses” (p.209). However, Dubin also stated it is not a requirement that all propositions be converted to testable hypotheses. This nuance of the methodology is discussed further in the Limitations section. In regards to this study, I expect the first five steps of theory development phase to yield 4-5 units, and therefore, there is the potential for a near corresponding number of research hypotheses. Additionally, the descriptions from Appendix B of Morgan et al.’s (2011) were used to inform and guide the development of the research hypotheses.

Objectives and Outcomes

The objectives for the study were threefold: to complete the eight steps of Dubin's (1978) two-phase theory-then-research theory-building methodology (Lynham, 2002b), to evaluate reflexively the emergent theory against Patterson's (1986) formal criteria for theory, and to contribute to the body of knowledge on business models. Pursuing these objectives is likely to produce several outcomes. First, theory building using the theory-then-research approach resulted in a theoretical framework as well as research that empirically tested the hypotheses developed for the theory. Second, the theoretical framework and reflexive evaluation of the emergent theory should have implications for future empirical research on the topic of business models. Last, the study should add to the growing body of evidence of the need for continued theory building on the business model concept.

Limitations

There were two notable limitations to this study, and both were in the research operation phase of Dubin's (1978) methodology. First, because theoretical constructs exist in theory, it was implausible to measure the constructs (i.e., units of the theory) directly. However, it was possible to measure several empirical indicators of the theoretical constructs. Remané et al.'s (2017) research identified several empirical indicators for various "dimensions" (p.3) found in business model patterns. Those dimensions were developed into theoretical constructs (i.e., the units of the theory), and thus they had empirical indicators that were measurable. This was believed to be as close as the present research study could get to measuring the theoretical constructs. The second limitation was with the static nature of dataset employed for empirical testing of

the theoretical constructs (i.e., Remané et al., 2017). The dataset included 43 empirical indicators, and as a secondary source (i.e., created by other researchers), the present study was limited to using what is provided in the dataset in order to maintain measurement validity. Prior to beginning the research, Remané et al.'s dataset was reviewed and the limitations on the empirical indicators did not appear to be problematic because there was ample data in the dataset. These limitations also might affect some of the assumptions of the study, and those assumptions are discussed after stating the study's delimitations.

Delimitations

An initial self-imposed boundary for the study was to limit the units of the theory to the “fundamental constructs” (Pateli & Giaglis, 2004) or “first order components” (Massa, et al., 2017) of the business model concept. This delimitation narrowed the scope of the theory development, research operation, and theory evaluation to a manageable size. Some scholars, such as Osterwalder's (2004) and Wirtz et al.'s (2016), had conceptualized and investigated as many as nine building blocks or components of a business model. However, in the interest of developing a concise and generalizable theory—and in consideration that humans have limited ability to absorb and process overlaid information for business decision purposes (Giddings, 2008), I consolidated the constructs into categories and in doing so delimit the theory to a handful of units. Suddaby (2010) defined such categories of constructs or components as theoretical constructs (p.346). Theoretical constructs have been defined as “abstract statements or terms about categories of observations” (Suddaby, 2010, p. 346), and “these constructs exist in theory” (McIntire & Miller, 2007, p. 285). A second imposed boundary for the study was limiting the scholarly articles reviewed to those published in the English

language. A final delimitation for the study is that the author chose which empirical indicators were tested for association during the investigation of Research Question 2. Because Remané et al.'s (2017) dataset includes 43 empirical indicators, the testable research hypotheses could have numbered into the hundreds. However, to put boundaries around the hypotheses testing, the author will choose the empirical indicators for testing the theoretical framework and limit it to around 20 inferential statistics and analysis.

Definitions of Key Terms

Because several terms are used throughout this proposal that are central to the research or have important contextual meaning, those key terms are defined here.

Business model — “how the enterprise creates and delivers value to customers, and then converts payments received to profits” (Teece, 2010, p.173). (More definitions for the business model are presented in the literature review in Chapter Two.)

Concept — “an abstract or generic idea” (Merriam-Webster, n.d., Definition 2).

Conceptual framework — “integrates various constructs and propositions in a meaningful way”; “a conceptual framework normally does not rise to the level (of sophistication) of a theoretical framework” (Ellinger & Yang, 2011, p.119)

Theoretical constructs — “abstract statements or terms about categories of observations” (Suddaby, 2010, p. 346); “these constructs exist in theory” (McIntire & Miller, 2007, p. 285).

Theoretical framework — “a supportable premise or the extension of such premise through a logical path of reported research and clear reasoning” (Ellinger & Yang, 2011, p.119).

Theory — “any coherent description or explanation of observed or experienced phenomena” (Gioia & Pitre, 1990, p.587).

Theory building — “the ongoing process of producing, confirming, applying, and adapting theory (Lynham, 2002a, p.222)

Theory development — “a research process for creating theory” (Torraco, 2005a, p.352)

Finally, a working definition of the business model concept is: an abstract representation of a system of how a company makes money using the constructs of value, customer, infrastructure, and profit.

Conclusion

The purpose of this first chapter is to explain the chain of reasoning in support of the research and to provide an understanding of the overall research study. Attending to these items also guides the remainder of this manuscript. In the next chapter, Chapter Two presents a literature review of scholarly knowledge in the business model and theory building (research methods) bodies of knowledge. Following that, Chapter Three explains the research methods, data collection, and data analysis for this study.

CHAPTER TWO – LITERATURE REVIEW

This chapter provides a literature review of the background literature and the most relevant literature (Lincoln, 2007) in two bodies of knowledge: the business model and theory-building research methods. The purpose of this chapter is to evaluate, summarize, and synthesize the contents of original and primary scholarship in these fields of inquiry (Calabrese, 2006). This literature review is very much like a critical analysis and very little like a simple enumeration of who said what, in that it presents the breadth and depth of the bodies of knowledge as well as the intersection of both domains. Figure 5 illustrates the content areas in the informing bodies of knowledge under review (i.e., the business model and theory building). Furthermore, the goal of this literature review is to provide an understanding of the noteworthy knowledge and research on the topics and to lay the foundation for the research methodology and exploration of the research questions.

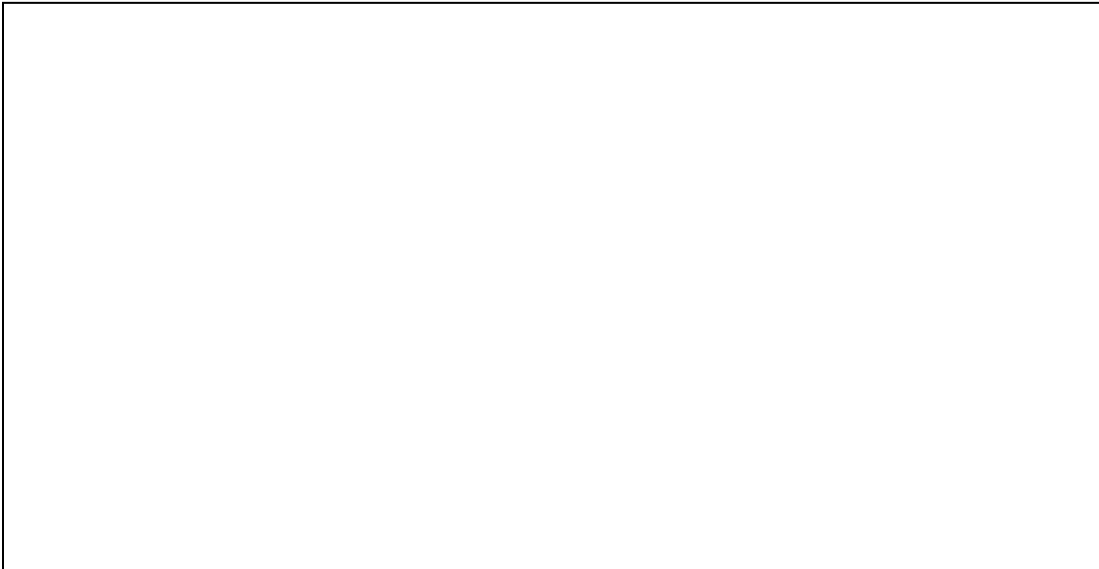


Figure 5

*Business Model Body of Knowledge and Theory Building Body of Knowledge*Note.

Source: Adapted from Lincoln (2007).

This chapter is organized into three sections. The opening section presents the literature review methods (i.e., two methods) and the literature search results. In the second section, the literature review focuses on the breadth of knowledge on the business model and is broken out in to three areas of literature: the business model concept, business model innovation, and business model patterns. This section also includes a review of the most relevant and informing literature on conceptual frameworks of the business model concept. This literature is deemed to include some aspects of theory building, and thus it is located at the intersection of the two informing bodies knowledge (refer to the center of the Venn diagram in Figure 5). The third section in this chapter presents a view of the body of knowledge on theory building. The depth of knowledge presented in this portion of the literature served to inform the methods and research design that follows in the subsequent chapter.

Literature Review Methods

During the literature search and literature reporting activities, the researcher used two methods of critical analysis. To search the literature and evaluate articles, the researcher employed a two-phase, critical analysis of information-source method described by Calabrese (2006) and Ormondroyd et al. (2004). During the method's first phase, which is known as the preliminary appraisal phase, the researcher performed online searches in EBSCOHost and Google Scholar search engines during October 2021, using the search terms "business model" and "theory building". In the second phase or the content analysis phase, the researcher examined the purpose and substance of publications (i.e., title, abstract, and peer-review status) and sorted the surviving scholarly

works into categories within the bodies of knowledge. This critical analysis of information-source method yielded 71 business model articles/books and 21 theory-building articles/books for this review.

A second critical analysis method was employed to organize and present the knowledge in this literature review. In this method, as described by University of Washington (n.d.) and Woodward-Kron (2002), a critical analysis of the literature content involves deconstructing the body of knowledge, critically examining the key ideas and relationships, and concluding the review with the presentation of an argument, supported by the literature evidence, for further research on the topic(s).

In the next section, the literature review data are presented in a recurring format. First, an overview of the body of knowledge and literary categories are presented. This is followed by a conceptualization of the topic, the key ideas or significant scholarly contributions, and a concluding explanation of how the literature contributes to our understanding of the topic.

Business Model Body of Knowledge

In the business model body of knowledge, three main categories of articles appear to exist in the literature. The categories of articles include the business model concept, business model innovation, and business model patterns. As with any body of knowledge, some categories in the literature seem to receive more research and publications than do others. For this review, the researcher found that business model innovation received the most attention in the scholarly literature, followed by the business model concept, and finally business model patterns. The process of selecting articles for the body of knowledge was based on whether the publication examined one of the three main

categories of articles in a significant way (i.e., in-depth explanation or examination). To explain this point further, of the 71 articles examined in the overall business model body of knowledge, 32 were classified as business model innovation, 27 as business model concept, and 12 as business model patterns. The subsections below review the literature in each of the three categories and in the recurring format described above (i.e., overview, conceptualization, key ideas/contributions, and conclusion). This section begins with a review of the literature data that are included in the business model concept category of articles. Figure 6 shows a Venn Diagram of the business model body of knowledge, with the business model concept category of articles highlighted in the middle.

Business Model Concept Literature

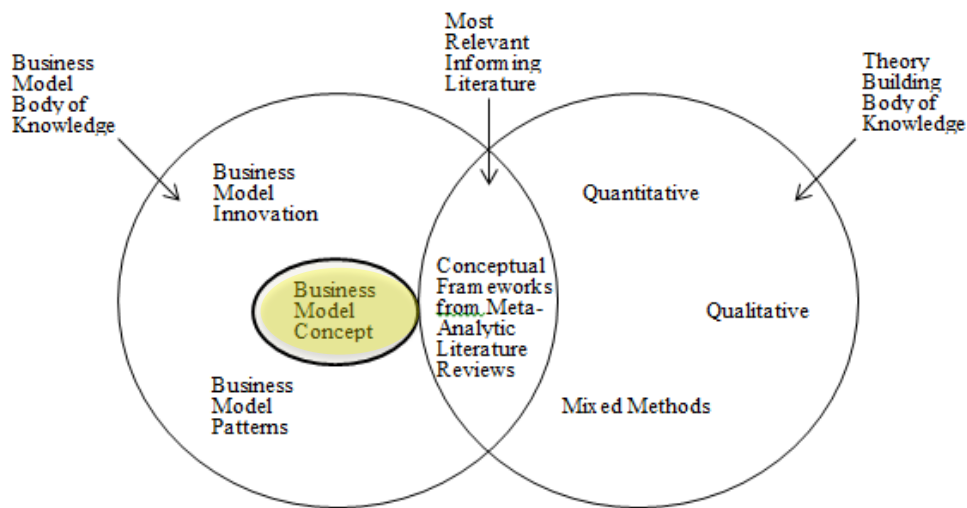


Figure 6

Business Model Concept Literature within the Business Model Body of Knowledge

Overview: The Business Model Concept

The first category of literature in the business model body of knowledge is the business model concept (i.e., highlighted in Figure 6). To provide an overall picture and

summary of this category of literature, this section begins with an overview of the themes, streams of research, and categories of literature identified by scholars on the topic. In one of the first systematic reviews of the business model concept, Zott et al. (2011) identified several themes in the literature and classified them into three streams of research: e-business, strategic issues, and innovation/technology management. Another study by Massa et al.'s, (2017) investigated of the literature using a critical review methodology but viewed the themes as “interpretations” (p.76), separating the publications into, 1) the implied meanings of descriptions of attributes of a real firm, 2) cognitive schemas, and 3) formal conceptual representations of a firm. Finally, in a similar vein, Wirtz et al. (2016) grouped the literature into three categories: concepts and terminology, structures, and management process. Table 2 presents a summary of the authors and themes identified in the literature.

Table 2

Themes in the Literature Identified by Scholars of the Business Model Concept

Authors (Year):	Zott et al. (2011)	Massa et al. (2017)	Wirtz et al. (2016)
Themes in the business model concept literature:	• e-business • strategic issues • innovation & technology management	• attributes of a real firm • cognitive schemas • formal conceptual representations	• concept and terminology • structures • management process

Definitions of the business model concept

As mentioned in Chapter One, a common question found in the literature (Massa et al., 2017) is, what actually is a business model? Defining each word should help explain the meaning of the concept. First, the term *business* is described as any activity that seeks to provide goods and/or services to others while operating at a profit (Nickels

et al., 2016). The second term, *model*, is a formal description of some aspect of the physical or social world for the purposes of understanding or communicating something (Mylopoulos, 1992). Two general types of models, according to Baden-Fuller and Morgan (2010), are scale models (i.e., scaled-down version of a real thing) and role models (i.e., ideals to be copied). In addition, as defined above, a concept is an abstract or generic idea (Merriam-Webster, n.d.). Together, the terms—business, model and concept—can be defined as “how the enterprise creates and delivers value to customers, and then converts payments received to profits” (Teece, 2010, p.173).

In the literature, scholars have attempted to define the term business model from various perspectives and for specific business applications. Morris et al. (2005) performed a content analysis of 30 definitions in the literature and separated the meanings into three general categories of economic, operational, and strategic. Some scholars described the business model as “a conceptual tool that contains a set of elements and their relationships ... to express the business logic of a specific firm” (Osterwalder & Pigneur, 2002, p.1). Other scholars, such as Magretta (2002), view the business model concept as “stories that explain how enterprises work” (p.4). In one of the most comprehensive examinations of definitions for the business model, Massa et al. (2017) scoped the literature and mapped 71 definitions/conceptualizations from 89 articles on the topic. Recently, Foss and Saebi’s (2017) reviewed the body of knowledge and argued that a definitional convergence seems to have taken place, coalescing around Teece’s (2010) definition of “the design or architecture of the value creation, delivery, and capture mechanisms” of a firm (p.172). Table 3 presents a chronological listing of 20

scholarly definitions of the business model and shows that many definitions include the same fundamental ideas of value, customer, infrastructure/value chain, and profit.

Table 3

Selected Chronological Definitions of the Business Model Concept in the Literature

Timmers (1998)	The business model “is an architecture of the product, service and information flows, including a description of the various business actors and their roles; a description of the potential benefits for the various business actors; a description of the sources of revenues” (p. 2).
Applegate (2000) (as cited by Massa et al., 2017)	A business model comprises 3 components. A concept, which describes an opportunity; Capabilities, which define the resources needed to turn concept into reality; and value, which measures the return to investors and other stakeholders.
Chesbrough and Rosenbloom (2002)	The business model “creates a heuristic logic that connects technical potential with the realization of economic value” (p. 529).
Magretta (2002)	Business models are “stories that explain how enterprises work.” (p. 4).
Morris et al. (2005)	A business model is a “concise representation of how an interrelated set of decision variables in the areas of venture strategy, architecture, and economics are addressed to create sustainable competitive advantage in defined markets” (p. 727).
Shafer et al. (2005)	“A business model as a representation of a firm’s underlying core logic and strategic choices for creating and capturing value within a value network.” (p. 202)
Weill et al. (2005)	“We define a business model as consisting of two elements: (a) what the business does, and (b) how the business makes money doing these things.” (p. 5)
Johnson et al. (2008)	“A business model consist of four interlocking elements, that, taken together, create and deliver value” (p. 52). [Those elements are: customer value proposition, profit formula, key resources and key processes.]
Casa desus-Masanell and Ricart (2010)	“Business model refers to the logic of the firm, the way it operates and how it creates value for its stakeholders.” (p. 196)
Demil and Lecocq (2010)	The business model “concept refers to the description of the articulation between different BM components or ‘building blocks’ to produce a proposition that can generate value for consumers and thus for the organization.” (p. 227)
Osterwalder and Pigneur (2010)	“A business model describes the rationale of how an organization creates, delivers, and captures value.” (p. 14)
Teece (2010)	“In short, a business model defines how the enterprise creates and delivers value to customers, and then converts payments received to profits.” (p. 173)
George and Bock (2011)	“A business model is the design of organizational structures to enact a commercial opportunity. (p.99) [...] framing of the business model yield[ed] three dimensions to the organizational structures noted in our definition: resource structure, transactive structure, and value structure.” (p.99)
Zott et al. (2011)	“The business model is emerging as a new unit of analysis; business models emphasize a system-level, holistic approach to explaining how firms “do business”; firm activities play an important role in the various conceptualizations of business models that have been proposed; and business models seek to explain how value is created, not just how it is captured.” (p.1)
Abdelkafi et al. (2013)	“A business model describes how the company communicates, creates, delivers, and captures value out of a value proposition.” (p. 12).
Baden-Fuller and Haefliger (2013)	“We define the business model as a system that solves the problem of identifying who is (or are) the customer(s), engaging with their needs, delivering satisfaction, and monetizing the value.” (p.419).
Fieldt (2013)	“A business model describes the value logic of an organization in terms of how it creates and captures customer value.” (p.92)
Nielsen and Lund (2014)	“The business model is therefore the platform which connects resources, processes and the supply of a service which results in the fact that the company is profitable in the long term.” (p. 9)
Schaltegger et al. (2016)	“A business model for sustainability helps describing, analyzing, managing and communicating (i) a company’s sustainable value proposition to its customers and all other stakeholders, (ii) how it creates and delivers this value, (iii) and how it captures economic value while maintaining or regenerating natural, social and economic capital beyond its organizational boundaries.” (p. 268)
Wirtz et al. (2016)	“A business model is a simplified and aggregated representation of the relevant activities of a company. It describes how marketable information, products and/or services are generated by means of a company’s value-added component.” (p. 41)

After defining the concept, many scholars proceed to propose a conceptualization of a framework for the business model (Osterwalder, et al., 2005; Wirtz et al., 2016). These frameworks enumerate the internal components that make up the phenomenon, and the next subsection discusses these conceptualizations.

Conceptualization of the Business Model Concept

True to the process of concept development (Branch & Rocchi, 2015), many scholars have proffered a conceptualization of the business model concept in the form a conceptual framework. While some conceptual frameworks described multiple levels and interrelated structures (e.g., Morris et al., 2005; Osterwalder & Pigneur, 2010; Wirtz et al., 2016), others simply propose the framework components and describe how they are used (e.g., Gassmann et al., 2013, 2014).

Conceptual Frameworks for the Business Model Concept

The literature includes numerous conceptual frameworks (i.e., the integration of constructs and propositions in a meaningful way; Ellinger & Yang, 2011) for the business model concept that vary in type, organizational levels, and terminology. Two common types of conceptual frameworks are e-commerce and general/generic. While many of the early frameworks (i.e., before 2002) were specifically developed for e-commerce business (e.g., Afuah & Tucci, 2001; Dubosson-Torbay et al., 2002), most of the frameworks conceptualized after 2002 were intended as a general/generic business model (e.g., Chesbrough & Rosenbloom, 2002; Morris et al., 2005; Osterwalder 2004). In terms of organizational levels, some scholars claim the framework components require consideration at multiple levels of the business. For example, Morris et al. (2005) argued

that questions regarding the business model should be answered at three levels: foundational, proprietary, and rules levels of an organization. Scholars also use different terms in their conceptual frameworks to describe what makes up a business model. Some call it (i.e., what makes up a business model) a component; some call it an element; some call it a dimension; and others call it a pillar or main area. Table 4 provides a summary of the different terms scholars have used in their conceptual frameworks to describe what makes up a business model's "fundamental constructs" (Pateli & Giaglis, 2004, p.306).

Table 4

Terms Used in Conceptual Frameworks to Describe What Makes Up a Business Model

Terms Used in Conceptual Frameworks	Authors
components	Morris et al. (2005), Wirtz et al. (2016)
elements	Baden-Fuller and Mangemantin (2013), Johnson (2008)
dimensions	Gassmann et al. (2013), George and Bock (2011)
pillars/main areas	Osterwalder and Pigneur (2010)
attributes	Chesbrough and Rosenbloom (2002)

Analysis of 10 Conceptual Frameworks for the Business Model Concept

To achieve the breadth and depth desired for this literature review, a comparative analysis of 10 conceptual frameworks is presented in Table 5. This analysis involved deconstructing the frameworks and using a matrix analysis for presenting the data. By deconstructing the frameworks (i.e., "to take apart or examine", Merriam-Webster, n.d., deconstruct, n.d., Definition 2), it allowed this review to highlight the "fundamental constructs" (Pateli & Giaglis, 2004, p. 306) of the business model concept. A *matrix analysis* (Pateli & Giaglis, 2004) was used for this analysis because it is well suited for presenting and comparing numerous conceptual frameworks and their core components

in horizontal listings and vertical dimensions. The 10 conceptual frameworks were selected based on their common referencing in the literature (Massa et al., 2017) and their widespread deployment in practice (Spieth et al., 2014).

Table 5

Authors and Core Components in 10 Selected Business Model Conceptual Frameworks

Authors (Year)	Core Components in Conceptual Framework
Chesbrough and Rosenbloom (2002)	• value proposition • market segment • value chain • cost structure and profit potential
Osterwalder (2004)	• product • customer interface • infrastructure management • financial aspects
Morris et al. (2005)	• value proposition/offering • customer/market • internal capabilities and competencies • how will the firm make money • competitive strategy • personal/investor growth
Richardson (2008)	• value proposition • value creation and delivery system • value capture
Johnson et al. (2008)	• customer value proposition • key resources • key processes • profit formula
Osterwalder and Pigneur (2010)	• customers • offer • infrastructure • financial viability
George and Bock (2011)	• resource structure • transactive structure • value structure
Baden-Fuller and Mangematin (2013)	• customers • customer engagement/proposition • value chain and linkages • monetization
Gassmann et al. (2014)	• who • what • how • value/profit
Wirtz et al. (2016)	• strategic components (resources & network) • customer and market components • value creation components

The analysis of business model conceptual frameworks produced two noteworthy points to this review. First, since 2002, scholars have predominantly focused their research on general/generic conceptual frameworks that exist at the organization level of a business. This indicates that instead of thinking of the business model as residing at the product, business-unit, company/business or industry level (Wirtz et al., 2016), the prevailing view among scholars is the highest and best use of business model sphere of influence is at the company level. Second, examining the conceptual frameworks showed that scholars have not yet reach a consensus on the terminology for the fundamental constructs of what makes up a business model (e.g., component, element, dimension, pillars, etc.).

Key Ideas in the Business Model Concept Literature

In addition to the definitions and conceptual frameworks discussed above, several key ideas were identified in the body of knowledge on the business model concept. First, the terms value and value creation frequently received attention from scholars in the definitions and conceptual frameworks. Value has been described as the set of benefits that a business promises to deliver to customers to satisfy their needs (Kotler & Armstrong, 2012). Value creation, according to Amit and Zott's (2001), can be achieved through product, 1) novelty (i.e., new items), 2) lock-in (i.e., consumable product parts), 3) complementarities (i.e., product and services), and 4) efficiency (i.e., transaction efficiency).

A second key idea in the literature was the business model concept can have different typologies (i.e., distinguishable types or classifications; Weill et al., 2005). Several articles described different business model typologies, such as, (a) networked

business models that include value system partners in the business model (e.g., Wirtz et al., 2016); (b) open business models that allow external actors or groups to contribute to the success of a product (e.g., Chesbrough, 2006); and (c) platform business models that bring buyer and seller together to conduct business (e.g., Osterwalder & Pigneur, 2010).

Finally, innovation was a key idea identified in the business model concept literature. Zott et al. (2011) described how the innovation of a business model is a new form of innovation that adds to the traditional forms such as product, process, and organizational innovation. More is said about innovation of business models in the Business Model Innovation section below.

Meaning and Significance of the Business Model Concept Literature

Reviewing the literature on the business model concept reveals several insights and significant aspects. First, scholars have published numerous definitions of the business model concept, but only recently, they have begun to coalesce around a common understanding of the concept (i.e., value creation, delivery, and profit mechanisms; Teece, 2010). This shows that the field of inquiry appears to have some consensus about what is a business model. Second, because scholars have viewed the business model concept from different perspectives (e.g., entrepreneurial, technological, strategic), they envisioned diverse uses for it. The varying perspectives have resulted in competing conceptual frameworks, differing foundational components, and splintering research silos (Wirtz et al., 2016).

In the next section, the literature review focuses on business model innovation (See Figure 7). This category of research has particular interest for practitioners who are looking to become more competitive in their industries.

Business Model Innovation Literature

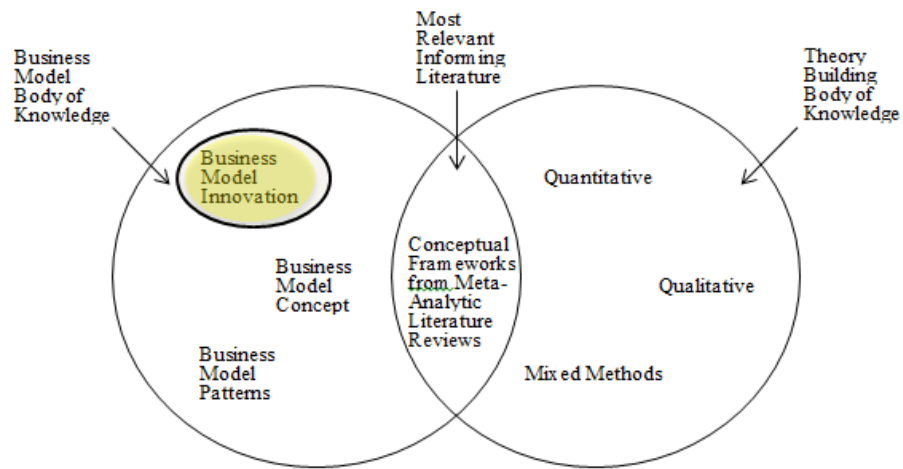


Figure 7

Business Model Innovation Literature within the Business Model Body of Knowledge

Overview: Business Model Innovation

The second category of literature within the business model body of knowledge is the literature focusing on business model innovation. Historically, Mitchell and Coles (2003; 2004; 2004b) produced some of the first publications on business model innovation in their articles discussing the periodic need for businesses to update or replace their business models (Foss & Saebi, 2017). Surprisingly, it was not until a decade later that Frankenberger et al. (2013) and De Reuver et al. (2013) published the first process frameworks for business model innovation. These frameworks are discussed later in this text. According to Remané et al. (2017) and Frankenberger et al. (2013), this body of literature, which is quite prominent in practitioner journals, still exhibits the attributes of an emerging body of knowledge. Foss and Saebi (2017) noted this category of literature continues to lack breath, depth, and clarity.

While the literature on business model innovation needs development (Foss & Saebi, 2017), some scholars have identified themes and streams of research in this body of knowledge. Schneider and Spieth (2013) categorized business model innovation literature into three streams: prerequisites, elements and processes, and effects achieved from business model innovation, and Foss and Saebi (2017) identified four streams of research including conceptualization, organizational change process, consequences, and outcomes. Both studies noted that business model innovation could be viewed as an outcome or a process.

Definitions for Business Model Innovation

Due to the dual meaning for business model innovation, definitions in the literature can provide some insight to its meaning. When viewed as an outcome, business model innovation has been defined as “the discovery of a fundamentally different business model in an existing business” (Markides, 2006, p.20). Conversely, when defined as a process, Bucherer et al. (2012) stated that business model innovation is “a process that deliberately changes the core elements of a firm and its business logic” (p.184). This definitional inconsistency seems inherent due to the term innovation; Crossan and Apaydin (2010) defined it as, “...renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems. It is both a process and an outcome” (p.1155). In other words, the definitions show state that the outcome of business model innovation is a new or innovative business model, and the process of business model innovation involves changing the organizational systems of a firm.

Conceptualization of the Business Model Innovation Process

Several scholars have developed frameworks describing the process of business model innovation, and three are explained here. First, Frankenberger et al. (2013) examined 14 cases of business model innovation across six multinational companies and proposed a four-phase business model innovation process framework. Known as the 4-I framework, Frankenberger et al.'s framework structured the process into four steps of *initiation*, *ideation*, *integration*, and *implementation* (Frankenberger et al., 2013). A second business model innovation framework by De Reuver, et al. (2013) recommended using a “roadmapping approach” (p. 4) as a step-wise technique for moving from an existing business model to a desired one. This pragmatic framework involved identifying the desired changes in the existing business model, analyzing how the changes affect other business model components, translating the changes into specific activities that need to take place, and mapping the actions into a transitional roadmap (De Reuver et al., 2013). The last business model innovation framework was created by Geissdoerfer et al. (2017) based on a comprehensive literature review and on interviews with academic experts. The framework was intended to help organizations bridge the “design-implementation gap” (p. 267). It involves an eight step, cyclical/iterative process of ideation, concept design, virtual prototyping, experimenting, detail design, piloting, launch, and adjustment and diversification. Geissdoerfer et al. (2017) also noted that business model innovation in practice typically involves multiple iterations of this framework.

Key Ideas in the Business Model Innovation Literature

In addition to the definitions and process frameworks for business model innovation, several key ideas were identified in the literature on the topics of antecedents and barriers, interacting elements, and outcomes and consequences. Chesbrough (2010) noted that clear antecedents of business model innovation manifest when an existing business model is no longer working for a focal firm. Several external and internal factors typically are present in this situation (Bucherer et al., 2012, p189; Demil & Lecocq, 2010). The external factors may include market signals of new entrants, competitive threats in the market, increased costs, technology changes, or the emergence of substitutes or commoditization of the product/service (Bucherer et al. 2012; Demil & Lecocq, 2010). Internal factors can include management's examination of the firm's dominant logic (Chesbrough, 2010), comparison of the current business model to others in the industry (Teece, 2017), or assessment of the organization's dynamic capabilities for organizational change (Teece, 2017). Some barriers to business model innovation include organizational resistance to change, conflicts between a new business model and an existing one (i.e., cannibalization), or limited organizational resources (Bucherer, et al., 2012; Chesbrough, 2010).

The second key idea in the literature on business model innovation is the existence of interacting elements during the innovation process. These interacting elements can include the leadership team who is driving the innovation process or management's approach (i.e., informal or formal) to business model innovation (Bucherer et al., 2012). Bucherer et al. (2012) found that smaller companies, for the most part, tend to choose an informal approach to business model innovation, and larger companies tend to adopt a more formal approach, using design tools such as the Business

Model Canvas (Osterwalder & Pigneur, 2010) or IBM's component business modeling (Chesbrough, 2010). Two other major interacting elements that affect the business model innovation process are experimentation and time (Teece, 2010, 2017). Because business model innovation is far from linear, Demil and Lecocq (2010) recommended taking an experimentation and evolutionary approach, and McGrath (2010) favored utilizing a learning and discovery driven approach. Researchers also identified time as element for consideration during business model innovation (Bucherer et al. 2012; Teece, 2017). Finally, start-ups generally show agility with business model innovation, pivot more quickly and find organizational transformation easier than do incumbent firms do (Teece, 2017).

One final key idea identified in the literature was that the outcomes or consequences of business model innovation could prove to be a major and challenging undertaking (Gassmann et al., 2013). Many scholars (e.g., Frankenberger et al., 2013; Geissdoerfer et al., 2017; Teece, 2010) noted that business model innovation is not a one-time project but rather an iterative. In addition, in some instances, firms need to be careful not to cannibalize their existing business' market share when implementing a new business model (Velu & Stiles, 2013). To assist businesses in achieving their desired outcomes, scholars recommend using one of the business model innovation process framework.

Meaning and Significance of the Business Model Innovation Literature

The review of literature on business model innovation revealed that it is another form of organizational learning and change, a market driven form. Business model innovation also appears to be particularly important in technology-driven, global, and

rapidly changing marketplaces. The literature showed that researchers are aware of the need to inform practitioners about business model innovation and its concepts, frameworks, antecedents, processes, and consequences (i.e., before, during, and after). This is significant because it seems to support the growing need for empirical research and theory building in the overall business model body of knowledge. One form of empirical research identified in the business model innovation literature studied the patterns among various business models in practice, and this category of literature (See Figure 8) is reviewed next.

Business Model Patterns Literature

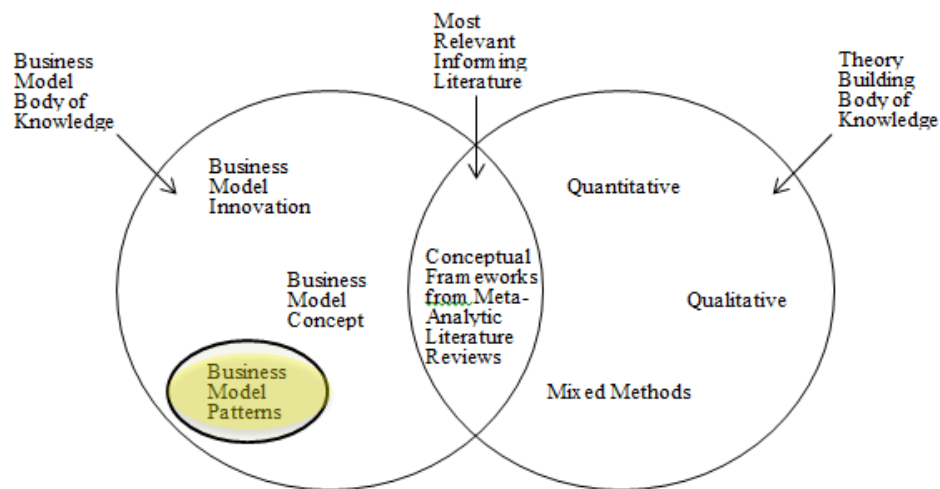


Figure 8

Business Model Patterns Literature within the Business Model Body of Knowledge

Overview: Business Model Patterns

The third category of literature in the business model body of knowledge is business model patterns. A relatively small body of knowledge, the business model patterns literature identified for this study included three types of literature: definitions and conceptualizations of business model patterns, research on using business model

patterns as tools, and empirical lists of business model patterns. Although few articles fall into the first two types of literature, these articles still provide important research on understanding how to use patterns effectively in designing or innovating a business model (Luttgens & Diener, 2016). Additionally, throughout this category of literature, scholars use synonymic terms such as systems (Osterwalder & Pigneur, 2002), archetypes (Weill et al., 2005), and recipes (Baden-Fuller & Morgan, 2010) to refer to business model patterns.

Definitions for Business Model Patterns

To define business model patterns, scholars have generally expressed their definitions in a similar way. Amshoff et al. (2015) defined business model pattern as “a combination of configuration options, which repeatedly occurs in successful business models” (p.11), and Osterwalder and Pigneur (2010) described business model patterns as “business models with similar characteristics, similar arrangements of business model building blocks, or similar behaviors” (p. 55). Remané et al. (2017) pointed out that many business model pattern definitions draw on the works of the architectural theorist Christopher Alexander (“who is considered the father of patterns”; p.7) and the belief that patterns, 1) describe solutions to a problem, 2) describe the core of a solution, and 3) describe a solution in a general and reusable way.

Conceptualization of Business Model Patterns

While the definitions for business model patterns appears homogeneous, researchers’ conceptualization of the topic shows a more heterogeneous understanding of it. Baden-Fuller and Morgan (2010), for example, analogized business model patterns to “recipes” (p.156) for business practitioners to draw elements together during design or

innovation processes and to “cook them” together (p.166). In a different vein, Amshoff et al. (2015) conceptualized three types of business model patterns: frameworks (e.g., the business model canvas and its design elements), prototypical business models (i.e., generic archetypes found in industry), and solution patterns that address specific elements and aspects of a business model. Finally, in a study of 250 business models that looked for repetitive patterns, Gassmann et al. (2013) identified 55 recurring business model patterns and analyzed the patterns using four universal dimensions of who, what, how, and value.

Key Ideas in the Business Model Patterns Literature

Several key ideas emerged from the business model patterns literature in the areas of innovation, industry, and lists of patterns. First, business model patterns are viewed as conceptual toolkits for practitioners to use during the business model design or innovation processes. Luttgens and Diener (2016), for example, used business model patterns coupled with Porter’s (2008) Five Forces framework to inform practitioners on how to design business models that counteracted external threats in a competitive environment. A second key idea in the literature on business model patterns is how they can inform businesses about entire industries. Abdelkafi et al. (2013) studied existing patterns in the automobile industry and discussed the transferability of auto-industry patterns to the emerging electric mobility market (i.e., electronic vehicle market). Another study by Amshoff et al. (2015) used a market perspective to develop a methodology for identifying an industries pattern-maps and an industry’s dominant business logic in order to help entrepreneurs design disruptive business models. The third key idea on business model pattern is that these lists of business model patterns contain

the vast majority of the concepts and elements needed for designing effective business models. Gassmann et al.'s (2013) study found that about 90% of business model innovations activities culminated in re-compilations of the 55 recurring business model patterns. In the most comprehensive list of business model patterns to date, Remané et al. (2017) compiled a database of 186 patterns for business practitioners to search for and navigate to a set of patterns for a specific business model impact.

Meaning and Significance of the Business Model Patterns Literature

Although a relatively small number of publications exist on business model patterns, the body of knowledge makes a significant contribution to our understanding of the business model body of knowledge. Studying business model patterns provides quantifiable data for researchers to conduct empirical studies—especially large scale quantitative research—on the business model concept. In addition, by documenting business model patterns and their elements, it brings scholars closer to a truer understanding of the underlying constructs (i.e., a concept with added meaning adopted for scientific research purposes; Kerlinger, 1973) and closer to a means for theory development on the business model concept.

Few studies can be considered theory development on the business model concept, and only two are discussed next. Figure 9 presents a Venn diagram of this most relevant informing literature in the business model body of knowledge.

Business Model Most Relevant and Informing Literature

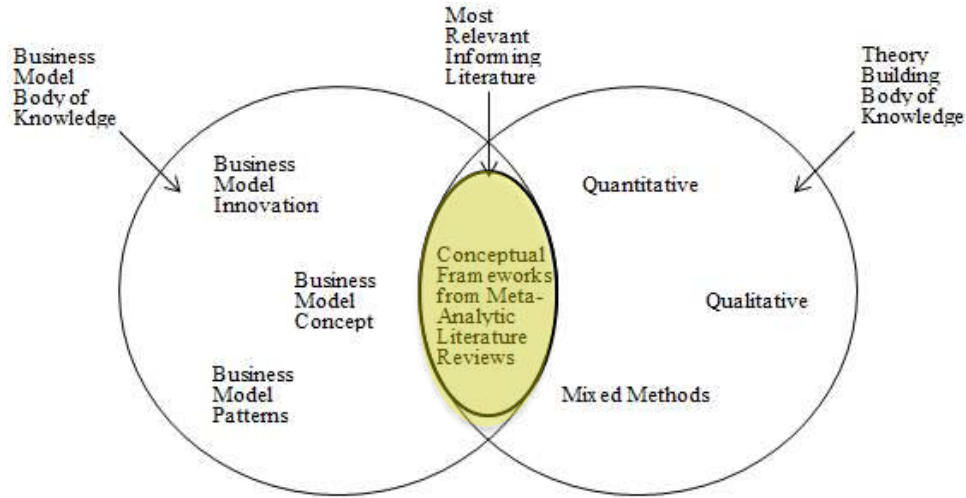


Figure 9

Most Relevant and Informing Literature in the Business Model Body of Knowledge

Overview: Business Model Most Relevant and Informing Literature

The final category of literature in the business model body of knowledge is the most relevant informing literature for the overall research study. This last category contains studies proffering conceptual frameworks derived from meta-analytic literature analysis and from scholarly research processes. Two studies appear in this category, Osterwalder (2004) and Wirtz et al. (2016). While these studies did not explicitly set out to perform theory development, the quantitative methods they employed and deductive reasoning both applied in their research could be viewed as meta-analytic research for theory development on a topic (Torraco, 2005a). Both studies conceptualized nine components or building blocks in their conceptual frameworks that were deduced through analysis and integration of empirical and conceptual research on business model conceptual frameworks.

Definition of the Business Model Most Relevant and Informing Literature

To define the business model most relevant informing literature, it is worth restating what is being examined. Two separate bodies of knowledge—business model and theory building—(i.e., the background literature, Lincoln, 2007) have intersected and the research studies that are similar in methodology and research topic to the one being proposed are identified in the literature. Lincoln (2007) described this literature content intersection as the most relevant informing literature. Therefore, the business model most relevant informing literature intersection can be defined as the intersection of the background literature bodies of knowledge (business model and theory building) that contain research studies that are similar in methodology and topic to the one being proposed. Figure 10 illustrates this definition.

Conceptualization of the Business Model's Most Relevant and Informing Literature

The conceptualization of the business model's most relevant informing literature is composed of two research studies: Osterwalder (2004) and Wirtz et al.'s (2016). While Osterwalder's (2004) research on the business model concept occurred in the early 2000s, its findings of nine building blocks supported by four pillars remains important to scholars today. Osterwalder called the research *The Business Model Ontology*, based on Gruber's (1993) definition of ontology "as an explicit specification of a conceptualization". In the study, Osterwalder initially identified four main areas or "pillars" (p.42) for the business model concept—product, customer interface, infrastructure management, and financial aspects. These four pillars were the result of influenced by Kaplan and Norton's (1992) Balance Scorecard approach and by Markides' (1999) list of essential business model issues for a company. Wanting to split the split the

pillars into building blocks, Osterwalder selected 14 scholarly conceptual frameworks, identified each framework's elements, and deduced a framework that included all the elements mentioned by at least two scholars. The resulting framework included nine building blocks: value proposition, target customer, distribution channel, relationship, value configuration, capability, partnership, cost structure, and revenue model. Having well supported the building blocks on top of pillar categories, Osterwalder synthesized the business model concept literature in order to describe the interrelationships between building blocks. Table 6 summarizes Osterwalder's business model ontology framework.

Table 6

Osterwalder's (2004) The Business Model Ontology

Pillars	Building Blocks	Description
Product	Value Proposition	A Value Proposition is an overall view of a company's bundle of products and services that are of value to the customer.
Customer Interface	Target Customer	The Target Customer is a segment of customers a company wants to offer value to.
	Distribution Channel	A Distribution Channel is a means of getting in touch with the customer.
	Relationship	The Relationship describes the kind of link a company establishes between itself and the customer.
Infrastructure Management	Value Configuration	The Value Configuration describes the arrangement of activities and resources that are necessary to create value for the customer.
	Capability	A capability is the ability to execute a repeatable pattern of actions that is necessary in order to create value for the customer.
	Partnership	A Partnership is a voluntarily initiated cooperative agreement between two or more companies in order to create value for the customer.
Financial Aspects	Cost Structure	The Cost Structure is the representation in money of all the means employed in the business model.
	Revenue Model	The Revenue Model describes the way a company makes money through a variety of revenue flows.

Osterwalder's (2004) business model ontology also served as the foundational research for the Business Model Canvas tool (Osterwalder & Pigneur, 2010), which has become

one of the most popular design and innovation tools in practice (Fielt, 2013; Massa et al., 2017)

The other instance of the business model's body of knowledge most relevant informing literature is Wirtz et al. (2016), *Business Models: Origins, Development and Future Research*. In this study, the authors investigated the background, definitions, components, and theoretical development of business models in an effort to identify a converging business model view. The study design included triangulating their research starting with a meta-analysis of the literature, then deriving the components of an integrated business model, and lastly surveying 21 business models experts on areas for further research. In their scoping of the literature, the authors quantitatively identified 681 peer-reviewed articles and qualitatively analyzed them for research foci. To derive the components of their integrated business model, Wirtz et al. examined 14 relevant conceptual frameworks and conducted a frequency analysis to establish nine essential components. Last, the authors roughly categorized the nine essential components into three groups (strategic, customer/market, and value creation), which was based on their integrated definition of the business model. In their conclusions and implications, Wirtz et al. surveyed 21 business models experts on their preferred areas for future research and found that theoretical deduction and large-scale quantitative surveying topped the list of research methodologies.

Table 7 presents Wirtz et al. (2016) integrated business model framework.

Table 7*Wirtz et al.'s (2016) Components of an Integrated Business Model*

Component Categories	Components		
Strategic Components →	Strategy	Resources	Network
Customer and Market Components →	Customers	Market Offering	Revenues
Value Creation Components →	Service and Provision	Procurement	Finances

Key Ideas in the Business Model Most Relevant and Informing Literature

Three key ideas in this category of most relevant informing literature involve, (a) the framework component categories, (b) Osterwalder's (2004) ontology in practice, and (c) Wirtz et al. (2016) survey of regarding future research methodologies. The first key idea was that both studies' used framework component categories (Osterwalder referred these as main areas/pillars and Wirtz et al. (2016) called them components) and broke those categories down into lower level sub-constructs. This is important in revealing the structure of the business model concept's constructs and sub-constructs. A second important point was the prominence of Osterwalder's framework in research and practice. This indicates the framework should influence future theory building. The last key idea was Wirtz et al.'s, (2016) expert survey and their desire that more studies use theoretical and quantitative research methodologies.

Meaning and Significance of the Business Model Most Relevant and Informing Literature

One meaning of this most relevant and informing literature is that it remains very small and clearly underdeveloped. As this literature review presented, few studies in the literature can be considered theoretical, and no studies were found that used a theory-building methodology. This is significant for two reasons. First, it appears to indicate the field of inquiry does not have a symbiotic and reflexive system of praxis, where practice prompts scholarly research, research generates theory, and theory both informs research and leads to practice (Lynham & McDonald, 2011). Second, the dearth of theory building on the business model concept seems to reveal a gap in the literature and an opportunity to contribute to the nascent business model theory category of literature.

Having reviewed the most relevant background literature and the most relevant informing literature in the business model body of knowledge, this literature review turns its focus to the theory building body of knowledge. This body of knowledge is represented in the right-hand circle of the Venn diagram of Figure 10.

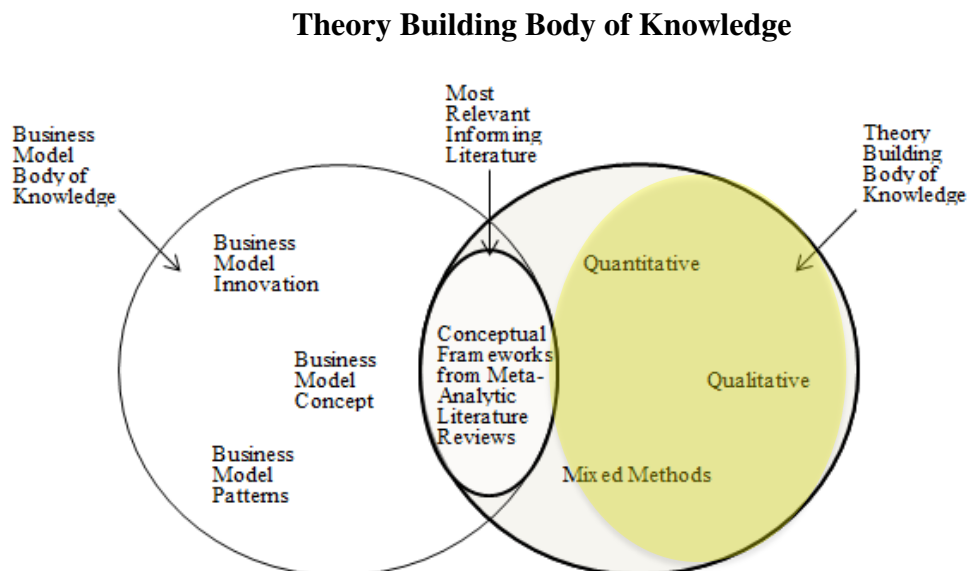


Figure 10

Theory Building Body of Knowledge

Theory Building Literature

The second body of knowledge in this literature review is theory building. Theory building is an important research method (Holton, 2003) because it enables researchers to investigate new understandings of a phenomenon through the development of new theories or the refinement of existing ones (McLean, 2011). In this section, the literature review is presented in the same recurring format as the previous sections (i.e., literature overview, definitions, key ideas in the literature, and meaning and significance of the literature), except that instead of presenting a subsection on conceptualizations of the topic, the heading Methodologies (of Theory Building) is used. This review begins with a brief overview of the theory building body of knowledge.

Overview: Theory Building Literature

As with any body of knowledge, theory building has multiple views on definitions, on criteria and standards of quality, on paradigmatic methodologies, and on processes for conducting theoretical research. To begin this discussion, a simple and initial definition for theory building is, “theory building will be taken to mean the process or recurring cycle by which coherent descriptions, explanations, and representations of observed or experienced phenomena are generated, verified, and refined” (Lynham, 2000b, p.161).

Much more will be said about theory building definitions in the following section.

McLean (2011) argued that theoretical contributions are important for providing focus on research variables, for formulating hypotheses used in conducting research, and for providing foundational understanding for other writing in the field (McLean, 2011).

Good theory building is undergirded by formal criteria, the standards for evaluating theory that extends around the knowledge domains (i.e., research topics) and the outputs

of theory building (Patterson, 1986). Table 8 presents some of those formal criteria and scholarly standards for theory building.

Table 8

Authors and Formal Criteria/Scholarly Standards for Theory Building

Author	Formal Criteria/Scholarly Standards for Theory Building
Patterson (1986)	1. Importance: A theory should not be trivial but should be significant. 2. Preciseness and Clarity: A theory should be understandable, internally consistent, and free from ambiguities. 3. Parsimony or Simplicity: The theory contains a minimum of complexity and few assumptions. 4. Comprehensiveness: A theory should be complete, covering the area of interest and including all known data in the field. 5. Operationally: A theory should be capable of being reduced to procedures for testing its proposition or predictions. 6. Empirical Validity or Verifiability: A theory must be supported by experience and experiments that confirm it. 7. Fruitfulness: The capacity of a theory to lead to predictions that can be tested, leading to the development of new knowledge. 8. Practicality: It should be useful to practitioners in organizing and their thinking and practice by providing a conceptual framework for practice.
Torraco (2005a)	1. The theorist should have substantial knowledge about the two major domains for theory building. 2. The theory should be based on the clear specification of the problem or need for theory building. 3. The research should demonstrate explicitly the logic and theoretical reasoning used by the theorist to link the research problem with the theoretical outcome (e.g., the theory or model). 4. The work should propose and discuss research propositions, questions, or hypotheses for further theoretical.
Whetten (1989)	1. What: What factors (variables, constructs, concepts) logically should be considered as part of the explanation of the social or individual phenomena of interest? 2. How: How are they (the set of factors) related? 3. Why: What are the underlying psychotically, economic, or social dynamics that justify the selection of factors and the proposed causal relationships? 4. Who, Where, When: These conditions place limitations on the propositions generated from the theoretical models.

In addition to formal criteria for evaluating theory, theory building also can be view through a lens of competing paradigm-related categories of methods, multi-paradigmatic approaches, and structured or unstructured processes. For example, Torraco (2005a) examined the field of theory building using a paradigmatic lens and identified

three categories of research methods that included quantitative, qualitative, and mixed method approaches. Each of these categories is explained in the next subsection. Scholars have also recommended using other approaches to theory building including multi-paradigmatic perspectives (Gioia & Pitre, 1990), a disciplined imagination process (Weick, 1989), or a general method in applied disciplines (Lynham 2002a). Finally, because theories can be verified or falsified, they have different life spans, and Turner et al. (2018) described the life cycle of a theory presented in Figure 11.

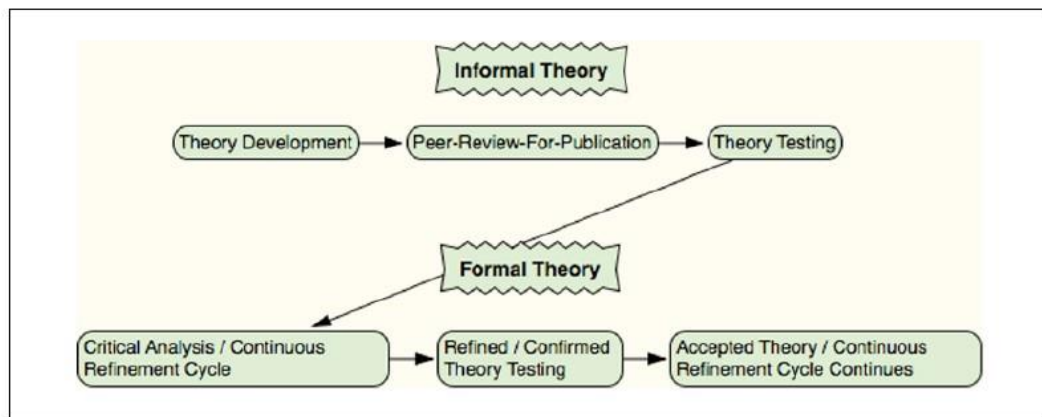


Figure 11

Life cycle of a theory (Turner et al.,2018)

Definition of Theory, Theory Development, and Theory Building

Throughout the literature, theory, theory development, and theory building have numerous definitions, reflecting alternate views that expose readers to a range of thinking on the topics. The following definitions provided by scholars expand this point.

Theory is:

- Any coherent description, explanation, and presentation of observed or experienced phenomena (Gioia & Pitre, 1990, page 587).

- A theory simply explains what a phenomenon is and how it works, a theory explains the phenomenon by identifying its main ideas, or concepts, and by stating the relationships these concepts have to each other (Torraco, 2005a, p.352).
- A theory is an attempt to organize and integrate knowledge and to answer the question why. A theory organizes, interprets, and states in the form of laws or principles the facts and knowledge in an area for a field (Patterson, 1986, p. xix).

McLean (2011) also stated what theory is not; “a theory is not necessarily a fact that can be observed and measured consistently; it's a best guess at the time based on observations, experimentation, and reasoning” (p.210). Theory development, as defined previously in this text, is “a research process for creating theory” (Torraco, 2005a, p.352). Finally, because theories typically change over time, theory building has been defined as “the ongoing process of producing, confirming, applying, and adapting theory” (Lynham, 2002a, p.222).

Theory Building Methodologies

Two realms of theory building seem to exist in the literature, and they are methodologies and processes. In the realm of theory-building methodologies, Torraco (2005a) divided the approaches into three paradigm-related categories of quantitative, qualitative, and mixed methods. Kuhn (1970) described paradigms as forcing “scientists to investigate some part of nature in a detailed and [in] depth” way, (p. 24). Alternatively, theory building can be viewed as a process (Torraco, 2005a). Paradigm-related theory development methods are reviewed next followed by theory research as a process.

Quantitative Research Methods for Theory Building

Quantitative research methods used in theory building include Dubin's theory development methodology, meta-analytic theory development, and theory development from quantitative case studies. Dubin's methodology was illustrated in Figure 4 of Chapter One, and it is worth reviewing here. Dubin, an esteemed scholar in theory and applied theory building (Holton & Lowe; 2007; Torraco, 2005), described a structured methodology (e.g., Dubin, 1969, 1978) with eight clearly defined and interrelated steps that are well suited for novice researcher-theorists (Storberg-Walker, 2003). In Dubin's methodology, the first five steps specify a theory construction method (i.e., theory development phase), and the second three steps describe a research operation for empirical verification of the theory. For this reason, Dubin's is known as a theory-then-research methodology.

Meta-Analytic Research and Theory Development from Quantitative Case Studies

Two other types of quantitative approaches to theory development, according to Torraco (2005a), are multi analytic research and theory development from quantitative case studies (Yin, 1994). In meta-analytic research, the researcher-theorist uses statistical techniques to sum up a body of literature and to draw general conclusion as the basis for theory development (Torraco, 2002, 2005a). While the advantage of meta-analytic research for theory development is the theoretical knowledge is based on aggregate knowledge, the disadvantage is the researcher can only use existing studies (Torraco, 2002, 2005a). Yang (2002) stated the following five steps of meta-analytic research for theory building. First, review existing theory and identify variables of interest. Second, search existing empirical studies and code variables of interest. Third, examine the

variability of effect sizes for the variables of interest. Fourth, conduct appropriate statistical test(s) to explain the variability of effect sizes. Finally, confirm and disconfirm current theory and/or search for alternative theory. Torraco (2005a) also stated that theory development from case study research is possible from either quantitative or qualitative case settings. Qualitative research methods for theory building are discussed next.

Qualitative Research Methods for Theory Building

Qualitative research methods for theory building offer several distinctive approaches including grounded theory, phenomenology, and social constructive research. In grounded theory research, the method uses an inductive approach and the theory is built from the ground up through continuous checking of the data to the emerging theory (Strauss & Corbin, 1998). Grounded theory is well suited for theory being developed for the first time and one that is free from the need for confirmation or disconfirmation.

Phenomenological research for theory development examines what an experience means to an individual and then uses that understanding for theoretical explanations (Torraco, 2005). Moustakas (1994) is renowned for providing general guidelines for using phenomenology (Torraco, 2005), a method that seeks to provide a comprehensive description of the unique experience(s). Last, social constructivist research for theory development can be undertaken when seeking an understanding about how social experiences are created and given meaning (i.e., sense-making of people of their social world) (Torraco, 2002, 2005a). Torraco (2005a) succinctly stated that social constructivist theory seeks to establish a theoretical meaning (through carefully crafted narratives) of how people make sense of their social world.

Mixed Methods Approaches for Theory Building

The third and final category of paradigm-related research methods used in theory building is the mixed methods approaches. According to Torraco (2005), this group of methods uses theory development from case study research (again either quantitative or qualitative), paradox for theory development (to examine apparently opposing views or paradigms), and multi triangulation for theory building by juxtaposing and linking conflicting paradigm's, insights for a new understanding of the phenomenon (Torraco, 2005)

Theory Research as a Process

Unlike the paradigm-related methods discussed thus far, some scholars view theory building in terms of a process. For example, Snow (1973) described a three-phase process for theory building that included recognizing metaphors, constructing models, and organizing metaphors (Swanson et al., 2000). Another method described by Weick (1989) in an issue of the Academy of Management Review focusing on Theory building, described theory building in terms of thought trials and as a process of disciplined imagination. Weick's approach was noteworthy because it also bridged the boundary between quantitative and qualitative paradigms (Torraco, 2005a). This multi-paradigmatic functionality to theory building is also found in Lynham's (2002a) general methods approach to theory building.

Lynham's (2002a) general method of theory-building research in applied disciplines is noteworthy for its comprehensive and inclusive way of approaching theory building (Storberg-Walker 2003). In this method, Lynham proposed five general phases of theory building that include conceptual development, operationalization, confirmation or disconfirmation, application, and continuous refinement and development. The

General Method of Theory-Building in Applied Disciplines, “an overarching theory development construct and language for theory researchers” (Torraco, 2005a, p.363), embraces multiple paradigms, inductive or deductive reasoning, and multiple methods, such as grounded theory, meta-analysis, social constructivist, and case studies (Storberg-Walker, 2003). Figure 12 illustrates Lynham’s (2002a) General Method of Theory-Building Research in Applied Disciplines.

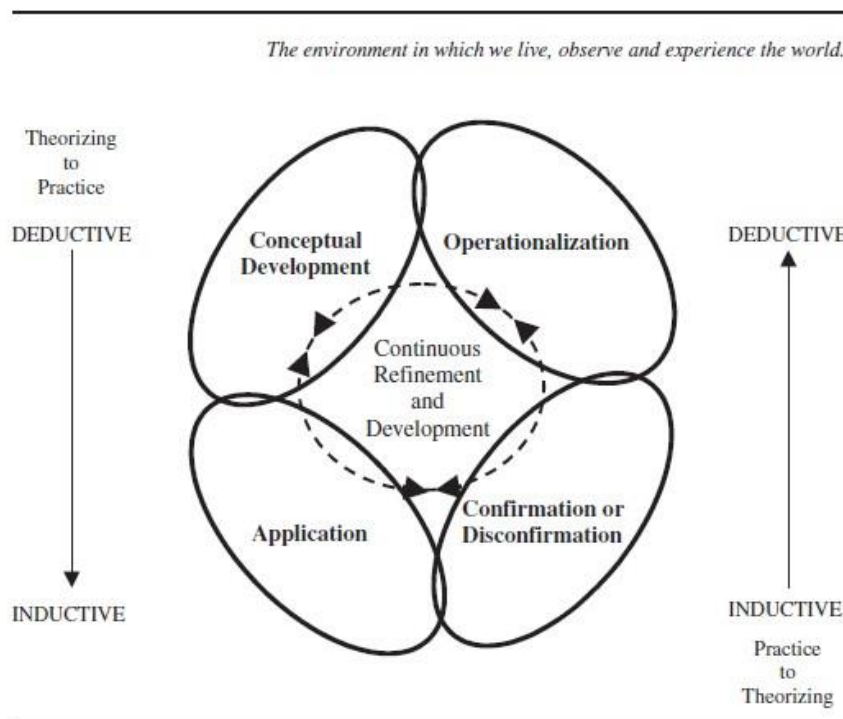


FIGURE 3: The General Method of Theory-Building Research in Applied Disciplines

Figure 12

Lynham’s (2002a) General Method of Theory-Building Research in Applied Disciplines

Key ideas in Theory Building Body of Knowledge

Reviewing the literature in the theory building body of knowledge yielded several key ideas. First, Dubin's method is a prescriptive approach that has a purposeful and interrelated output at each step and phase of the methodology. Moreover, the

methodology is holistic in accomplishing both theory development and empirical research outputs for theory building. Second, Lynham's (2002a) general method has multiple applications in research roles of quantitative, qualitative, inductive, deductive, and process-orientated theory building. Last, theory building needs to be practical and inform practitioners; as Lewin famously stated, "there is nothing as practical as a good theory" (Billig, 2015, p. 1).

Meaning and Significance of the Theory Building Body of Knowledge

Going beyond the literature on theory building, the meta-view of the body of knowledge informs academicians and practitioners that there are different approaches to theory building and that theories have a life cycle. The different approaches can accommodate various paradigms for looking at the phenomena, different methodologies for researching it, or a general method of conceptualizing, operationalizing, testing, and applying knowledge on a topic. Perhaps most significant to the researcher theorist is understanding that there is a life cycle to a theory, and as some point a theory it may be openly accepted or rejected. Fortunately, however, the researcher theorist can and should revise and refine the theory.

Conclusion

This chapter provided a literature review of two bodies of knowledge as well as the intersection of those two bodies that respectively constitute the background knowledge and the most informing scholarly knowledge for the proposed research study on the development of a theory for the business model concept. The review aimed to show how scholars have defined and conceptualized frameworks for the business model concept, and most focused on the underlying components of value creation, value

delivery, and value monetization. When business practitioners undertake business model innovation or new design, they typically engage in a process that examines the interaction of organizational elements with the intent of producing a new business model outcome and a market driven form of organizational change. Organizations can expect more reliable outcomes from the business model innovation process when they use business model patterns; patterns that describe established business archetypes or systems in the business world. Researcher also can benefit from using business model patterns provide as quantifiable data or as core theoretical constructs of the business model. Two studies by Osterwalder and Pigneur's (2010) and Wirtz et al. (2016) can be considered the most relevant informing literature of theory building for the business model concept, though neither reported taking a theory building approach in the study. In this sense, theory development on the business model concept might be best approached by employing a prescriptive methodology, such as Dubin (1978) or by using a general method (c.f. Lynham, 2002a). Explicit in this review is that the integration of these three bodies of knowledge is needed in order to equip the researcher-theorist for the challenges of theory building for the business model concept.

Furthermore, to be effective in the proposed research study, it is important to have a meta-view of the literature's strengths, weaknesses, gaps, and opportunities. The strengths of the extant research are in the areas of business model concept's definitions, conceptual frameworks, and quantifiable pattern data. Two weaknesses of the literature likely include the emergent and diverse nature of business model innovation literature, and the very few studies viewed as business model theory development. Clearly, there is a gap in the literature where no studies were found to have used a theory

development/building methodology. Therefore, my argument is the proposed study should produce this key outcome of establishing an instance of business model theory development and building in the literature.

CHAPTER THREE – METHODS

This chapter presents the research methods for the research study. The methods include, (a) a critical analysis of the scholarly literature, (b) applied theory building using Dubin's (1978) methodology, (c) qualitative and quantitative data collection processes used for building a taxonomy of framework components and finding empirical indicators, respectively, (d) quantitative hypotheses testing of the theory processes, and (e) reflective evaluation of the theory. Table 9 lists these five research methods, the research activities, and the associated steps of Lynham's (2002a) General Method of Theory-Building Research in Applied Disciplines. Lynham's approach, which is discussed in more detail in the upcoming Research Design section, is presented (in the table's right-hand column) to show how the General Method informs, guides, and aligns with the proposed research study.

Table 9

Research Methods, Research Activities, and Lynham's (2002a) General Method of Theory Building

Research Methods	Research Activities	Lynham's (2002a) General Method of Theory Building
1. Critical analysis of the literature	1. Critical analysis of the conceptual frameworks of the business model and Dubin's (1978) methodology	0. Knowledge of the phenomena and the research methodology
2. Applied theory building (a) Qualitative data collection (b) Quantitative data collection	2. Dubin's theory building methodology (a) Theory development (Dubin steps 1-5) (b) Research operation (Dubin steps 6-7)	1. Conceptual development phase 2. Operationalization phase
3. Quantitative hypotheses testing	3. Theory testing (Dubin step 8)	3. Confirmation / disconfirmation of the theory phase
4. Reflexive evaluation of the theory	4. Evaluation of the theory based on Patterson's (1986) formal criteria	4. Continuous refinement and development cycle 5. Application phase

To organize this detailed presentation of the research methods, the chapter is divided into three main sections: Research Approach, Data Collection, and Data Analysis (Creswell, 2014; Krathwohl, 1998). The presentation section begins by revisiting the study's research questions.

Research Questions Revisited

As stated in Chapter One, the research questions for this study consist of three major inquiries that are addressed during the theory development, research operation, and theory evaluation phases of the study and reported in the following chapter. The primary research questions are:

1. Research Question 1 (RQ1): What is the theoretical framework of the theory of the business model concept? A question of theory development.
2. Research Question 2 (RQ2): Is there an association between the individual empirical indicators for each theoretical construct? An overarching question of empirical indicator association using Chi-square inferential statistics to begin testing the theoretical framework of the theory.
3. Research Question 3 (RQ3): What is the reflexive evaluation of the content and construct validity of the theory of the business model concept? A question of theory evaluation based on Patterson's (1986) formal criteria.

Several research sub-questions are also answered during the theory development and research operation phases of the study, and these research sub-questions are discussed in more detail in the sub-section below on Research Methods.

Research Approach

Given the theoretical nature of the research study, the research approach was a crucial component of this study. Creswell (2014) described the research approach as the plans, procedures, or proposal to conduct research using qualitative, quantitative, or mixed methods that involve “the intersection of philosophy, research design, and specific methods” (p.5). Thus, the research approach for this study is described in the following subsections: Research Perspective, Research Design, and Research Methods.

Research Perspective

For a variety of reasons, I decided to approach and view the study from a functionalist research perspective. First, Burke (2007) stated, "the functionalist paradigm refers to the search for explanations of social phenomena, from the view of a realist, what can be described as a positivist perspective" (p.7), and this description aligns with theory building for the business model concept. Second, the choice of research perspective or “philosophical worldview” (Creswell, 2014, p.5) was brought about by the nature of the research questions, the research design, and the research methodology. In light of the theory-building research questions coupled with Dubin's (1978) methodology, the choice of research perspective follows Holton and Lowe (2007) suggestion that "Dubin's model best fits within the functionalist paradigm." (p.302). Third, the research design for the study mirrors Gioia and Pitre (1990) description of theory building in the functionalist paradigm where, (a) theory building starts with a review of literature, (b) takes place in a deductive manner, (c) extends prior knowledge (i.e., conceptual frameworks), (d) uses hypotheses as tentative statements of relationships among units, and (e) carries an implicit orientation toward a management perspective and organizational structures. Last,

Holton and Lowe pointed out that the functionalist paradigm has particular implications for the research process because the analyses are quantitative (i.e., not interpretive) and the results of the processes are either verification or falsification of the hypotheses and theory (as a representation of reality). In light of these reasons, choosing functionalism as the research perspective was a causal exercise.

Additionally, my “positionality” (Callahan, 2014, p.274) for this study was that of a researcher at a public, R1 Carnegie Classification research university, in the School of Education’s academic department of Organizational Learning, Performance, and Change. My educational focus is on organizational learning, performance, and change, and my research interests include organizational development and entrepreneurship.

Research Design

The research design for the study was informed and guided by Lynham’s (2002a) General Method of Theory-Building Research in Applied Disciplines for two primary reasons. First, the initial three phases’ of the General Method (i.e., conceptualization, operationalization, and confirmation) align well with the eight steps in Dubin’s methodology. As Table 9 showed, I completed the three phases of the General Method while conducting Dubin’s eight steps of theory building and addressing Research Questions 1 and 2. The General Method’s forth phase of “continuous refinement and development” cycle also is undertaken while answering Research Question 3 and performing a reflective evaluation of the theory’s strengths based on Patterson’s (1986) formal criteria for evaluation theory. The second reason for employing the General Method was for its intrinsic design of theory building in applied disciplines. Applied disciplines, according to Swanson and Chermack (2013), are “realms of study and

practice that are fully understood through their use in the functioning world” (p.15). As stated previously, the business model concept has universal application in practice. Finally, while the fifth phase of ‘application’ in Lynham’s General Method was not be undertaken in this study, it is the intention of the study that the knowledge produced with have real-world application inform business practitioners on how to apply theoretical principles in practice.

Research Methods

The purpose of this Research Methods subsection is to describe how the data were collected and analyzed for the study (Drisko, 2005). The research methods used included a critical analysis of scholarly literature, constant comparison method for building a taxonomy of units, Dubin’s methodology of applied theory building, quantitative hypothetico-deductive testing, and reflective evaluation of the theory.

Critical Analysis of Scholarly Literature

A critical analysis of scholarly literature was performed that involved reviewing the body of knowledge, selecting articles for use in the theory building phase of research, and critically examining the key ideas in select articles to support the rationale, logic, and choices made during the eight steps of theory building. The critical analysis was particularly important for building a taxonomy of the units or components of the business model concept using the constant comparison method with a closed coding schema.

Constant Comparison Method

The constant comparison method was used with a "closed conventions" coding schema. The constant comparison method is a qualitative research method often times employed in grounded theory research where the data are sorted into categories based on

their attributes, then groupings are organized in a systematic way to build a new theory inductively from the ground up (Glaser, 1965; Lincoln & Guba, 1985). The closed conventions coding schema (i.e., “well defined categories”; Stock, 1994, p.134) used for constant comparison was based on the ‘a priori knowledge’ developed by Morris et al.,

Dubin’s Methodology of Applied Theory Building

Dubin’s (1978) methodology of applied theory building provided a structured approach to the study and supplied answers to the first two research questions and their sub-questions. Figure 13 provides an illustration of Dubin’s methodology of applied theory building alongside the theory development and research operation phases and research sub-questions.

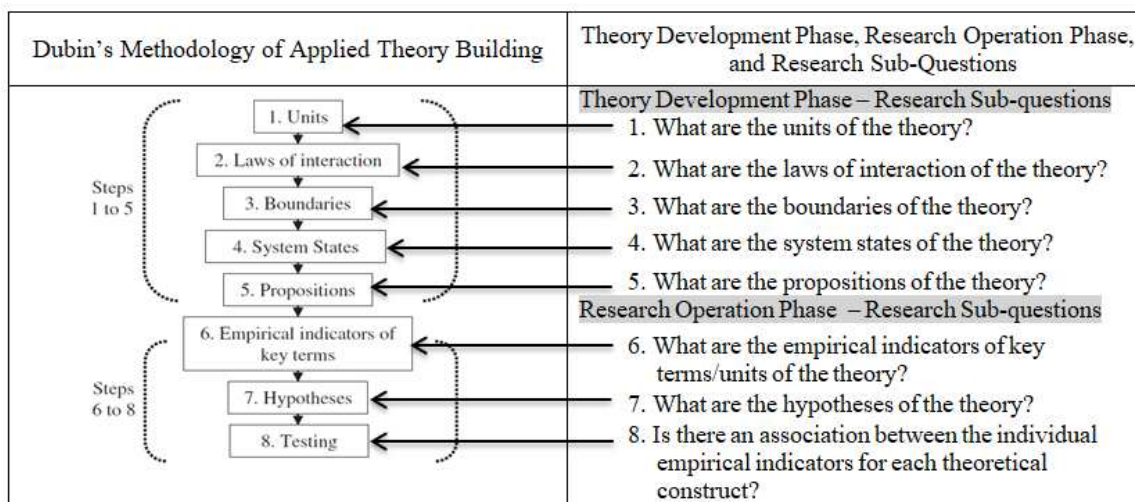


Figure 13

Note: Source Lynham (2002b)

A brief summary of the eight steps in Dubin's methodology is provided below, based on Lynham's (2002b) explanation of the methodology.

1. “Units” involves identifying and describing the units of the theory in terms of their characteristics and the specific types of units.

2. “Laws of Interaction” requires specifying the interactions that govern the theory by establishing the type(s) of relationships (e.g., categorical law, sequential law, or determinant law) that appear to exist between the units of the theory.

3. “Boundaries” entails determining the boundaries of the theory that represent the real world limits in which the theory is expected to hold true (e.g., closed system or open system).

4. “System States” encompasses specifying the conditions under which the units of the theory interact or are operative; this is based on three criteria of inclusiveness, persistence, and distinctiveness.

5. “Propositions” involves specifying the truth statements of the theory, typically in the form of if-then statements that posit the values of a unit, continuity of a systems state, or changes of a system state.

6. “Empirical indicators of key terms” requires finding indicators for measurement of values of a unit in the theory and determining whether they are absolute or relative indicators.

7. “Hypotheses” consists of constructing links between the theoretical framework and the real world by predicting (and ultimately testing) the values of the units of the theory. These hypotheses mirror the propositions of the theory.

8. “Testing” involves testing the hypotheses of the theory through empirical research. The output of this last step of Dubin’s methodology is to confirm or disconfirm the adequacy of the theoretical framework and areas for improving the theory.

The eight steps of Dubin's (1978) methodology were carried out in two phases: theory development and research operation. During the theory development phase, steps

1-5 of Dubin's methodology produced the units of the theory, laws of interaction, boundaries, system states, and propositions. These five steps of theory development produced two outputs: a theoretical framework (Lynham 2002b) and responses to Research Question 1 and Research Sub-question 1-5. The theory development phase and responses to the research questions allowed the researcher-theorist to apply logic and deduce what is believed to be the 'reality' of the business model concept. Following this, the research operation phase was needed to begin establishing the ontological 'nature of that reality' and test the hypotheses the quantitative hypothetico-deductive method of scientific inquiry.

Quantitative Hypothetico-Deductive Method

During the research operation phase, which included completing steps 6-8 of Dubin's (1978) methodology, the quantitative hypothetico-deductive method of scientific inquiry is used. This method of scientific inquiry involves testing the credibility of hypotheses by taking the propositions (i.e., predictions) and determining whether the predictions are consistent with empirical observations (i.e., hypothetico-deductive method, APA Dictionary of Psychology, 2015). In simple terms, this method involves taking propositions to be tested, generating hypotheses, empirically testing the hypotheses (i.e., quantitatively in this study), and determining if the hypotheses are correct/confirmed or incorrect/disconfirmed. Dubin defined these hypotheses as "the predictions about values of units of a theory in which empirical indicators are employed for the named units in each proposition" (p.206). For example, Dubin stated that every time the name of a unit appears in a proposition (i.e., truth statement), it should be substituted with an empirical indicator that measures values on this unit. An example of a

proposition in the current study is, "the empirical indicator of *quality* is independent of the empirical indicator of *price* for the value theoretical construct", and the research question testing of this truth statement would take the form of "is there a Chi-square association between empirical indicators *quality* and *price* of the value theoretical construct?" The output of the research operation phase was again dual: empirical testing of the theoretical model (Lynham 2002b), and the address of Research to Research Question 2 along with Sub-question 6-8.

Reflexive Evaluation of the Theory Based on Patterson's Formal Criteria

The fourth and final method employed in this study was a reflective evaluation of the theory based on Patterson's (1986) formal criteria for assessing a theory. The evaluation instrument, which is presented in Figure 14, was adapted from Patterson (1986) and Holton and Lowe (2007), and it incorporated Patterson's eight formal criteria for theory evaluation into an assessment with a 10-point Likert scale ratings along with comments. The eight criteria for evaluating a theory are: importance, preciseness and clarity, comprehensiveness, operationally, empirical validity or verifiability, fruitfulness, and practicality. At the end of the assessment, a ninth item allows for comment(s) on any other aspect of the emergent theory. Patterson's formal criteria are usually used to evaluate theory (p.xx) because empirical testing of a theory for correctness or validity is not always possible. For the present study, Patterson's criteria provided a summative assessment of the overall theory and helped answer the third research question as to the theory's content and construct validity. The American Psychological Association (2015) defines content validity and construct validity, respectively, as "the extent to which a test measures a representative sample of the subject matter or behavior under investigation"

and “the degree to which a test or instrument is capable of measuring a concept, trait, or other theoretical entity”. A copy of the instrument used for the reflexive evaluation of the theory based on Patterson’s formal criteria is present in the next section under Instruments.

Data Collection

Data collection, which the American Psychological Association (2015) defined as "a systematic gathering of information for research or practical purposes" (p.282), includes the qualitative and quantitative data needed for theory building and the research questions, the data collection procedures, and data analysis throughout the research process. Additionally, the results of a business model concept feasibility study are discussed.

Qualitative and Quantitative Data Collection

Both qualitative and quantitative data collection were needed for the theory building and reflexive evaluation aspects of this study. Qualitative data (e.g., scholarly literature, case studies, and conceptual literature) were essential for steps 1-5 of the theory development phase to produce the theoretical framework as well as for answering Research Question 1. Simply put, the literature was the data (Torraco, 2005, p.360) for the theory development portion of the research study. Additionally, some qualitative data was also collected from the ‘comments’ sections of the reflective evaluation form which was used to answer Research Question 3. The specific procedures for qualitative data collection are discussed in the next sub-section on Data Collection Procedures.

Quantitative data collection was also required for step 8 of Dubin’s (1978) research procedure and for addressing Research Question 2. The quantitative data were

collected from an existing dataset in the public domain (i.e., business model pattern database; Remané et al., 2017) and used to test hypotheses deduced from the theoretical model. Permission to use the dataset was received from Gerrit Remané (personal communication, March 16, 2023).

Data Collection Procedures

Data collection procedures for the study consisted of two distinct techniques, one for the qualitative data and the other for the quantitative data. The qualitative data collection technique was an integrative literature review (Torraco, 2005b, 2016), which included a literature search, review, and synthesis of representative literature to produce new knowledge in the form of theoretical framework. Additionally, comments from the reflective evaluation form were collected for a thematic analysis of patterns in the comments. The quantitative data collection procedure involved double data entry (i.e., entered twice; PubMed, 1998) of the data contained Remané et al.'s (2017) dataset into an Excel spreadsheet because “a digital version of the database is not available any longer” (Remané, personal communication, March 16, 2023). The spreadsheet file was then upload into SPSS statistical software for data analysis. A complete listing of the data in Remané et al.'s dataset is presented in Appendix A.

Instruments

Two research instruments were utilized to collect data during the study. First, an Excel spreadsheet was used as a tool to collect the secondary data contained in Remané et al.'s (2017) dataset. The second research instrument employed in the study was the Theory Evaluation Form presented in Figure 14. This instrument collected data on the reflective evaluation of the theory, and the data were used to address Research Question 3.

Evaluator:
Organization:

Title:
Field of Research:

1. Importance - Rate and comment on the importance of "A Theory of the Business Model Concept". Patterson (1986) described importance of a theory as the quality or aspect of having some relevance to life, being applicable to more than a limited or restricted situation, or having acceptance by competent professionals or persistence in the literature. Rating: 1) 2) 3) 4) 5) 6) 7) 8) 9) 10) Comments:
2. Precision and Clarity - Rate and comment on the preciseness and clarity of "A Theory of the Business Model Concept". Preciseness and clarity have to do with how clear and understandable the theory is. "A theory should be understandable, internally consistent, and free from ambiguities" (Patterson, 1986, p. xx). Other indicators of clarity include the ease of relating the theory to practice and specifying propositions, hypotheses, and testing methods. Rating: 1) 2) 3) 4) 5) 6) 7) 8) 9) 10) Comments:
3. Parsimony or Simplicity - Rate and comment on the parsimony or simplicity of "A theory of the Business Model Concept". Parsimony means that a theory contains a minimum of complexity, is economically constructed with a limited number of concepts, and contains few assumptions (Patterson, 1986, p. xx). Rating: 1) 2) 3) 4) 5) 6) 7) 8) 9) 10) Comments:
4. Comprehensiveness - Rate and comment on the comprehensiveness of "A theory of the Business Model Concept". A theory is comprehensive if it completely covers the area of interest and includes all known data in the field. Rating: 1) 2) 3) 4) 5) 6) 7) 8) 9) 10) Comments:
5. Operationality - Rate and comment on the operationality of "A theory of the Business Model Concept". "A theory should be capable of being reduced to procedures for testing its propositions or prediction." (Patterson, 1986). Key concepts should be operationally defined with enough precision to be measurable. While not all concepts of a theory need to be operationalized, concepts can be used to indicate relationships and organization among concepts. Rating: 1) 2) 3) 4) 5) 6) 7) 8) 9) 10) Comments:
6. Empirical Validity - Rate and comment on the potential of the empirical validity of "A theory of the Business Model Concept" in terms of its support from experiments or experience that confirm or disconfirm the theory, new knowledge creation, and indirect stimulation of the development of better theory. Rating: 1) 2) 3) 4) 5) 6) 7) 8) 9) 10) Comments:
7. Fruitfulness - Rate and comment on the fruitfulness of "A theory of the Business Model Concept". The capacity of a theory to lead to predictions that can be tested and in turn leads to the development of new knowledge is referred to as its fruitfulness. The hypotheses or predictions are based on the theory's propositions. The propositions contribute to the fruitfulness of the theory and are tested through empirical research. Rating: 1) 2) 3) 4) 5) 6) 7) 8) 9) 10) Comments:
8. Practicality - Rate and comment on the practicality of "A theory of the Business Model Concept". A theory is practical if it is useful to researchers and practitioners in organizing their thinking by providing a conceptual framework for application. A theory allows the practitioner to move beyond the empirical level of trial-and-error application of techniques to the rational level of application of principles. Rating: 1) 2) 3) 4) 5) 6) 7) 8) 9) 10) Comments:
9. Comment on any other aspect of "A theory of the Business Model Concept" that has not been previously addressed.

Figure 14

Theory Evaluation Form Based on Patterson's Formal Criteria

Note: Adapted from Patterson, 1986; Holton and Lowe, 2007.

Data Analysis

The data analyses took place in each of the three consecutive phases of theory development, research operation, and theory evaluation. The theory development involved analyzing the literature data and synthesizing the knowledge in order to deduce the units of the theory, laws of interaction, boundaries, and system states. In the research operation, the data analyses involved using a statistical analyses software application (i.e., SPSS) to test whether the hypotheses of the empirical indicators had not been falsified and if the data demonstrated the hypotheses. I used associational inferential statistics (i.e., Chi-square tests) for testing the hypotheses of the theory and for identifying associations (or independence) of the empirical indicators of the theoretical constructs of the theory. The final data analyses activity involved thematic analysis (Braun & Clark, 2006) of the comments collected from the Theory Evaluation Form Based on Patterson's Formal Criteria. The thematic analysis required identifying and analyzing the patterns of terms and meanings (Braun & Clark, 2006) in the evaluation form comments.

Feasibility Study of Theory Building for the Business Model Concept

A feasibility study of theory building for the business model concept was completed in Spring 2020 to understand the phenomena in the literature, to formulate this proposal, and to assess whether quantitative data could be collected for empirically testing a theory. Scholarly literature was collected using the integrative literature review technique previously described in the Data Collection Procedure (i.e., Torraco, 2005b; Holton & Lowe 2007). Ten conceptual frameworks were selected for content analysis based on their common referencing in the literature (Massa et al., 2017), and the framework components were categorized to identify possible theoretical constructs of a

theory. Establishing potential theoretical constructs was important in order to search for a possible dataset with empirical indicators that would be needed for completing the research operation phase (i.e., steps 6-8) of Dubin's methodology. Four potential theoretical constructs of value, customer, infrastructure/value chain, and profit were established, and a suitable dataset was indeed located (i.e., Remané et al., 2017) with 12 dimensions that correspond to the potential theoretical constructs. Thus, the feasibility study provided a trial run of the qualitative data collection procedures for the proposed study and provided a degree of confidence in the existence of quantitative data needed for completing the research operation of Dubin's methodology.

Conclusion

The purpose of this chapter was to state and describe the methods for the research study and to explain the research approach, data collection, and data analysis activities. Some of the principle points of the Research Approach section were the adoption of functionalism as the research perspective, the use of Lynham's General Method of Theory-Building Research in Applied Disciplines to guide the research design, and the employment of Dubin's (1978) methodology as the primary research methodology. In terms of Data Collection, the salient points were the need for both qualitative and quantitative data, procedures for collecting both types of data (i.e., integrative literature and dataset input, respectively), and employment of a data collection instrument. Finally, the data analyses and a feasibility study were explained.

CHAPTER FOUR – RESULTS

This chapter presents the results of the research study conducted to develop and test a theory of the business model concept. The results include the methodological development of a scientific model, quantitative testing of hypotheses to determine support for the model, and a formal evaluation of the emergent theory. The study was guided by Dubin's (1978) applied theory building methodology and Patterson's (1986) formal criteria for theory evaluation. Using Dubin's methodology, the research goes through eight steps of theory building, including creating a taxonomy of the units (i.e., theoretical constructs) of the theory, specifying the laws of interaction and boundaries, stating the propositions and hypotheses, and quantitatively testing the empirical indicators of the units. The research was divided into three phases: theory development, research operation, and theory evaluation. Once the entire cycle of theory development, research operation, and theory evaluation was completed, the results can be considered a theory (S. Lynham, personal communication, February 26, 2024). Thus, this chapter reports the research results of developing and testing of a theory of the business model concept.

The results presented in this chapter also address the three primary research questions. The first research question is addressed in the theory development phase and responds to the research question, what is the theoretical framework of the business model concept? To answer this question, the study used Dubin's (1978) theory-building methodology, scholarly literature, and logic to identify, describe, and qualify the theoretical framework for the theory. In the second section of this chapter, which is the

research operation phase, the results address the research question, Is there an association between the individual empirical indicators for each theoretical construct? For this question, the research operation employed chi-square inferential statistics to assess the independence of empirical indicators for each unit of theory. The final section of this chapter addresses the third primary research question, what is the reflexive evaluation of the content and construct validity of the theory of the business model concept? In order to provide a prompt assessment of the emergent theory, the theory evaluation phase performed a reflexive evaluation in accordance with Patterson's (1986) formal criteria for theory (Patterson, 1986, p.xx). Figure 15 illustrates the organization of the results reported in this chapter according to the research phases and research questions, as well as a review of Dubin's theory building methodology as describe by Lynham (2006).

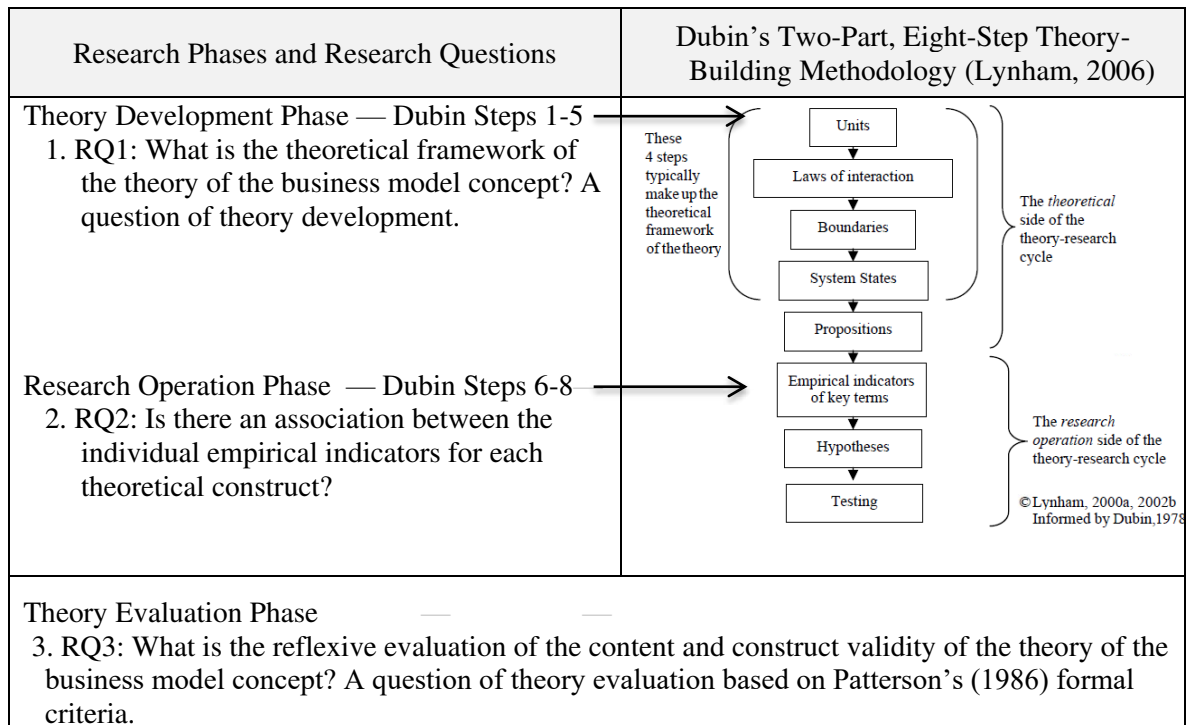


Figure 15

Chapter Organization by Research Phases, Primary Research Questions, and Dubin's Methodology

There are three additional notes about the presentation of the results in this chapter. First, a recurring presentation format is used to report the results for each of the eight steps in Dubin's (1978) methodology. The presentation format consists of three parts: method guidelines, research output, and a summary of the results that address the related research question. The second notice is that each stage of theory development or research operation output is reported in a consistent manner, including what the research produced, how the data were collected (or derived), what the data are, and what the output means. Lastly, it should be noted that Dubin's methodology is known as theory building because it frequently entails revising, testing, or expanding upon an existing theory. However, this research study is being approached as theory development because there is currently no formal, methodically developed, and published theory for the business model concept.

Theory Development Phase

The theory development phase of this study entailed completing the first five steps of Dubin's (1978) theory-building methodology. The five steps or methods included, (a) identifying and describing the units of the theory, (b) specifying the laws of interaction among the units, (c) determining the boundaries of the theory, (d) designating the system states of the theory, and (e) specifying the propositions (i.e., truth statements) of the theory. Each of the five steps' outputs was accomplished using scholarly literature, logical reasoning, and the researcher-theorist's applied knowledge. Collectively, the output produced a theoretical framework and answered the first primary research question, namely, what is the theoretical framework of the theory of the business model

concept. The framework is built upon four theoretical constructs, which Dubin (1978) designates as the units of the theory.

Theory Development - Step One: Identifying the Units of the Theory

The first step of theory development was to identify the units of the theory. This step consisted of three research activities: reviewing the body of literature on the business model concept, building a taxonomy of the units or most commonly cited properties of the concept, and producing descriptive research on the taxonomic properties of the concept as the "units" of the theory. Dubin's (1978) methodology uses the neutral and colorless term "units" as the foundational pieces or "building block(s) of theory" (p.37). The units of a theory are the properties of the concept, also known as the theoretical constructs, as described by scholars such as Suddaby (2010) and McIntire & Miller (2007). The following subsection contains several of Dubin's method guidelines for identifying the units of a theory, descriptive research on the units, and a summary and illustration of the units.

Method Guidelines

Scientific Inquiry. Dubin (1978) provided two critical guidelines for identifying the units of the theory, beginning with how the researcher approaches the scientific inquiry of a concept, and, most important, how the unit characteristics and unit types must fit together. Because researchers and scientists have limited ability to observe and comprehend abstract phenomena such as concepts, Dubin proposed using Kaplan's (1964) method of scientific inquiry. Kaplan's method entails analyzing the subject matter and categorizing the properties of the concept being studied. Based on this, the scientific inquiry method employed in the focal study was divided into two parts. First, a critical

analysis of the body of knowledge on the business model concept was performed (i.e., to identify the most frequently identified properties of the concept). Second, the most frequently identified properties were classified and used to create a taxonomy of those properties. The taxonomy was then used to define and describe the theory's units.

Unit Guidelines. According to Dubin (1978), before identifying a theory's units, the researcher-theorist must first understand the unit characteristics, unit types, and restrictions on unit type combinations. The five distinct and bivariate unit characteristics are: unit or event, attribute or variable, real or nominal, primitive or sophisticated, and collective or member. When identifying a unit of a theory, the researcher must select one bivariate characteristic over another based on a specific question. Table 10 describes each unit characteristic, as well as the specific question or distinction question. There also are five different unit types for the researcher to consider: enumerative, relational, statistical, associative, and summative. Researchers must carefully consider which unit types are used together in a theoretical framework to ensure that it is logically sound and does not violate any restrictions on unit type combinations. Table 10 also includes a list of the five unit types, as well as their descriptions and restrictions on unit type combinations.

Table 10*Method Guidelines for Unit Characteristics, Unit Types, and Unit Restrictions*

Unit Characteristics	Description	Distinction Question
Unit or Event	Unit must have (be able to count) two or more entries	A question of the number of occurrences
	Events are unique occurrence at a point in time and not numerous enough to be considered a unit	
Attribute or Variable	Attribute is a characteristic of a thing distinguished by being present or not present	A question of present-non-present or present in amount or degree
	Variable is a characteristic of a thing that may be present in amount or degree	
Real or Nominal	Real characteristic indicates that an empirical indicator is considered to be available to stand for a unit	A question of an empirical indicator for the unit
	Nominal characteristic indicates that an empirical indicator is NOT considered to be available to stand for a unit	
Primitive or Sophisticated	Primitive characteristic indicates an undefined starting point for the unit	A question of the theoretical starting point
	Sophisticated characteristic indicates a previously defined unit	
Collective or Member	Collective characteristic is that of the group	A question of reductionism; a set (i.e., class) or an element of a set
	Member characteristic indicates an individual element of the group	
Unit Types	Description	Examples
Enumerative Unit	A property of a thing or concept universally present in all conditions and system states; all members always possess the property	age, gender, social group size
Associative Unit	A property of a thing or concept present only in some of its conditions/states; the property's value may be positive, zero, or negative	formal education, income, affective response to a situation
Relational Unit	A property of a thing or concept that is determined or derivable by a relationship among two or more properties; the property maybe an interaction or a combination of properties	supervisor and subordinate interact for the property of subordination
Statistical Unit	A property of a thing; three classes: central tendency, dispersion, relative position	underachiever, middle class, underdeveloped
Summative Unit	A property of a thing or concept that stands for the entire complex thing; it draws together a number of different properties, without specifying the properties or the interactions; however, there is no utility employing this type of unit in theory building	under-developed economy, mass society, other-directed personality
Unit Restriction	Unit Type Combination Restrictions	
Relational Unit	A relational unit should not be combined in the same theory with an enumerative or associative units that are themselves properties of that relational unit.	
Statistical Unit Combinations	When a statistical unit is employed, it is by definition a property of a collective. Therefore, a statistical unit should not be combined with any other kind of unit (i.e., remunerative, associative, or relational) in the same theory.	
Summative Unit	A summative unit is derived from the interaction of a number of other properties. Because it can represent a number of properties and interactions, summative units are not employed in scientific models.	

Finally, Dubin (1978) stated that despite some researchers' depreciation of "purely descriptive research" (p.87), it is an essential form of research in the early stages of theory development. Furthermore, the more descriptive the research is (of the units of the theory), the more likely they are to be useful in future theory-building research. With this in mind, the descriptive research for each unit in the theory includes a definition, description, and specification of the unit's characteristics and unit type.

Scientific Inquiry Conducted to Identify the Units of the Theory

Critical Analysis of Literature. The first step in the research process to identify the units of the theory involved conducting a critical analysis of the relevant literature. The critical analysis required reviewing the body of knowledge on the business model concept, identifying the most frequently referenced conceptual frameworks in publication, and selecting multiple frameworks to build a taxonomy of the business model concept's constituent components. Based on the frequency with which they were cited in the literature, 11 conceptual frameworks were identified for use in a taxonomy of the units of the theory.

Build a Taxonomy of Units. Building a taxonomy of units involved analyzing the 11 conceptual frameworks, categorizing the components, and labeling the categories as the core properties of the concept. To categorize the frameworks' components, the constant comparison method was used with a "closed conventions" coding schema. The constant comparison method (as described in the Research Methods section of Chapter 3) sorted the conceptual framework components into several categories, based on a closed conventions coding schema (i.e., "well defined categories"; Stock, 1994, p.134) of 'a priori knowledge' developed by Morris et al. (2005). Morris et al.'s research found that

“the most consistently emphasized components [of a business model] concerned the value proposition, the customer, internal processes and competencies, and how the firm makes money.” (p.729). In order to use Morris et al.’s most consistently emphasized components as the coding schema (as well as to increase the level of abstraction of the resulting categories) several adjustments were made to the component labels. Specifically, the component labeled ‘value proposition’ was simplified to *value*; the ‘internal processes and competencies’ component was modified to *infrastructure*; and component ‘how the firm makes money’ was renamed to *profit*. The resulting categories were then used to build the taxonomy of units of the theory. Figure 16 illustrates the process used for building the taxonomy of units of the theory.

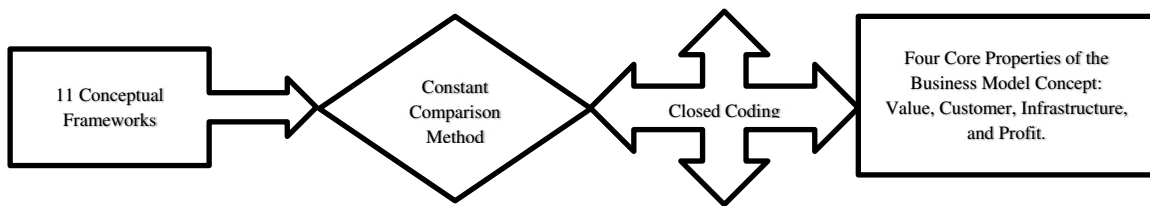


Figure 16

Process for Building the Taxonomy of Units for Business Model Concept

Table 11 displays the taxonomy built by categorizing the constituent components of 11 conceptual frameworks into four core properties for the business model concept. Dubin (1978) asserted, “we build our theories about the properties of things [i.e., concepts] rather than the things themselves” (p.40). The table's four central columns (with bold and shaded titles) show the four categories of components (i.e., the properties of the concept) for the business model concept, namely, profit, customer, value, and infrastructure. Of the 45 components listed in Table 11, 41 (91%) were successfully

categorized into the four central columns and categories. There were four components that could not be categorized via the coding schema, and notably, those four components came from two sources. The uncategorized components, which are listed in the right-most column, appear to be “complementary” components and “are thus defined only when applicable” (Pateli & Giaglis, 2004, p. 308). This means they are used in some business models but not all models. Aside from the uncategorized components, the taxonomy presented in Table 11 shows near consensus among the selected scholars regarding the core properties of the business model concept. The four core properties of the business model concept are subsequently identified and describe as the units of the theory (see Table 11 below).

Table 11*Taxonomy of Conceptual Framework Components Categorized into Four Core Properties*

Conceptual Framework Authors	Conceptual Framework Components Categorized into Four Core Properties				Uncategorized (Complementary*) Properties
	Value	Customer	Infrastructure	Profit	
Chesbrough and Rosenbloom (2002)	• value proposition	• market segment	• value chain	• cost structure and profit potential	
Hedman and Kalling (2003)	• offering	• customers	• activities & organization resources • supply of factors and production inputs		• Competitors • management/longitudinal process
Osterwalder (2004)	• product	• customer interface	• infrastructure management	• financial aspects	
Morris, Schindehutte, and Allen (2005)	• value proposition/offering	• customer/market	• internal capacities and competencies	• how to make money/economic	• competitive strategy • personal/investor growth
Richardson (2008)	• value proposition		• value creation and delivery system	• value capture	
Johnson, Christensen and Kagerman (2008)	• customer value proposition		• key processes • key resources	• profit formula	
Osterwalder and Pigneur (2010)	• offer	• customers	• infrastructure	• financial viability	
George and Bock (2011)	• value structure		• resource structure • transactive structure		
Baden-Fuller and Mangematin (2013)	• customer engagement/value proposition	• identifying customers	• value chain and linkages	• monetization	
Gassmann, Frankenberger, and Csik (2014)	• what	• who	• how	• value/profit	
Wirtz, Pistoia, Ullrich and Gottel (2016)	• value creation components	• customer and market components	• strategic components (resources, networks)		

Note: The uncategorized components listed in the right-most column are thought to be complementary (Pateli and Giaglis, 2004).

Identifying and Describing the Units of the Theory

The descriptive research that follows identifies the four units of the theory: value, customer, infrastructure, and profit. The units were identified, defined, described, and characterized using scholarly literature, logic, and the researcher-theorist's applied knowledge.

Value Unit. The first unit of the theory of the business model concept is value. In the context of a business model, value is commonly understood to mean "value for the customer" (Osterwalder, 2004) , as well as “all similarly associated demand-side notions of value” (Woodall, 2003, p.1). Remané et al.’s (2017) research suggests that value has two dimensions: products/service types (e.g., physical, financial, human, intellectual property, or hybrid) and strategies for value differentiation (e.g., quality, customization, combination, access/convenience, price, and network effects). After reviewing the taxonomy of units presented in Table 11, it is clear that scholar’s unanimously agree that value is a fundamental unit of the business model concept.

Value Unit Definition. The value unit has been defined as “a holistic view of a company's bundle of [benefits received from] products and services that are of value to the customer” (Gassmann et al., 2013, p. 2; Osterwalder, 2004).

Value Unit Description. Based on the literature and scholars descriptions, the value unit can be described as a comprehensive set of benefits that include the company or brand, the type of product or service it offers, and the various forms of value differentiation. In this context, value is viewed as beginning at the organizational level with the company's reputation (Osterwalder, 2004), progressing through the firm's internal processes and external value chain (i.e., supply chain; Porter, 1985), and ultimately being offered and delivered to the customer or consumer of the product or service. This means that value exists throughout the product or service's life cycle, from creation to purchase, use, support, and disposal (Osterwalder, 2004).

The value unit is affected by several factors that customers find important, such as cost, quality, customization, item combination, accessibility and convenience, and

network effects (Remané et al., 2017). Woodall (2003) stated that the considerations of intrinsic value, exchange value, use value, and utilitarian value are also included in the notion of value for customers. Intrinsic value is the quality or attribute of a product or service that has ‘worth’ to the customer. The term ‘exchange value’ refers to the extrinsic and quantifiable economic settlement that is taken into consideration whenever a product or service is transferred from one party to another (Woodall, 2003, p.4). Use value is a subjective form of value that seeks to satisfy an individual's unique and continuously changing needs or wants. Utilitarian value, which is more commonly known as the value proposition (equation), combines intrinsic and exchange values by calculating the bundle of benefits minus the cost (in relevant currency) that results in a net value for the customer (Woodall, 2003, p.8). Figure 17 illustrates the notion of *value* in terms of a value proposition equation (Barnes et al., 2009).



Figure 17

Value Proposition Equation

Value Unit Characteristics and Type. The value unit has five unit characteristics and one unit type. The value unit characteristics are: unit (i.e., sample population exceeds one), variable (i.e., varies in amount or degree), real (i.e., empirical indicators are available), sophisticated (i.e., previously defined starting point), and collective (i.e., group-wide characteristic). The unit type of value is enumerative, which means that it is a property of the thing in all conditions or states in the theory (Dubin, 1978).

Customer Unit. The second unit in the theory of the business model concept is customer. According to Remané et al. (2017), the customer unit has two dimensions: target customers and the value-delivery processes employed to provide value to consumers (e.g., customer relationship management). Incorporating the customer unit into the theory is consistent with the majority of the conceptual frameworks examined for the taxonomy of units presented in Table 11. Two frameworks in particular placed the customer unit at the center of their conceptual frameworks. First, Morris et al. (2005) argued that defining the customer is a critical factor in a venture's success or failure. Second, Gassmann et al. (2013) placed the customer unit at the middle of their "magic triangle" and highlighted it as the "central dimension in designing a new business model" (p. 2).

Customer Unit Definition. The term customer as it pertains to a business model has been defined as “all customer related aspects. ... the choice of a firm's target customers, the channels through which it gets in touch with them and the kind of relationships the company wants to establish [and maintain] with its customers.” (Osterwalder, 2004, p.60)

Customer Unit Description. The customer unit is simply described as "how and to whom" the company wishes to deliver its value proposition (Osterwalder, 2004, p. 60). Remané et al.'s (2017) research reported that the customer unit involves several aspects in the dimensions of target customer and value-delivery processes. Remané et al. (2017) research discovered that the customer unit encompassed multiple aspects in the two dimensions of target customers and value-delivery processes. Target customers include both new and existing customer groups, market segments, and other business-to-business

customers with whom the company does business. The value-delivery processes including branding and marketing, sales channels, sales models, and customer relationship management. Substantially, the customer unit directs a company's attention toward a specific target market(s) and conducts outreach to those customers.

Customer Unit Characteristics and Type. The customer unit's characteristics and unit type determine the nature of the unit and what is known about it. The customer unit has the following characteristics: unit (i.e., the sample population is larger than one), variable (i.e., the amount or degree varies), sophisticated (i.e., the research has a defined starting point), and collective (i.e., it represents a group characteristic). The customer unit type is an enumerative unit because it is a property of the thing in all conditions and states described in the theory.

Infrastructure Unit. The third unit of the theory of the business model concept is infrastructure. Remané et al. (2017) identified the infrastructure unit as having three dimensions: sourcing, third-party involvement, and value-creation processes, which are discussed in greater detail below. The inclusion of the infrastructure unit in the theoretical framework is justified by its unanimous presence in all 11 conceptual frameworks of the used in the taxonomy of units, as presented in Table 11.

Infrastructure Unit Definition. The infrastructure unit is defined as “the value system configuration that is necessary to deliver the value proposition” (Osterwalder, 2004, p.79).

Infrastructure Unit Description. According to Remané et al. (2017), scholars have described infrastructure in the context of business model in three ways: sourcing of the product/service, third-parties involvement, and value-creation processes. Sourcing

refers to the decisions and activities that determine whether to manufacture or purchase a product or service. Third-party involvement has to do with the decisions and actions concerning suppliers, customers, competitors, or multiple parties. Last, value-creation processes involve research and design, supplies, production, and multiple steps.

Scholars have described infrastructure in the context of the business model using a variety of other terms and approaches. Some of those terms include infrastructure management (Osterwalder, 2004), internal capabilities and competencies (Morris et al., 2005), key resources, key activities, and key partnerships (Osterwalder & Pigneur, 2010), strategic components (Wirtz et al., 2016), and value chain (Chesbrough & Rosenbloom, 2002; Gassmann et al., 2013; Osterwalder, 2004). Perhaps the most significant of these is value chain. As described by Porter (1985), a value chain is comprised of a company's value creation activities that are organized into nine generic categories: firm infrastructure, human resource management, technology development, procurement, inbound logistics, operations, outbound logistics, marketing and sales, and service. In other words, a value chain is analogous to the infrastructure unit; it encompasses an organization's entire infrastructure from supply to demand.

Infrastructure Unit Characteristics and Type. The unit characteristics and unit type for the infrastructure unit are consistent with the preceding two units. The unit characteristics are as follows: unit (i.e., a sample population in excess of one), variable (i.e., variation in degree or amount), sophisticated (i.e., research has a clearly defined starting point), and collective (i.e., the group shares a particular characteristic). The infrastructure unit type is also an enumerative unit, representing the property of the thing in all conditions and states defined in the theory.

Profit Unit. Profit is the fourth and final unit of the theory for the business model concept. In this context, the profit unit is often viewed pragmatically and expressed in the statement "How we make money" (Morris et al., 2005, p.730). Considering that the fundamental nature of a business is to offer goods and/or service in order to make a profit (Nickels et al., 2016), it is logical to include profit as a unit in the theory of the business model concept.

Profit Unit Definition. The profit unit is defined as “the outcome of the rest of the business model’s configuration ...[and] is composed of the company’s revenue model and its cost structure” (Osterwalder, 2004, p.95).

Profit Unit Description. Remané et al. (2017) classified the profit unit into three dimensions: revenue models, pricing strategy, and direct profit effects. Revenue models pertain to the activities and decisions made about whether and how to sell, lend, intermediate, and advertise the company's products or services. Pricing strategies are describe and classified as premium, cheap (i.e., inexpensive), dynamic, or non-transparent. Last, direct profit effects include organizational configurations to increase revenue, reduce costs, or leverage multiple effects. Other business model scholars have described profit in terms of financial aspects (Osterwalder, 2004), how the firm makes money (Morris et al., 2005), value capture (Richardson, 2005), profit formula (Johnson et al., 2008), monetization (Baden-Fuller and Mangematin, 2013), or simply "why" (Gassmann et al., 2014, p2) the business model is financially viable.

Profit Unit Characteristics and Unit Type. The profit unit characteristics and unit type are consistent with other units in the theory. The profit unit has the following characteristics: unit (i.e., the population is greater than one), variable (i.e., it varies in

amount or degree), sophisticated (i.e., there is a defined starting point for the unit), and collective (i.e., it is a common characteristic of the group).

Summary of the Units of the Theory of the Business Model Concept

Theory development step one identified, described, and characterized the units of the theory of the business model concept as value, customer, infrastructure, and profit.

These results also answered the research sub-question, what are the units of the theory?

Figure 18 depicts the units of the theory (in a specific visual order based on their presumed interactions) and Dubin's eight-step methodology. The next step of theory development is to investigate the laws of interaction between the units of the theory.

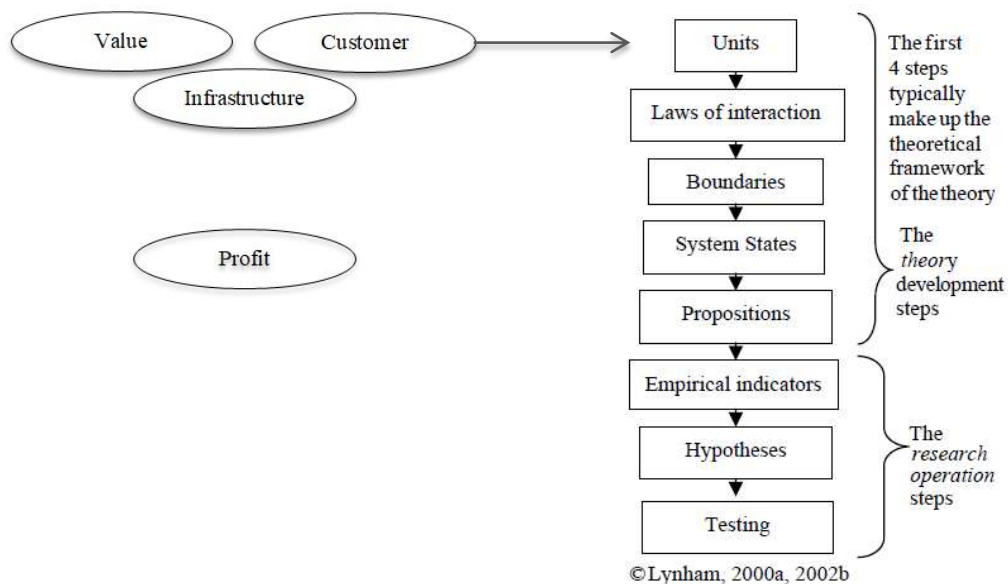


Figure 18

Four Units of the Theory of the Business Model Concept and Dubin's eight-step methodology

Theory Development - Step Two: Laws of Interaction of the Theory

Theory development step two involved specifying the relationships among the units in the theory, also known as the laws of interaction. The research-theorist derived the statements of the laws of interaction from scholarly literature and applied knowledge, with a particular focus on the types and efficiency of the relationships under consideration (Dubin, 1978). Dubin defined laws of interaction as “the linkages among units of a model” (p.90), emphasizing that this is “an indispensable step in developing a scientific model” (p.89). Upon completing this step, “the model is cranked up to operate” beyond a taxonomy of units (p.91). Dubin emphasized that laws of interaction themselves are never measured, and most importantly, they are not necessarily a statement of causality. Laws of interaction are simply the specifications of the existence, type, and efficiency of unit interactions. The following subsection presents the method guidelines for stating laws of interaction, the research and specification of the laws of interaction for the business model concept, and a summary and illustration of the results.

Method Guidelines

Laws of Interaction. According to Dubin's (1978) method guidelines for stating the laws of interaction, a law has two components, three general categories, and four levels of efficiency. A law consists of two analytically distinct components: the units and the relationship that connects them. The three general categories of laws of interaction are: categoric, sequential, and determinant. A categoric law states that the values of a unit are associated with the values of another unit, and these laws typically employ the phrasing “is associated with” (Dubin, 1978, p.101). Sequential laws use a time dimension

to convey the temporal order or sequence of unit interactions, or, in other words, to indicate that one unit (or units) precedes another. Sequential laws of interaction frequently employ phrases such as 'preceded by' or 'succeeded by' (Lynham 2000). Finally, a determinate law “associates [the] determinate values of one unit with [the] determinate values of another unit” (Dubin, p.106). The four levels of efficiency of a law are (from lowest to highest): presence-absence, directionality, co-variation, and rate of change. Table 12 summarizes the three general categories of laws of interaction and the four levels of efficiency.

Table 12

Method Guidelines for Categories of Laws of Interaction and Levels of Efficiency

Categories of Laws	Description	Common Phrasing
Categoric	A categoric law states that the values of a unit are associated with the values of another unit; most laws in social science and behavioral science literature are categoric	• “a greater than chance” • “associated with” • “expected to influence”
Sequential	A sequential law always employs a time dimension to order the relationship in an implied temporal sequence	• “if and only if” • “succeeded by” • “preceded by”
Determinate	A determinate law associates determinate values of one unit with determinate values of another unit	• “inverse ratio”, • “positively related” • “negatively related”
Levels of Efficiency	Description of Efficiency from Lowest to Highest	Distinctions
Presence-Absence	States that with the presence of a positive/negative value of unit A, there will be a corresponding positive/negative value of unit B (lowest efficiency)	• Categoric laws cannot rise above this level of efficiency • Sequential laws may achieve any level of efficiency
Directionality	Proclaims the directionality of a relation between the values of one unit and the values of another (second level)	• Sequential laws may achieve any level of efficiency • Determinate law is always at the second level or higher
Co-variation	Expresses co- variation between two or more units. (third level)	• Determinate law • Sequential law
Rate Of Change	Expresses the rate of change in values of one variable with the associated rate of change in the values of another unit. (highest level)	• Determinate law • Sequential law

Dubin (1978) highlighted one other point regarding the general knowledge of laws. Laws of interaction are defined by researchers-theorists, so they are limited by what the human mind can comprehend and subject to change.

Specifying the Laws of Interaction of the Theory

The laws of interaction in the theory of the business model concept include all of the units interacting with one another. The laws were derived using a combination of scholarly literature, applied knowledge, and logical reasoning. Teece (2010) identified a relationship between the value unit and the customer unit, stating that a business model articulates how a company creates value based on an understanding of customer needs. A business also proceeds to deliver the value to customers through its infrastructure and subsequently converts customers' payments into profits. Teece described the interactions of the core aspects of business as its "organizational and financial architecture" (p.173), creating value based on customer needs, delivering value to customers via infrastructure, and converting payments to profit. Based on this organizational architecture, it is within reason for the researcher-theorist to make assumptions that profit also has an inverse or an upstream effect on the product or service's value, the target customer, and various aspects of infrastructure. This means that all four units of the theory of the business model concept have linkages or interactions with each other (i.e., producing six categoric laws); and the three units of value, customer, and infrastructure precede the profit unit (i.e., producing one sequential law).

Categoric Laws of Interaction of the Theory. Six categoric laws of interaction specify how the four units of the business model concept theory interact with one another.

A categoric law, as describe previously in Table 12, states that “values of a unit are associated with values of another unit” (Dubin, 1978, p.98). Dubin also noted that it makes no difference which unit comes first in the statement of a law because "categoric laws are symmetrical" (p. 100). The six categoric laws of interaction of the business model concept are:

1. The value unit is associated with the customer unit.
2. The customer unit is associated with the infrastructure unit.
3. The infrastructure unit is associated with the value unit.
4. The profit unit is associated with the value unit.
5. The profit unit is associated with the customer unit.
6. The profit unit is associated with the infrastructure unit.

Sequential Law of Interaction of the Theory. There is one sequential law interaction of the theory of the business model concept. This law indicates the existence of a temporal interval or time dimension "used to order the relationship among two or more units" in theory (Dubin, 1978, p.101).

The sequential law of interaction of the business model theory is:

1. The units of value, customer, and infrastructure precede the profit unit.

Succinctly put, the value unit, customer unit, and infrastructure unit take place before interacting with the profit unit. Osterwalder (2004) described this sequential relationship of profit as “transversal because all other pillars [i.e., units of the theory] influence it [profit)]. This block [the profit unit] is the outcome of the rest of the business model’s configuration” (p.95).

Figure 19 illustrates the laws of interaction of the theory of the business model concept alongside Dubin's eight-step methodology.

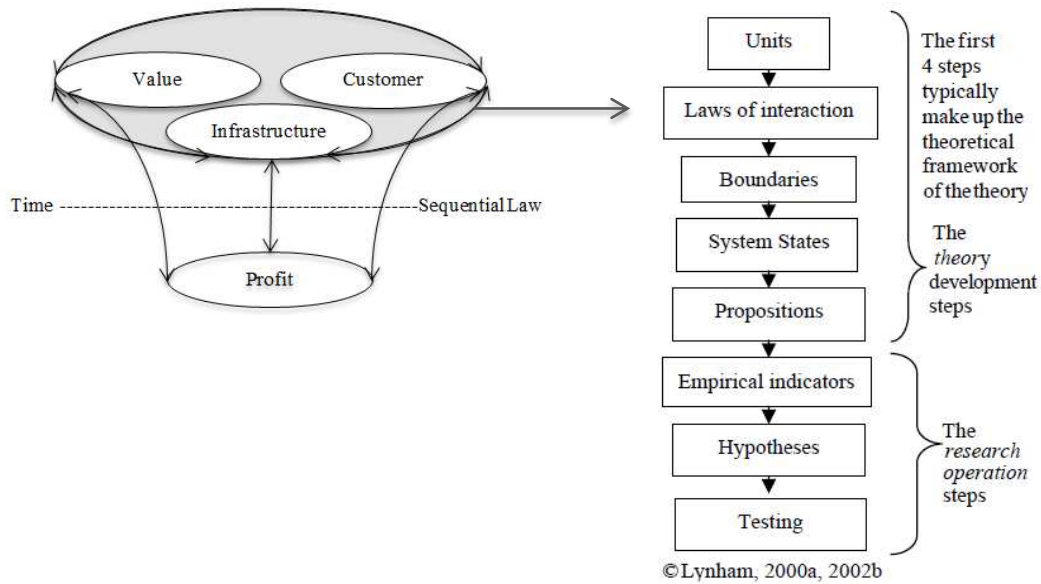


Figure 19

Six Laws of Interaction of the Theory of the Business Model Concept and Dubin's eight-step methodology

Note: The solid lines represent the six categoric laws of interaction, and the dashed line represents the sequential law of interaction.

Summary of the Laws of Interaction of the Theory of the Business Model Concept

The laws of interaction among the units of the business model concept include six categorical laws and one sequential law. These laws also answer the research sub-question, what are the laws of interaction of the theory? The laws of interaction of the theory are as follows:

Categoric laws of interaction of the theory of the business model concept:

1. The value unit is associated with the customer unit.

2. The customer unit is associated with the infrastructure unit.
3. The infrastructure unit is associated with the value unit.
4. The profit unit is associated with the value unit.
5. The profit unit is associated with the customer unit.
6. The profit unit is associated with the infrastructure unit.

Sequential law of interaction of the theory of the business model concept:

1. The units of value, customer, and infrastructure precede the profit unit.

The next step in Dubin's theory-building methodology involves using the laws of interaction to determine the boundaries of the theory.

Theory Development - Step Three: Boundaries of the Theory

Theory development step three determined the boundaries of the theory and established the empirical environment in which the scientific model being developed is expected to operate in the real world. According to Dubin (1978), a scientific model is bounded when the limiting values of the units of the model are determinant. To determine the limiting values of the units, the research-theorist commonly employs logic in a dimensional analysis of homogeneity of the characteristics of the units and the laws of interaction to establish "boundary-determining criteria" (p.126). In other words, the researcher states the boundary-determining criteria to establish how the units of the theory fit inside the boundaries (i.e., interior and exterior) of the scientific model. The bound-determining criteria also establish where the interior and exterior boundaries of the model are located, as well as whether the model has open or closed boundaries. Dubin used a well-known logical syllogism to describe how units of a model fit inside (and share) boundary-determining criteria. The syllogism is: All men think; Plato is a man;

therefore, Plato thinks. The following results describe how the boundaries of the theory were researched, specified, and logically deduced. As in the previous methodological steps, the method guidelines are described first, followed by the research and specification of the boundaries, and finally by a summary of the theory's boundaries.

Method Guidelines

Boundaries. Dubin (1978) stated there are two options for establishing boundary-determining criteria, two general classes of criteria, and two conventions for exchange over boundaries. The two options for establishing boundary-determining criteria are to use logic, such as a syllogism, or to conduct an empirical test to determine whether the boundary-determining criteria are in fact the reality. The two general classes of criteria are interior and exterior. Interior boundary criteria are those derived using the characteristics of the units and the laws of interaction of the theoretical model. Dubin (1978) listed several procedures for finding interior boundaries, including using truth tables, limiting the probability of unit values, sub-setting the limits of a model, and using asymptotes with the laws of interaction and the scientific model. In terms of establishing exterior boundary criteria, Dubin noted that the most common occurrence is when the researcher-theorist admits that a new unit or a law of interaction (or both) are required for the model to extend beyond the believed exterior of the domain.

Dubin (1978) also pointed out that the two conventions for exchange over boundaries are: open boundaries and closed boundaries. An open boundary is one in which there is some type of exchange between the theoretical model's system and that of the external environment. A closed boundary is viewed as one in which there is no exchange between the system and its environment. In the current research study, a logical

sylllogism was developed to establish the boundary-determining criteria, the domains were sub-set (e.g., assigned designations such as "A" and all others are "not-A") to determine the interior and exterior boundary criteria, and the research-theorist's applied knowledge was used to establish the model's open and closed boundaries.

Determining the Boundaries of the Theory

Determining the boundaries of the theory involved using scholarly literature, logic, and applied knowledge about various forms of commerce. First, scholarly literature was used to determine the organizational levels at which a business model concept can be applied within a business. Wirtz et al. (2016) conducted a meta-analysis of business model literature and reported that scholars have described the business model as being employed at several organizational levels, including the product level, business unit level, and company level. Moreover, the research revealed that the "converging business model view" holds that a business model is most commonly used at the company level (Wirtz et al., 2016, p.38). In addition to this—and most notably, some scholars have unequivocally stated that “every organization ... has a theory of the business” (Drucker, 1994), "all companies have a business model" (Sandulli & Chesbrough, 2009, p.1) and "all businesses, either explicitly or implicitly, employ a particular business model" (Teece 2010, p. 191). These scholarly propositions were subsequently used for the major and minor premises of a logical syllogism to establish the boundary-determining criteria of the scientific model.

Boundary-Determining Criteria. The boundary-determining criteria for the scientific model of the business model concept involved using a predicate-logic syllogism. Predicate logic employs “sentences [that] express propositions and [the] propositions

denote truth-conditions ... Its basic elements (entities) correspond to things in the world and their properties (predicates)” (Boston University, 2008.p2). To specify the boundary-determining criteria for the business model concept, the syllogism’s major premise was founded on the research-theorist’s proposition that *All businesses can be described at several organizational levels (i.e., product/service level, business unit level, company level)*. The syllogism’s minor premise is based on the scholarly literature (i.e., Wirtz et al., 2016) cited above that *The business model concept can be applied at several organizational levels (i.e., product/service level, business unit level, company level)*. The syllogism’s conclusion follows logically, *Therefore, the business model concept can be applied to all businesses*. In this syllogism, the term ‘businesses’ infers operating for a profit (Nickels et al., 2016). This point is important because corporations and organizations operating without the expressed intent of earning a profit (e.g., non-profits corporations, not-for-profit organizations, and governmental organizations) reside outside the scientific model and in the external commerce environment.

The boundary-determining criteria for the business model concept are outlined in the following predicate logic syllogism, followed by the symbolic logic proof (A. Huff, personal communication, February 15, 2024).

1. All businesses can be described at several organizational levels (i.e., product/service level, business unit level, company level).
 $\forall x (Bx \rightarrow Ax)$
(Reads: For every x, if x is a business, then x has several organizational levels.)
2. The business model concept can be applied at several organizational levels (i.e., product/service level, business unit level, company level).
 $\forall x (Ax \rightarrow Mx)$
(Reads: For every x, if x has an organizational level, then this business model concept applies to x.)

3. Therefore, the business model concept can be applied to all businesses.

$$\forall x(Bx \rightarrow Mx)$$

(Reads: For every x , if x is a business, then this business model concept applies to x .)

Predicate Logic Key:

B = all businesses

A = several organizational levels

M = the business model concept applies

Proof:

1. $\forall x (Bx \rightarrow Ax)$
2. $\forall x (Ax \rightarrow Mx) // \forall x (Bx \rightarrow Mx)$
3. $Bx \rightarrow Ax$ UI 1
4. $Ax \rightarrow Mx$ UI 2
5. $Bx \rightarrow Mx$ HS 3,4
6. $\forall x (Bx \rightarrow Mx)$ UG 5

(A. Huff, personal communication, February 15, 2024)

Figure 20 illustrates the predicate logic syllogism and the boundary-determining criteria for the theoretical model of the business model concept.

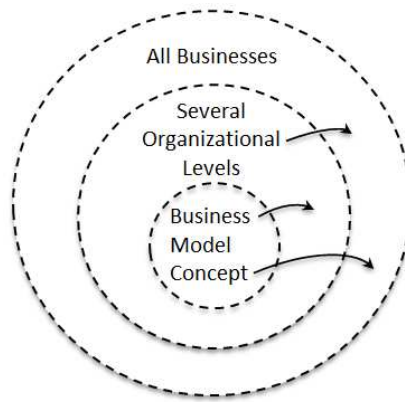


Figure 20

Boundary-Determining Criteria for the Scientific Model of the Business Model Concept

Once the boundary-determining criteria were established, the next step involved specifying the boundary classes or the interior and exterior boundaries criteria of the

scientific model. These boundaries were derived using the researcher-theorist's applied knowledge and logic.

Interior and Exterior Boundaries. The interior and exterior boundaries mirror the boundary-determining criteria of the scientific model with the addition of the aggregate environment of 'All Other Forms of Commerce'. To establish both classes of boundaries, the method of sub-setting (Dubin, 1978) was employed. Sub-setting involved using affirmative criteria (i.e., 'all A' and 'all others not-A') to distinguish the model's boundaries based on characteristics of categories of domains. The interior boundaries are based on the boundary-determining criteria in the predicate logic syllogism and reflect the 'all A' domains of the scientific model, the organizational levels (i.e., product, business unit, and company), and all businesses. The exterior boundary criteria, which would require the scientific model to add a new unit and/or a new law of interaction, reflects the domain of 'all others not-A'. This exterior domain of 'all other forms of commerce' is beyond the business for-profit environment because transactions in this domain alter or negate the profit unit of the scientific model. Some examples of this exterior domain include nonprofit corporation, charitable foundations, and governmental organizations. Substantially, the interior and exterior boundaries establish the domain of the scientific model, the limits of the model, and the other forms of commerce environment outside of the model. Figure 21 illustrates the interior and exterior boundaries of the theory of the business model concept.

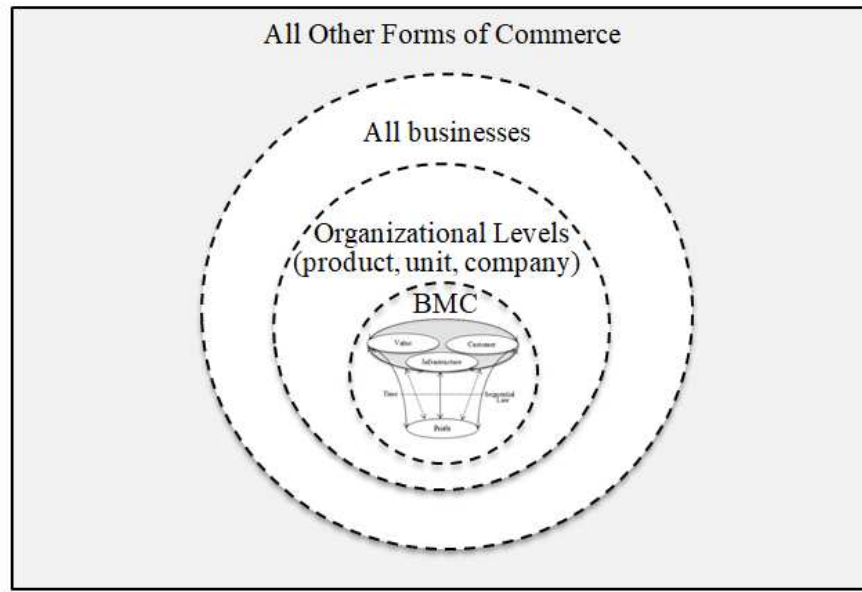


Figure 21

Interior and Exterior Boundaries of the Theory of the Business Model Concept

Note: The business model concept (BMC) is the central element in the illustration.

The interior boundaries, which also are open boundaries, are depicted using dashed lines, and the exterior boundary, which is a closed boundary, is represented with the solid line.

Open and Closed Boundary Classes. The theoretical model of the business model concept includes several open boundaries as well as one closed boundary. Open boundaries encounter exchange over the boundary lines between the system (i.e., the scientific model) and the surrounding environment. All interior boundaries in the scientific model of the business model concept are open boundaries because there is exchange between the systems (i.e., product to business unit, business unit to company, and company to all businesses) and the bordering environment. Chesbrough (2006) has written extensively on open business models, where external stakeholders (e.g.,

programmers, industry partners, and even customers) are involved in a company's business model. The only closed boundary is that of the environment beyond the domain of 'all other forms of commerce' (i.e., "exchange or buying and selling of commodities"; Merriam-Webster, commerce, n.d., Definition 2). Some examples transactions in the exterior domain might include free, donations, grants, frauds, fraud, etc. In the exterior domain, the business model concept is defunct because at least two units in the scientific model (e.g., value, customer, or profit) are not applicable, and thus destroying the model. Figure 22 depicts the boundaries of the theory of the business model concept alongside Dubin's eight-step methodology.

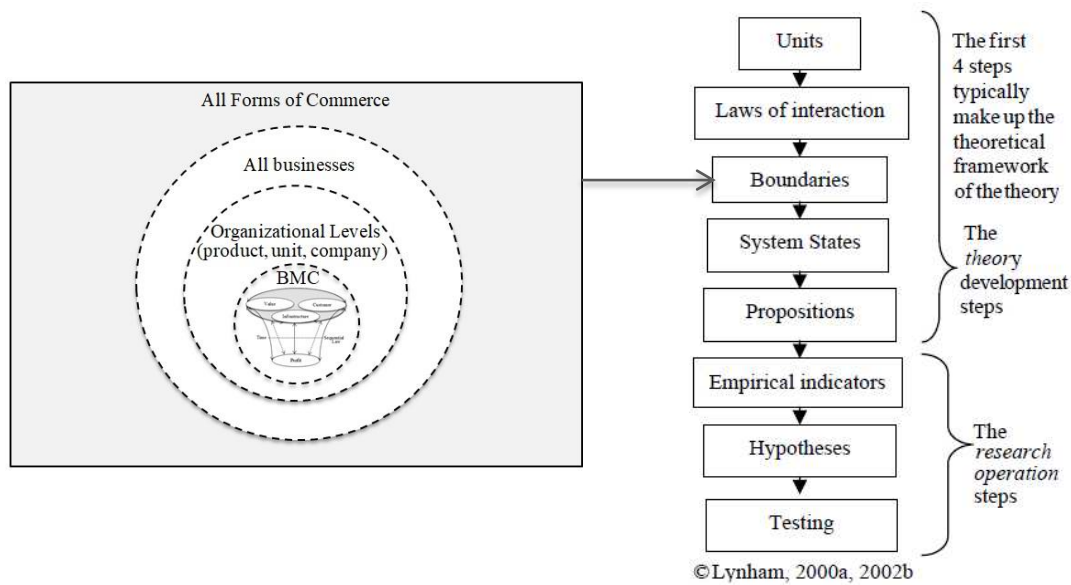


Figure 22

Four Boundaries of the Theory of the Business Model Concept and Dubin's eight-step methodology

Note: The dashed lines are open boundaries, and the solid line is a close boundary.

Summary of the Boundaries of the Theory of the Business Model Concept

The theory of the business model concept has four boundaries, and those boundaries provide an answer for the research sub-question, what are the boundaries of the theory? The boundaries of the theory of the business model concept include:

1. An interior and open boundary encompasses all units (i.e., value, customer, infrastructure, and profit) of the scientific model
2. An interior and open boundary encompasses several organizational levels (i.e., product, business unit, company) in a business
3. An exterior and open boundary encompasses all-businesses and represents the limit of the empirical domain and the scientific model
4. An exterior and closed boundary exists outside the empirical domain of the scientific model

These four boundaries inform the next step in the development of the scientific model as a whole system (Dubin, 1978, p.144), which specifies the theory's system states.

Theory Development - Step Four: System States of the Theory

Theory development step four uses the image of the scientific model developed up to this point, which includes the taxonomy of units, laws of unit interactions, and the model's bounded domain, to designate the model's various system states as a whole (Dubin, 1978). A system state is a condition of the system being modeled in which all units of the scientific model have a distinct value for a persistent period of time (Dubin, 1978). In essences, system states designate the conditions in which the scientific model is in operation (Dubin, 1978; Lynham, 2000). In this forth step of theory development, the

following are presented: the method guidelines, the research and designation of the scientific model's system states, and a summary of the findings.

Method Guidelines

System States. Dubin (1978) highlighted two important distinctions that need consideration when designating the states of a system. A system state was defined as having three distinct features or criteria:

1. All units of the system have characteristic values—indicating inclusiveness.
2. The characteristic values of all units are determinant of its nature—indicating distinctiveness
3. The arrangement of unit values persists though time—indicating persistence.

Dubin (1978) highlighted the importance of the first criterion (i.e., inclusiveness), which assists the researcher in distinguishing between two conditions: unit outcomes and system states. Unit outcomes are special conditions (i.e., distinct values) of one or more units of the scientific model, but not all units. The second criterion of distinctiveness (also referred to as determinant) means that values of each unit are measurable and distinctive for that state of the system (Dubin, 1978, p.148). The third criterion of persistence requires that the system state persists long enough to be observed by the researcher-theorist. These three distinct criteria of a system state, namely, inclusiveness, distinctiveness, and persistence must all be met to distinguish a system state (Dubin, 1978).

Another important distinction for consideration when designating a system state is examining the categories of laws of interaction employed in the scientific model (Dubin, 1978). Each category of law has a particular format for indicating a system state. For

example, a system state characterized by a categoric law commonly employs the phrasing: “If... , then..., under conditions of... ” (p.152). Table 13 presents the three laws of interaction (i.e., categoric, sequential, and determinate) along with the format for indicating system states.

Table 13

Format for Indicating System States

Law of Interaction	Format for Indicating System States
Categoric	If..., then... under conditions of
Sequential	A change in the value of A (in a given direction; by a given amount; in and by both) is accompanied by a change in values of B (in a given direction; by a given amount; in and by both) under conditions...
Determinate	A change in the value of A (in a given direction; by a given amount; in and by both) is followed in time by a change in values of B (in a given direction; by a given amount; in and by both)

Designation of the System States of the Theory

Research on the system states of the business model concept revealed two system states: design/non-operational and implementation/operational. The research involved reviewing the business model innovation body of literature (i.e., discussed in Chapter Two) and synthesizing the knowledge. As noted in the second chapter’s literature review, business model innovation can be viewed as both a process and an outcome (Bucherer et al., 2012; Markides, 2006). To identify the system states for the scientific model being developed, the scholarly literature from Frankenberger et al. (2013), Geissdorfer et al. (2017), and Wirtz and Daiser (2018) was reviewed and synthesized. Each of these scholars described multiple phases of business model “design”, which Frankenberger et al. called a “meta-phase” (p.13), which takes place before the actual implementation of a business model. Table 14 depicts each these scholars' perspective on the various stages of

design/non-operation, implementation/operational, and post-implementation. It is important to note that post-implementation (Wirtz and Daiser, 2018) is a circular and iterative process that re-engages with the design/non-operation (Frankenberger et al., 2013; Geissdorfer et al., 2017) , therefore it is not deemed as a separate system state.

Table 14

Scholarly Research of Business Model System States

Authors	System State: Design/Non-operational	System State: Implementation/ Operational	System State: Post-Implementation (Circular and Iterative Reengages the Design State)
Frankenburger et al. (2013)	• Initiation • Ideation • Integration	• Implementation	
Geissdorfer et al. (2017)	• Ideation • Concept Design • Virtual Prototyping • Experimenting • Detail Design • Piloting	• Launch	• Adjustment and Diversification
Wirtz and Daiser (2018)	• Analysis • Ideation • Feasibility • Prototyping • Decision Making	• Implementation	• Sustainability

System State: Design/Non-Operation State. The design/non-operation state occurs in entrepreneurial settings or when a company is undertaking the process of innovating its existing business model. During this system state, some units may have measurable values (e.g., value unit, customer unit, infrastructure unit). However, in most cases (except in cases of limited implementation such as pilot tests, trial-and-error, experimentation; Frankenberger et al., 2013) the profit unit does not take on a value. Consequently, the design/non-operation system state does not meet the criteria for

inclusiveness, and the system is not considered operational. Figure 23 illustrates the design/non-operational system state with the profit unit out-of-focus.

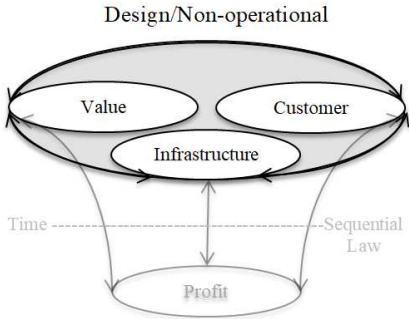


Figure 23

Design/Non-operational System State of the Business Model Concept

System State: Implementation/Operational State. When the business model is in the implementation/operational state, all units have values, the values are distinctive, and the system state persists for a period of time. The business model is categorized as operative in the implementation/operational state because it satisfies the three criteria of inclusivity, distinctiveness, and persistence in this system state.

Once implementation is complete, scholarly research suggests that there are post-implementation activities (e.g., Teece, 2010). Some post-implementation activities include reflection, adjustment, and diversification (Geissdoerfer et al., 2017) and “deconstruction and evaluation” (Teece, 2010, p.188). These activities re-engage with the person or team responsible for the business model innovation initiative (Wirtz and Daiser, 2018) and the person, team, or organization may well repeat the entire design/non-operational processes (Geissdoerfer et al., 2017). Therefore, the post-implementation

activities are assumed to be grounded in the design/non-operational state and not a separate system state.

Figure 24 depicts the implementation/operational system state with all four units of the theory taking on distinct values for a persistent duration of time.

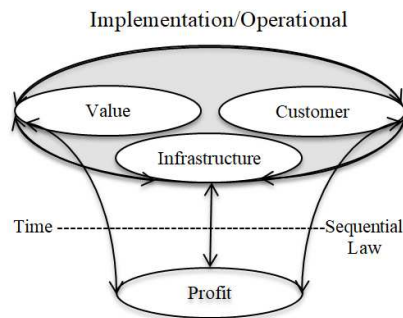


Figure 24

Implementation/Operational System State of the Business Model Concept

Figure 25 illustrates the system states output for Step Four of Dubin's methodology.

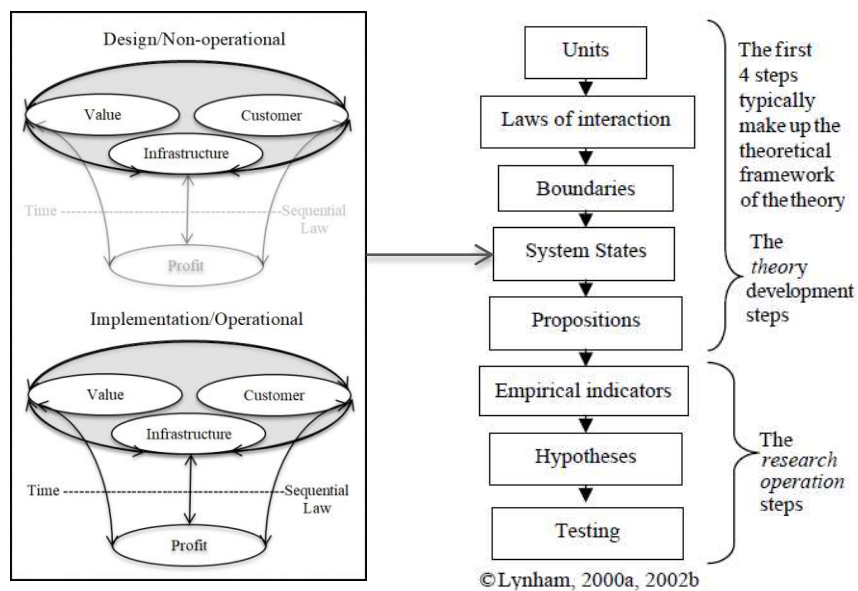


Figure 25

Two System States of the Theory of the Business Model Concept and Dubin's eight-step methodology

Summary of the System States of the Theory of the Business Model Concept

There are two system states in the theory of the business model concept: design/non-operational and implementation/operational. The design/non-operational state is affected by the categorical laws of interaction (i.e., specified in Step Two) and the general format (i.e., common phrasing) is followed accordingly. The phrasing format for sequential laws is also followed for the implementation/operational state. The system states of the business model concept are designated as:

1. Design/non-operational state: If the values of one or more units are equal to zero, then the theory is in a system state of design/non-operational under the conditions that the profit unit is equal to zero.
2. Implementation/Operational state: A change in the value of all units of the theory to non-zero is accompanied by a change in value of the profit unit to non-zero, under conditions the theory is in operation.

Together, these system states answer the research sub-question, what are the system states of the theory? With the addition of system states, Dubin (1978) described the scientific model as functioning as an entire system. "One of the purposes of any scientific model is to generate prediction [i.e., propositions] about the empirical domain it represents" (Dubin, 1978, p.159). Thus, the next step in the theory's development is to generate propositions or truth statements about the values taken on by units of the model in operation.

Theory Development - Step Five: Propositions of the theory

Theory development step five involved deriving the propositions of the theory and making predictions about the values of taken on by units of the scientific model in operation (Dubin, 1978, p.163). The propositions were derived logically and intellectually by the researcher-theorist, and they expressed synthetic truth statements about the model (Campbell, 1920, as cited in Dubin, 1978). Dubin defined a proposition as:

“a truth statement about a model when the model is fully specified in its units, laws of interaction, boundary and system states”, and “Any truth statement that can be made about such a system is a proposition of the system”. (Dubin, 1978, p.160).

Dubin also made clear that at this point of theory development, the propositions are synthetic in nature and only follow logically from the model (i.e., they are not necessarily empirically accurate). Propositions of a model enable the researcher-theorist to begin making predictions about the values of one or more units in the scientific model (Dubin, 1978, p.178). In this step of the theory’s development, the method guidelines are explained, the propositions of the theory are stated, and a summary of the results is presented.

Method Guidelines

Propositions. Dubin's (1978) method guidelines for specifying propositions of a theory highlighted several things for the researcher-theorist to consider, including the content of truth statements, types of propositions, and the number of propositions of the model. The propositions, which are representations of the truth statements, contain

predictions about the value(s) of the unit(s) of the model. The most common form of proposition specifies the values of two units and employs the classic “if... then...” statement, forming a conditional clause that is often times used in scientific research. In other words, the conditional sentence (i.e., propositions) are predictions of the values taken on by units of the model (Dubin, 1978, p.165). Dubin also stated that there are three types of propositional statements. First, there are propositions about the values of a single unit (of the model) in relation to the value(s) of other unit(s) connected by a law of interaction. Second, propositions may be made about the continuity of a system state that in turn involves values of units in the model. Third, propositions can be made about the oscillation of the system from one state to another that involves predictions about values of units in the model. Finally, Dubin noted that the number of propositions derived from a given model may be quite large. The number may be large is due to the fact that the number of propositions is equal to the sum of different combinations of the values of all the units with the values of all other units in a model (Dubin, 1978, p.166) . In light of this, the researcher-theorist may use ‘strategic propositions’ and ignore the existence of trivial propositions. Strategic propositions are “those that state critical or limiting values for one of the units involved” (Dubin, 1978, p.168). Trivial propositions are those “where small differences in values of [one unit]... are associated with small difference of values of [another unit] (p.169). Additionally, Dubin noted that “it is not a requirement... that all propositions of a model be testable”, only that “all theoretical models need to be testable by converting at least some of their propositions to hypotheses” (Dubin, 1978, p.209). This is the case with the current research study, which only developed strategic propositions and a negative proposition.

Dubin (1978) discusses an additional method guideline for using negative propositions in research. A negative proposition is one in which an affirmative proposition is expressed in its inverse or negated. Negative propositions are employed in research when empirical indicators for a range of values of a unit are difficult to secure for the model. In such circumstances, the researcher-theorist may employ negative proposition to test “empirical indicators of unit values that lie outside the range of the model's predicted unit values” (Dubin, 1978, p.173). Dubin provided the example of starting with a positive proposition, “high family income is associated with high social status”, and the inverted negative proposition “high personal income is associated with low social status”. In this case, the opposite of an affirmative statement is stated in the proposition and may be more suitable for converting to a hypothesis to test empirically for usefulness (Dubin, 1978).

Specification of the Propositions of the Theory

The propositions of a theory of the business model concept are specified in accordance with Dubin’s suggestion of focusing on strategic propositions. While the first proposition might seem trivial and an obvious truth statement, it also seems appropriate to make explicit that all units of the theory are required for the scientific model to function. Following that, the strategic propositions express the interactions between the four units of the scientific model, and if the value of one unit changes, it is reasonable to expect that the values of one or more other units in the model will change as well. Finally, Proposition 6 specifies a negative proposition, which is later converted into several hypotheses that serve as the scientific model's initial empirical tests.

Propositions. The propositions of the theory of the business model concept include:

Proposition 1: If one or more of units of the theory is not present or has a null/zero value, then the scientific model is non-operational.

Proposition 2: If value is associated with customer, then customer will change as a result of the change in value.

Proposition 3: If customer is associated with infrastructure, then infrastructure will change as a result of the change in customer.

Proposition 4: If infrastructure is associated with value, then value will change as a result of the change in infrastructure.

Proposition 5: If profit is associated with value, customer, and infrastructure, then value, customer, and infrastructure will change as a result of the change in profit.

Proposition 6: If an empirical indicator is associated with a unit, then the empirical indicator cannot be associated with another empirical indicator of that unit.

Figure 26 illustrates the six propositions of the theory and the corresponding step of Dubin's methodology.

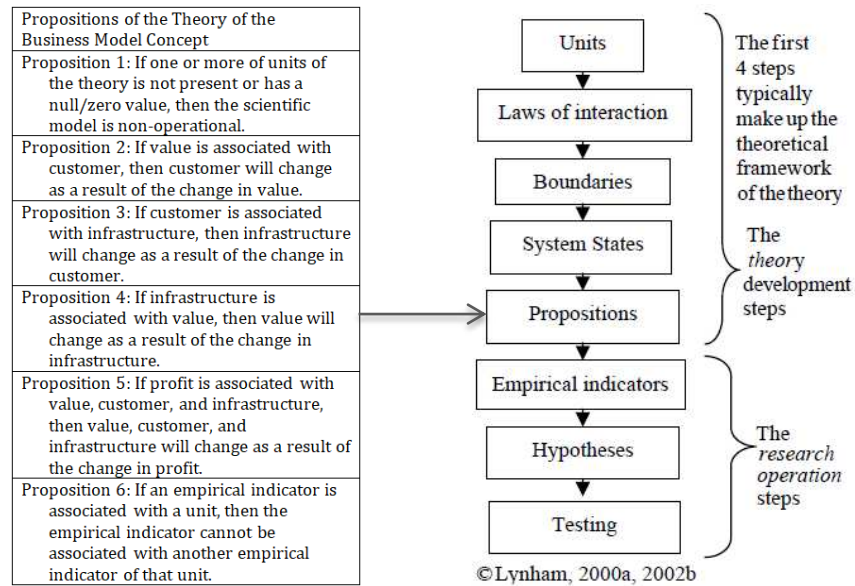


Figure 26

Six Propositions of the Theory of the Business Model Concept and Dubin's eight-step methodology

Summary of the Propositions of the Theory of the Business Model Concept

The six propositions listed above form the propositions of the theory of the business model concept. These propositions also answer the research sub-question, what are the theory's propositions?

In Dubin's (1978) methodology, once the propositions have been derived and specified, the theory development phase ends and the research operation phase begins (Lynham & Chermack, 2006). The research operation phase shifts the focus of the study from inward-facing and descriptive to outward-looking and empirical.

Research Operation Phase

Research Operation - Step Six: Empirical Indicators of the Theory

The research operation phase started with step six in Dubin's (1978) methodology and involved finding empirical indicators that produce values on the units in the scientific model. Lynham (2000) described this point in the research as a shift to an outward and empirical focus or "theory operationalization" (p.173). Dubin defined an empirical indicator as "an operation employed by a researcher to secure measurements of values on a unit" (Dubin, 1978, p.182), and repeatedly asserted "that the only portions of the theoretical [scientific] model that are every measured are the values of the units employed in the model (Dubin, 1978, p.186). The following subsection presents the research to identify empirical indicators for units in the theory in three sections: method guidelines, empirical indicators, and a summary of the findings.

Method Guidelines

Empirical Indicators. Dubin (1978) provided the following method guidelines for identifying empirical indicators of units in a theory, which included two criteria, two general classes of indicators, and specific requirements for each unit type. The two most important criteria for adequate empirical indicators are operationalism and reliability. Operationalism entails explicitly stating the measuring procedure used by a researcher, as well as the apparatus used to capture values on a unit. This is for the purpose of duplicating the research. Reliability refers to both the values produced by the measuring operation and the extent to which the operation produces equivalent values when performed by another researcher. Furthermore, the conventional manner for specifying an empirical indicator employs the phrasing "The value of unit X as measured by (... the

operation of the particular empirical indicator employed to generate the value on the unit)'' (Dubin, 1978, p.185). Simply put, the goals of operationalism and reliability are to state an empirical indicator that produces values of a unit with little difference from one observer to another (Dubin, 1978).

Two other method guidelines that are especially pertinent to the current study are the classes of empirical indicators and the specific requirements for particular unit types. The two classes of empirical indicators are absolute and relative indicators. Absolute indicators are measures on such things as race, gender, and age that leave "no question as to what they measure" (Dubin, 1978, p. 193). Relative indicators are empirical indicators that can be used for multiple theoretical units. Absolute indicators are the only class of indicator used in the current study.

There are also unique requirements for empirical indicators of the different unit types (enumerative, associative, relational, etc.). Enumerative units, which are the only unit type employed in the current theory, have the requirement that the empirical indicator simply "generate non-zero values for that unit in whatever" system state the unit is found (Dubin, 1978, p.186). Because all the units in the focal study are enumerative units, this means the unit takes on a nominal value.

Operation of Finding Empirical Indicators and Specifying the Indicators of the Theory

The empirical indicators of a theory of the business model concept are described in two parts: (a) the operation of finding the empirical indicators, (b) the specification of the empirical indicators (for the focal theory) using Dubin's (1978) phrasing format. The operation of finding empirical indicators is based on Remané et al.'s (2017) research, which produced *The Business Model Pattern Database*. Remané et al.'s operation (or

method) involved reviewing relevant literature on business model patterns (i.e., 29 articles), extracting the identified business model patterns, and sorting the patterns using a taxonomy-building structure. The operation, which will be referred to as the *business model pattern taxonomy-building structure*, is summarized in the following three steps.

1. Review relevant literature from academia and practice and select articles with business model patterns for analysis.
2. Extract from each article the business model pattern(s) and state each pattern's name, description, examples, and author(s).
3. Apply the taxonomy-building structure (i.e., developed by Remané et al., 2017; and based on Nickerson et al., 2013, p.345; See the flowchart provided in Appendix B) to the business model patterns extracted from the articles and proceed through several iterations until all patterns are classified.

Remané et al.'s (2017) employed this three-step business model pattern taxonomy-building structure to 29 articles on business model patterns, which resulted in the business model pattern database. The data provided in the database, specifically the characteristics per dimension (number of patterns per characteristic), are employed later in the focal study for testing the theory of the business model concept. A summary of the data included in the database is provided in Figure 27.

	Dimension (D)	Characteristics per dimension (number of patterns per characteristic)							
Overarching	D1: Hierarchical impact	Prototypical pattern (87)				Solution pattern (95)			
	D2: Degree of digitization	Purely digital (55)			Digitally enabled (35)			Not necessarily digital (92)	
Value proposition	D3: Product type	Physical (12)	Financial (7)	Human (5)	Intellectual property (36)	Hybrid (10)	Product type not specified (112)		
	D4: Strategy for differentiation	Quality (9)	Customization (8)	Combination (13)	Access/convenience (6)	Price (22)	Network effects (11)	No impact on differentiation (113)	
Value delivery	D5: Target customers	Specific new customer segment (10)		Lock-in existing customers (9)		Other companies (B2B) (7)		No impact on target customers (156)	
	D6: Value-delivery process	Brand and marketing (7)	Sales channel (20)		Sales model (9)		Customer relationship management (3)	No impact on delivery process (143)	
Value creation	D7: Sourcing	Make (17)			Buy (11)			No impact on sourcing (154)	
	D8: Third parties involved	Suppliers (9)	Customers (12)		Competitors (3)		Multiple parties (18)	No impact on third parties involved (140)	
	D9: Value-creation process	Research and design (7)	Supply (5)		Production (8)		Multiple steps (11)	No impact on creation process (151)	
Value capture	D10: Revenue model	Sell (15)	Lend (20)		Intermediate (18)		Advertising (12)	No impact on revenue model (117)	
	D11: Pricing strategy	Premium (11)	Cheap (9)		Dynamic (12)		Non-transparent (8)	No impact on pricing strategy (142)	
	D12: Direct profit effect	Increase revenue (42)		Reduce cost (15)		Multiple effects (11)		No direct profit impact (114)	

Fig. 3. Dimensions, characteristics, and number of business model patterns per characteristic.

Figure 27

Summary of data in Remané et al.'s (2017) Business Model Pattern Database

Figure 28 illustrates how the characteristics per dimension provided in Remané et al.'s (2017) business model pattern database correspond to the units of the theory of the business model concept.

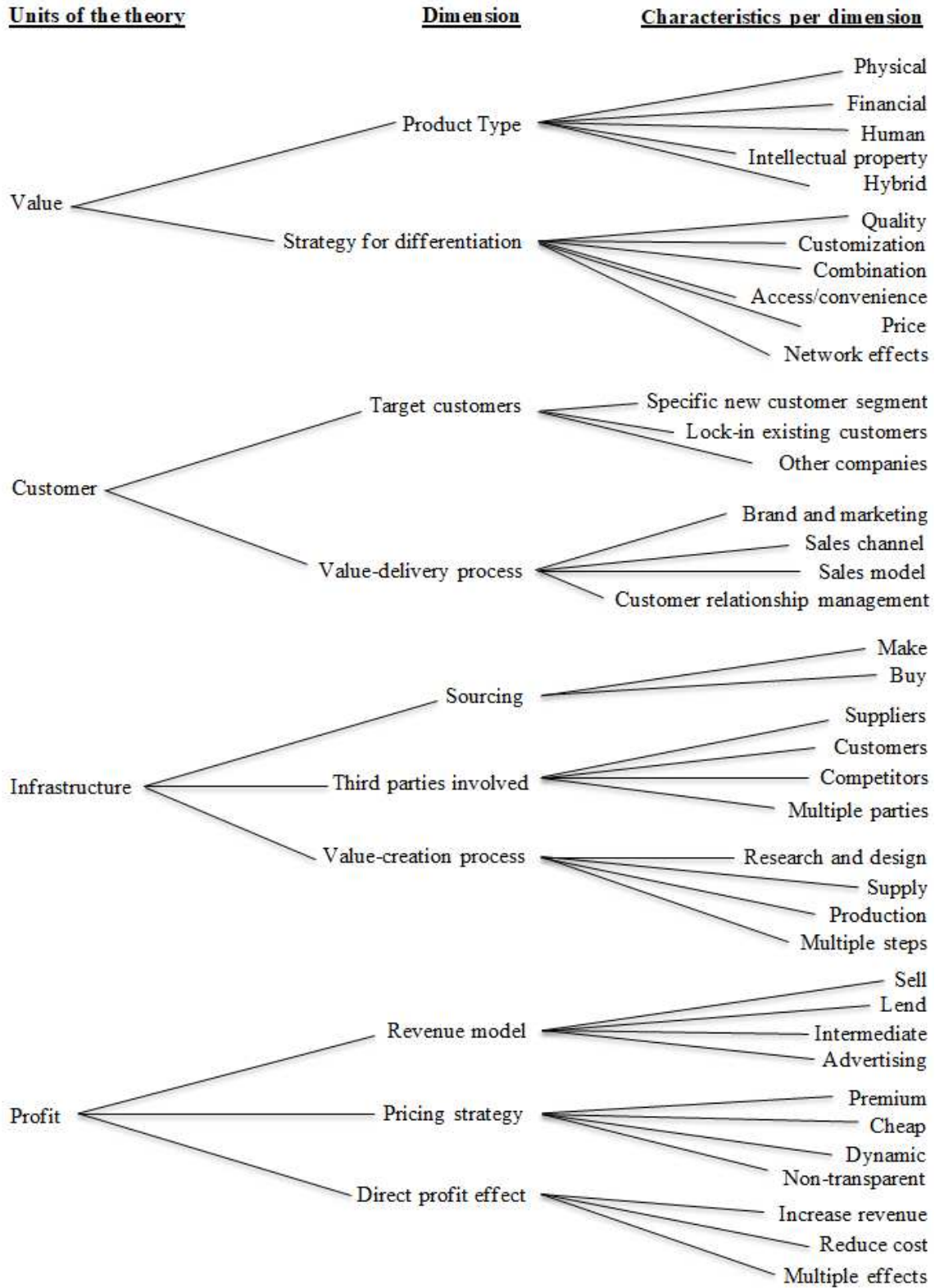


Figure 28

Remané et al.'s (2017) Characteristics per Dimension as Indicators of Units of the Theory

Having stated the operation of finding the empirical indicators, the second step was to use Dubin's (1978) conventional phrasing format for specifying an empirical (i.e., "The value of unit X as measured by ... (the operation of the particular empirical indicator ... employed to generate the value on the unit)" (p.185). Therefore, the empirical indicators of the theory of the business model concept are as follows:

Empirical Indicator 1: The value of unit Value (as measured by the operation of the *business model pattern taxonomy-building structure* instrument) will change as a result of a change in the characteristics per dimension indicator.

Empirical Indicator 2: The value of unit Customer (as measured by the operation of the *business model pattern taxonomy-building structure* instrument) will change as a result of a change in the characteristics per dimension indicator.

Empirical Indicator 3: The value of unit Infrastructure (as measured by the operation of the *business model pattern taxonomy-building structure* instrument) will change as a result of a change in the characteristics per dimension indicator.

Empirical Indicator 4: The value of unit Profit (as measured by the operation of the *business model pattern taxonomy-building structure* instrument) will change as a result of a change in the characteristics per dimension indicator.

In essence, these four empirical indicators (i.e., statements) express that a change in a characteristic per dimension indicator will result in a change in the value of the specific

unit. For example, a change in the “Quality” characteristic (per dimension indicator) will result in a change in the value unit; a change in “Specific new customer segment” characteristic will result in the change in the customer unit, a change in the “Suppliers” characteristic will result in a change in the infrastructure unit, and so forth.

Summary of the Empirical Indicators of the Theory of the Business Model Concept

The empirical indicators of the theory of the Business Model Concept include four empirical indicators listed above. These empirical indicators serve to answer the research sub-question, what are the empirical indicators of units of the theory? The next step in Dubin’s (1978) methodology involves constructing hypotheses based on the proposition about the values of units of the scientific model. Figure 29 shows how the output of the empirical indicators of the units of the theory completes Step Six of Dubin’s (1978).

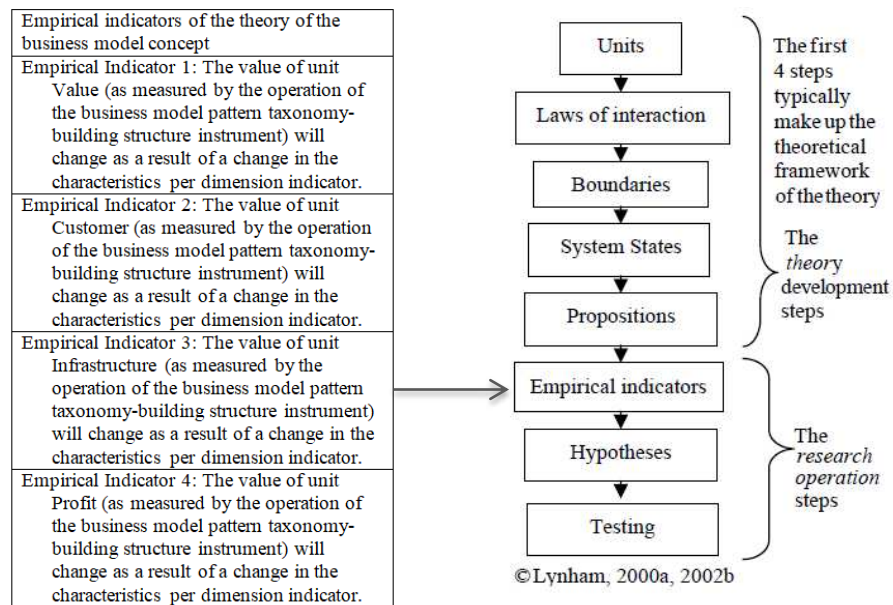


Figure 29

Four Empirical Indicators of the Theory of the Business Model Concept alongside Dubin’s eight-step methodology

Research Operation - Step Seven: Hypotheses of the Theory

Hypotheses of a theory involve relating the facts found in the empirical world (i.e., empirical indicators) to the propositions of the theory (Dubin, 1978). Dubin stated that the researcher is now concerned with constructing and specifying the reality test (i.e., predictions about values of units) that can be made of the scientific model (Dubin, 1978, p.206). This is accomplished by translating some of the theory's propositions, which were developed in step five of Dubin's methodology, into testable hypotheses. Dubin described hypotheses as “predictions about values of units of a theory in which empirical indicators are employed for the named units in each hypothesis” (Dubin, 1978, p.206). This is accomplished by “every time the name of a unit appears in a proposition, there must be substituted for it an empirical indicator that measures values on this unit” (Dubin, 1978, p.206). Once the hypotheses are developed, they establish a link between the scientific model and the empirical world, with the goal of determining whether the theory provides knowledge about things in the observable world. Step Seven is presented in three parts: method guidelines, hypotheses of the theory, and a summary of the results.

Method Guidelines

Hypotheses. Dubin (1978) provided several method guidelines for constructing hypotheses, including important criteria, the number of hypotheses developed, and hypotheses construction strategies. The first important criterion is that hypotheses are homologous (i.e., "having the same relative position, value, or structure"; Merriam-Webster, n.d., Definition 1) to the proposition that they represent in the scientific model. Substantially, a hypothesis should mirror the proposition of the model. A second criterion

is that the hypotheses should have empirical indicators that satisfy both the sufficient and necessary conditions for the unit's property.

Dubin (1978) also provided guidance for the number of hypotheses developed and the strategies for hypotheses construction. The number of hypotheses is exponentially affected by the number of empirical indicators for each unit in a proposition. For example, if two units in a proposition have two empirical indicators each, then there is the potential to construct four hypotheses from the one proposition. Knowing there is the potential for a large number of hypotheses, Dubin suggested selecting a strategy for hypotheses construction that fits the goals of the research study and maximizes the scientist's knowledge gained from performing the empirical test. The two strategies for hypotheses construction of strategic propositions are extensive testing and intensive testing. Extensive testing is a strategy of testing each strategic proposition of the model. Conversely, intensive testing involves focused testing of only one or perhaps several of the strategic propositions of the model. For the current research study of the business model concept, the "intensive testing" strategy (Dubin, 1978, p.210) was employed, based on the available data in Remané et al. (2017) dataset. It is important to note that the hypotheses stated below use the term 'empirical indicator' in place of the phrase "characteristic per dimension" used by Remané et al. (2017). This change in terminology was implemented for a variety of reasons, including brevity, clarity, and understandability.

Specification of the Hypotheses of the Theory

The hypotheses of the theory of the business model concept are based on the intensive strategy of hypotheses testing and focus initially on the hypotheses constructed

from Proposition 6. Proposition 6 states: If an empirical indicator is associated with a unit, then the empirical indicator cannot be associated with another empirical indicator of that unit. The hypotheses constructed from this proposition (Hypotheses 1 to 4) serve to test if there is an association between the individual empirical indicators in each dimension (intra-dimension) of the units of the theory. These hypotheses help to answer the primary research question, Is there an association between the individual empirical indicators for each unit of the theory? Several additional hypotheses (Hypotheses 5 to 10) were constructed for supplemental testing of the laws of interaction of the theory. These hypotheses investigate whether there are any empirical indicators of the four units of the theory that are associated or interact with an empirical indicator of another unit. These hypotheses are relevant to the laws of interaction of the units of the theory.

The hypotheses constructed for testing the scientific model of the business model concept are as follows:

Hypothesis 1. There will *not* be an association between the empirical indicators of each characteristic per dimension of the *value* unit.

Hypothesis 2. There will *not* be an association between the empirical indicators of each characteristic per dimension of the *customer* unit.

Hypothesis 3. There will *not* be an association between the empirical indicators of each characteristic per dimension of the *infrastructure* unit.

Hypothesis 4. There will *not* be an association between the empirical indicators of each characteristic per dimension of the *profit* unit.

Hypothesis 5. There will be an association between the empirical indicators of the *value* unit and *customer* unit.

Hypothesis 6. There will be an association between the empirical indicators of the *customer* unit and *infrastructure* unit.

Hypothesis 7. There will be an association between the empirical indicators of the *infrastructure* unit and *value* unit.

Hypothesis 8. There will be an association between the empirical indicators of the *value* unit and *profit* unit.

Hypothesis 9. There will be an association between the empirical indicators of the *customer* unit and *profit* unit.

Hypothesis 10. There will be an association between the empirical indicators of the *infrastructure* unit and *profit* unit.

Summary of the Hypotheses of the Theory of the Business Model Concept

Ten hypotheses were constructed and specified for the theory of the business model concept. These hypotheses answered the research sub-question, what are the hypotheses of the theory? In the next and final step of the research operation, the 10 hypotheses are tested using quantitative statistics, specifically Chi-square inferential statistics, to investigate where there is empirical support for the theory of the business model concept. Figure 30 shows the hypotheses in relation to Dubin's Step Seven.

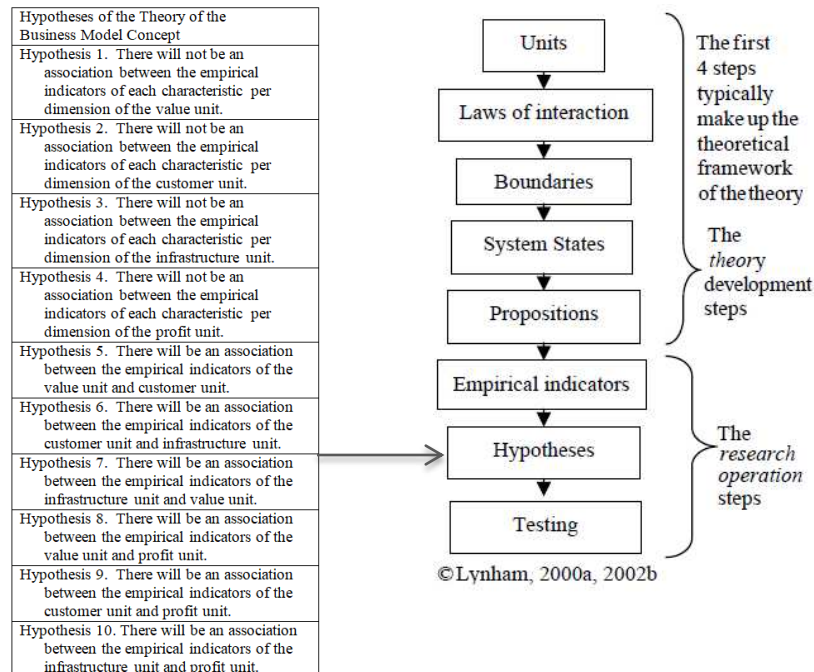


Figure 30

Ten Hypotheses of the Theory of the Business Model Concept for Step Seven of Dubin's methodology

Research Operation – Step Eight: Testing of the Theory

The research operation in step eight of Dubin's (1978) methodology clearly distinguishes the transition from theory building to theory testing (p.215). The goal of theory testing is to find out whether the empirical data provides supports for the scientific model. Using the hypotheses developed in the previous step (based on the propositions of the scientific model), the tests attempt to find support as to whether the scientific model characterizes the observable and empirical world. The results of Step Eight are again reported in three parts: method guidelines, empirical indicator testing results, and a summary of the results.

Method Guidelines

Testing. Dubin's (1978) provided several method guidelines for testing a theory, including the researcher's stance toward the scientific model, theory building, and hypotheses testing. A researcher-theorist may adopt one of two research stances toward the scientific model: proving the adequacy of the model, or improving a starting (i.e., existing) model. If the researcher takes the approach of proving the adequacy of the model, they have the freedom to discard data or reject research results that do not support the model's hypothetical predictions. On the other hand, if the researcher's goal is to improve a model, the focus is primarily on irregular cases and nonconforming results. Dubin underscored the critical nature of researcher's stance regarding the scientific model, as it directly influences the researcher's approach to data analysis. With regard to the researcher's stance on theory building, it is essential that they be mindful of the scientific model's constituent materials and the manner in which they are assembled and interconnected. Furthermore, the researcher's approach to hypotheses testing may be one of limitation of proof orientation, which focuses solely on units in the model and data within a given range, or one that does not include limitation of proof orientation. Finally, Dubin asserted that a scientific model and the resulting theory should be the focus of continuous refinement and perpetual theory building.

Specification of the Testing of the Theory

Testing of the theory involved using SPSS statistical analysis software and Chi-square statistic tests on the 10 hypotheses constructed in step seven of the methodology. The Chi-square test of independence checked to see whether the categorical variables (i.e., the nominal or name only variables collected from Remané et al. (2017) database), which are the empirical indicators of the units of the theory, have a statistically significant

association with each other. In other words, the categorical variables were tested to see if they were likely to be related to each other or independent of another. The tests were conducted on the database count totals of two empirical indicators at a time for each unit of the theory. For example, the empirical indicator of quality (of the value unit) was tested for an association with price (of the value unit). Both of these empirical indicators are of the same unit-dimension (i.e., same category of empirical indicator per unit). Testing the 10 hypotheses was done in two phases. First, Hypotheses 1- 4 were tested using Chi-square to see if the individual empirical indicators for each unit of the theory were independent of each other under the same dimension of the unit (i.e., as described in the example). These tests were performed to determine the independence of empirical indicators or the heterogeneity of indicators within a dimension (i.e., intra- dimension). The second phase of testing involved Hypotheses 5-10 and were inter-unit tests for association between two empirical indicators of different units of the theory. These tests were performed to see if there is empirical support of the laws of interaction among units of the theory.

To investigate the association or independence of two empirical indicators of the units of the theory, numerous Chi-square statistics were conducted and produced 2x2 cross-tabulation tables. The Alpha for each test was set at .05 (i.e., 95% confidence level) regarding the difference between the observed values expected values would be due to chance. The results for each hypothesis tested are presented in table format, with the unit of the theory, the categorized unit-dimension of the empirical indicators, the empirical indicators, and the Chi-square test p-value. Characteristic per unit

Table 15 reports the results of the Chi-square tests of Hypothesis 1.

Hypothesis 1. There will *not* be an association between the empirical indicators of each unit-dimension of the *value* unit.

Table 15

Value Unit Intra-Dimension Chi-Square Test of Association of Empirical Indicators

Unit of the Theory	Unit-Dimension	Empirical Indicator	Empirical Indicator	p-Value p =
Value	Product type	Physical	Financial	.473
		Physical	Human	.547
		Physical	Intellectual property	.075
		Physical	Hybrid	.387
		Financial	Human	.650
		Financial	Intellectual property	.180
		Financial	Hybrid	.515
		Human	Intellectual property	.260
		Human	Hybrid	.585
		Intellectual property	Hybrid	.106
Value	Strategy for differentiation	Quality	Customization	.483
		Quality	Combination	.374
		Quality	Access/convenience	.538
		Quality	Price	.254
		Quality	Network effects	.435
		Customization	Combination	.374
		Customization	Access/convenience	.538
		Customization	Price	.254
		Customization	Network effects	.435
		Combination	Access/convenience	.436
		Combination	Price	.149
		Combination	Network effects	.323
		Access/convenience	Price	.317
		Access/convenience	Network effects	.494
		Price	Network effects	.205

Note: None of the p-values > .05 Alpha level of significance, therefore none of the observed values exceeded the expected values, supporting the hypothesis there is not an association between the empirical indicators of each unit-dimension of the value unit.

Twenty five Chi-square test were run, and none reported a statistically significant association between the empirical indicators under the two unit-dimensions (i.e., product type and strategy for differentiation) of the value unit.

Table 16 reports the results of the Chi-square tests of Hypothesis 2.

Hypothesis 2. There will *not* be an association between the empirical indicators of each unit-dimension of the *customer* unit?

Table 16

Customer Unit Intra-Dimension Chi-Square Test of Association of Empirical Indicators

Unit of the Theory	Unit-Dimension	Empirical Indicator	Empirical Indicator	p-Value p =
Customer	Target customers	Specific new customer	Lock-in existing customer segment	.458
		Specific new customer	Other companies	.515
		Lock-in existing customer segment	Other companies	.538
Customer	Value delivery process	Brand and marketing	Sales channel	.343
		Brand and marketing	Sales model	.538
		Brand and marketing	Customer Relationship Management	.727
		Sales channel	Sales model	.280
		Sales channel	Customer Relationship Management	.539
		Sales Model	Customer Relationship Management	.690

Note: None of the p-values > .05 Alpha level of significance, therefore none of the observed values exceeded the expected values, supporting the hypothesis there is not an association between the empirical indicators of each unit-dimension of the customer unit.

Nine Chi-square tests were run, and none showed a statistically significant association between the empirical indicators under the two unit-dimensions (i.e., target customers and value-delivery process) of the customer unit.

Table 17 reports the results of the Chi-square tests of Hypothesis 3.

Hypothesis 3. There will *not* be an association between the empirical indicators of each characteristic per dimension of the infrastructure unit?

Table 17

Infrastructure Unit Intra-Dimension Chi-Square Test of Association of Empirical

Indicators

Unit of the Theory	Unit-Dimension	Empirical Indicator	Empirical Indicator	p-Value p =
Infrastructure	Sourcing	Make	Buy	.272
Infrastructure	Third parties involved	Suppliers	Customers	.422
		Suppliers	Competitors	.708
		Suppliers	Multiple parties	.338
		Customers	Competitors	.643
		Customers	Multiple parties	.235
		Competitors	Multiple parties	.563
Infrastructure	Value-creation process	Research and design	Supply	.650
		Research and design	Production	.563
		Research and design	Multiple steps	.494
		Supply	Production	.627
		Supply	Multiple steps	.565
		Production	Multiple steps	.463

Note: None of the p-values > .05 Alpha level of significance, therefore none of the observed values exceeded the expected values, supporting the hypothesis there is not an association between the empirical indicators of each unit-dimension of the infrastructure unit.

Thirteen Chi-square test were run, and none reported a statistically significant association between the empirical indicators under the three unit-dimensions (i.e., sourcing, third parties involved, and value-creation process) of the infrastructure unit.

Table 18 reports the results of the Chi-square tests of Hypothesis 4.

Hypothesis 4. There will *not* be an association between the empirical indicators of each characteristic per dimension of the *profit* unit?

Table 18*Profit Unit Intra-Dimension Chi-Square Test of Association of Empirical Indicators*

Unit of the Theory	Unit-Dimension	Empirical Indicator	Empirical Indicator	p-Value p =
Profit	Revenue model	Sell	Lend	.149
		Sell	Intermediate	.227
		Sell	Advertising	.301
		Lend	Intermediate	.120
		Lend	Advertising	.184
		Intermediate	Advertising	.266
Profit	Pricing strategy	Premium	Cheap	.442
		Premium	Dynamic	.387
		Premium	Non-transparent	.414
		Cheap	Dynamic	.485
		Cheap	Non-transparent	.509
		Dynamic	Non-transparent	.458
Profit	Direct profit effect	Increase revenue	Reduce cost	.027
		Increase revenue	Multiple effects	.061
		Reduce cost	Multiple effects	.305

Note: One p-values < .05 Alpha level of significance, although one of the observed values exceeded the expected values, the overall percentage (1/15=.067%) of empirical indicators, supporting the hypothesis there is not an association between the empirical indicators of each unit-dimension of the profit unit.

Fifteen Chi-square test were run, and one test showed a statistically significant association (i.e., increase revenue and reduce costs) between the empirical indicators under the three unit-dimensions (i.e., revenue model, pricing strategy, and direct profit effect) of the profit unit.

Table 19 reports the results of the Chi-square tests of Hypothesis 5.

Hypothesis 5. There will be an association between the empirical indicators of the *value* unit and *customer* unit?

Table 19

Value and Customer Inter-Unit Chi-Square Tests of Association between Empirical Indicators

Unit of the Theory	Unit of the Theory	Unit-Empirical Indicator	Unit-Empirical Indicator	p-Value p =
Value	Customer	Value-quality	Customer-specific new customer segment	.024
		Value-quality	Customer-brand and marketing	.003

Note: Two p-values < .05 Alpha level of significance, indicating the probability the observed values were due to chance was below 5%, and thus showing support for the hypothesis there is an association between some empirical indicators of the value unit and customer unit.

Numerous Chi-square tests were run on the empirical indicators of the value unit and customer unit, and two tests reported a statistically significant association (see Table 19).

Table 20 reports the results of the Chi-square tests of Hypothesis 6.

Hypothesis 6. There will be an association between the empirical indicators of the customer unit and infrastructure unit?

Table 20

Customer and Infrastructure Inter-Unit Chi-Square Tests of Association between

Empirical Indicators

Unit of the Theory	Unit of the Theory	Unit-Empirical Indicator	Unit-Empirical Indicator	p-Value p =
Customer	Infrastructure	Customer-other companies	Infrastructure-multiple steps	.001
		Customer-other companies	Infrastructure-multiple parties	.001

Note: Two p-values < .05 Alpha level of significance, indicating the probability the observed values were due to chance was below 5%, and thus showing support for the hypothesis there is an association between some empirical indicators of the customer unit and infrastructure unit.

Numerous Chi-square tests were run on the empirical indicators of the customer unit and infrastructure unit, and two tests reported a statistically significant association (see Table 20).

Table 21 reports the results of the Chi-square tests of Hypothesis 7.

Hypothesis 7. There will be an association between the empirical indicators of the *infrastructure* unit and *value* unit?

Table 21

Infrastructure and Value Inter-Unit Chi-Square Tests of Association between Empirical

Indicators

Unit of the Theory	Unit of the Theory	Unit-Empirical Indicator	Unit-Empirical Indicator	p-Value p =
Infrastructure	Value	Infrastructure-research and design	Value-quality	.003
		Infrastructure-make	Value-customization	.011

Note: Two p-values < .05 Alpha level of significance, indicating the probability the observed values were due to chance was below 5%, and thus showing support for the hypothesis there is an association between some empirical indicators of the infrastructure unit and value unit.

Numerous Chi-square tests were run on the empirical indicators of the infrastructure unit and value unit, and two tests reported a statistically significant association (see Table 21).

Table 22 reports the results of the Chi-square tests of Hypothesis 8.

Hypothesis 8. There will be an association between the empirical indicators of the *value* unit and *profit* unit?

Table 22

Value and Profit Inter-Unit Chi-Square Tests of Association between Empirical Indicators

Unit of the Theory	Unit of the Theory	Unit-Empirical Indicator	Unit-Empirical Indicator	p-Value p =
Value	Profit	Value-quality	Profit-increase revenue	.018
		Value-combination	Profit-increase revenue	.002

Note: Two p-values < .05 Alpha level of significance, indicating the probability the observed values were due to chance was below 5%, and thus showing support for the hypothesis there is an association between some empirical indicators of the value unit and profit unit.

Numerous Chi-square tests were run on the empirical indicators of the value unit and profit unit, and two tests reported a statistically significant association (see Table 22).

Table 23 reports the results of the Chi-square tests of Hypothesis 9.

Hypothesis 9. There will be an association between the empirical indicators of the *customer* unit and *profit* unit?

Table 23

Customer and Profit Inter-Unit Chi-Square Tests of Association between Empirical Indicators

Unit of the Theory	Unit of the Theory	Unit-Empirical Indicator	Unit-Empirical Indicator	p-Value p =
Customer	Profit	Customer-specific new customer segment	Profit-increase revenue	.038
		Customer-brand and marketing	Profit-increase revenue	.029

Note: Two p-values < .05 Alpha level of significance, indicating the probability the observed values were due to chance was below 5%, and thus showing support for the hypothesis there is an association between some empirical indicators of the customer unit and profit unit.

Numerous Chi-square tests were run on the empirical indicators of the customer unit and profit unit, and two tests reported a statistically significant association (see Table 23).

Table 24 reports the results of the Chi-square tests of Hypothesis 10.

Hypothesis 10. There will be an association between the empirical indicators of the *infrastructure* unit and *profit* unit?

Table 24

Infrastructure and Profit Inter-Unit Chi-Square Tests of Association between Empirical Indicators

Unit of the Theory	Unit of the Theory	Unit-Empirical Indicator	Unit-Empirical Indicator	p-Value p =
Infrastructure	Profit	Infrastructure-make	Profit-sell	.010
		Infrastructure-buy	Profit-sell	.001

Note: Two p-values < .05 Alpha level of significance, indicating the probability the observed values were due to chance was below 5%, and thus showing support for the hypothesis there is an association between some empirical indicators of the infrastructure unit and profit unit.

Numerous Chi-square tests were run on the empirical indicators of the infrastructure unit and profit unit, and two tests reported a statistically significant association (see Table 24).

Table 25 summarizes the results of the 10 hypotheses tested.

Table 25

Summary of the Hypotheses Testing of a Theory of the Business Model Concept

Hypotheses of the Theory	Results of Hypotheses Testing
Hypothesis 1. There will not be an association between the empirical indicators of each characteristic per dimension of the value unit.	25 Chi-square test were run, and none reported an association between the empirical indicators under the two unit-dimensions (i.e., product type and strategy for differentiation) of the Value unit.
Hypothesis 2. There will not be an association between the empirical indicators of each characteristic per dimension of the customer unit.	9 Chi-square tests were run, and none showed an association between the empirical indicators under the two unit-dimensions (i.e., target customers and value-delivery process) of the customer unit.
Hypothesis 3. There will not be an association between the empirical indicators of each characteristic per dimension of the infrastructure unit.	13 Chi-square test were run, and none reported an association between the empirical indicators under the three unit-dimensions (i.e., sourcing, third parties involved, and value-creation process) of the infrastructure unit.
Hypothesis 4. There will not be an association between the empirical indicators of each characteristic per dimension of the profit unit.	15 Chi-square test were run, and one test showed an association (i.e., increase revenue and reduce costs) between the empirical indicators under the three unit-dimensions (i.e., revenue model, pricing strategy, and direct profit effect) of the profit unit.
Hypothesis 5. There will be an association between the empirical indicators of the value unit and customer unit.	Numerous Chi-square tests were run on the empirical indicators of the value unit and customer unit, and two tests reported an association (see Table 19).
Hypothesis 6. There will be an association between the empirical indicators of the customer unit and infrastructure unit.	Numerous Chi-square tests were run on the empirical indicators of the customer unit and infrastructure unit, and two tests reported an association (see Table 20).
Hypothesis 7. There will be an association between the empirical indicators of the infrastructure unit and value unit.	Numerous Chi-square tests were run on the empirical indicators of the infrastructure unit and value unit, and two tests reported an association (see Table 21).
Hypothesis 8. There will be an association between the empirical indicators of the value unit and profit unit.	Numerous Chi-square tests were run on the empirical indicators of the value unit and profit unit, and two tests reported an association (see Table 22).
Hypothesis 9. There will be an association between the empirical indicators of the customer unit and profit unit.	Numerous Chi-square tests were run on the empirical indicators of the customer unit and profit unit, and two tests reported an association (see Table 23).
Hypothesis 10. There will be an association between the empirical indicators of the infrastructure unit and profit unit.	Numerous Chi-square tests were run on the empirical indicators of the infrastructure unit and profit unit, and two tests reported an association (see Table 24).

Figure 31 shows the hypotheses testing results alongside Dubin's eight-step methodology.

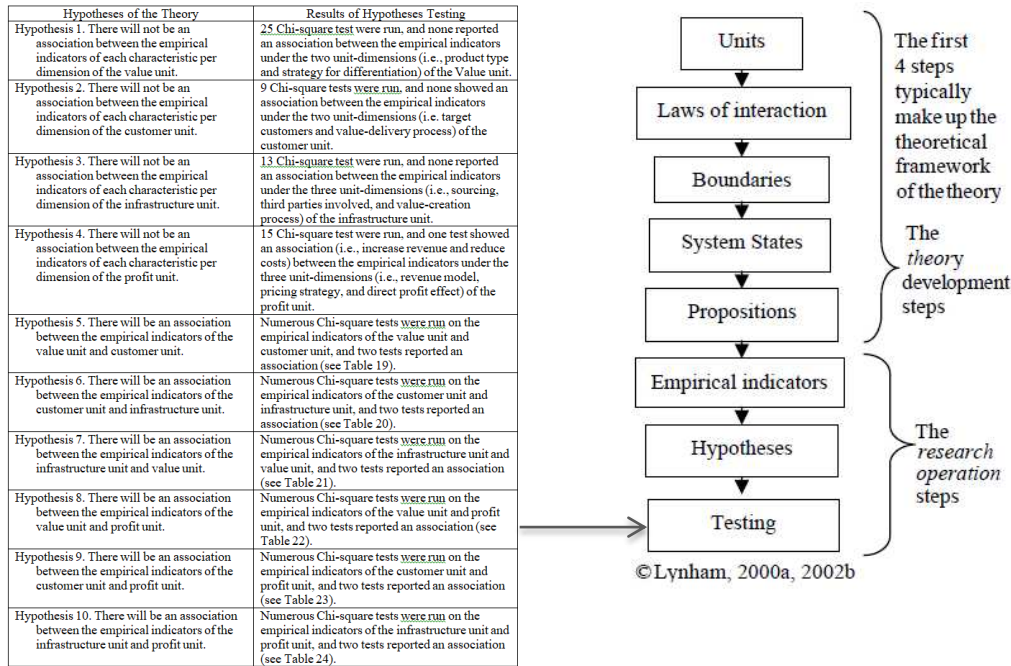


Figure 31

Ten Hypotheses Tested for the Theory of the Business Model Concept and Completing Dubin's Eight-Step methodology

Summary of the Testing of the Theory of the Business Model Concept

Ten hypotheses of the theory of the business model concept were tested for association between empirical indicators. These tests answered the research sub-question, Is there a Chi-square association between the individual empirical indicators for the theoretical construct of value, customer, infrastructure, profit? Testing of the hypotheses concludes the eight steps of Dubin's (1978) theory-building methodology. The next step and final step in this research study involved evaluating the theory based on Patterson's (1986) formal criteria for theory evaluation.

Theory Evaluation Phase

Theory Evaluation – Patterson's Formal Criteria for Theory Evaluation

Evaluating the theory of the business model concept was a complementary step to Dubin's (1978) theory-building methodology that assessed the theory as to its content correctness and construct validity. The purpose of this step was to critically review and assess the theory and to ascertain whether or not it satisfied specific formal criteria for a well-constructed theory (Patterson, 1986, p.xx). Eight formal criteria were offered by Patterson, and a ninth open-ended "other aspect" question was also incorporated into the evaluation. The assessment assisted the researcher-theorist in answering the research question, what is the reflexive evaluation of the content and construct validity of the theory of the business model concept?

The researcher-theorist provided the evaluation data as a reflective and personal assessment of the theory's merits, strengths, and weaknesses. The researcher provided a rating (1 to 10) and provided comments related to each evaluation criteria (as previously discussed in Figure 14 on page 66). When answering, the research also attempted to mitigate any inherent biases such as confirmation bias, affect heuristic, and belief bias. Thus, it is noted that the evaluation was only performed once and by the researcher-theorist, so the resulting score(s) may not be typical or representative of the theory's individual criteria or overall ratings. A summary of the numerical ratings of the researcher-theorist's reflexive evaluation is presented in Appendix C.

Importance

Rate and comment on the importance of "A Theory of the Business Model Concept". Patterson (1986) described importance of a theory as the quality or aspect of having some relevance to life, being applicable to more than a limited or restricted situation, or having acceptance by competent professionals or persistence in the literature.

Importance Rating: 5. The theory's importance was rated as five because it is essentially a midrange theory (Merton, 1968), neither inconsequential nor significant. As a midrange theory, it falls somewhere between a minor theory with a working set of propositions and hypotheses and a grand theoretical system with an all-encompassing model that explains all observed regularities (Merton). While the focal theory was developed for widespread application, assessing its significance is difficult due to its novelty, lack of acceptance by competent practitioners and scholars, and the subjectivity of the criteria used. Nonetheless, the theory may have application for a variety of audiences, such as entrepreneurs, business leaders, and researchers.

Precision and Clarity

Rate and comment on the preciseness and clarity of "A Theory of the Business Model Concept". Preciseness and clarity have to do with how clear and understandable the theory is. "A theory should be understandable, internally consistent, and free from ambiguities" (Patterson, 1986, p. xx). Other indicators of clarity include the ease of relating the theory to practice and specifying propositions, hypotheses, and testing methods.

Precision and Clarity Rating: 6. The theory was rated at six on the precision and clarity criterion due to its understandability, internal consistency, and intentional handling of ambiguities. The theory used both precise and common terms throughout the manuscript, making it understandable and aiming to establish a shared language for professional communication. The consistent use of terms also served to increase clarity for the internal purposes of deriving the propositions, constructing the hypotheses, and specifying the empirical indicators for testing. The use of figures at the end of many theory-building steps was intended to clarify the inherent ambiguities of scientific research on concepts and theory building.

Parsimony or Simplicity

Rate and comment on the parsimony or simplicity of "A theory of the Business Model Concept". Parsimony means that a theory contains a minimum of complexity, is economically constructed with a limited number of concepts, and contains few assumptions (Patterson, 1986, p. xx).

Parsimony or Simplicity Rating: 5. The theory was given a rating of five for parsimony or simplicity due to its minimal complexity, absences of assumptions, and balance of parsimony and oversimplification of terms. To minimize the complexity of the theory, only four units, three laws of interaction, and two system states were used in the theory. This seems to have achieved parsimony, a long established characteristic of good theory (Patterson, 1986), and simplified the complexities and functions of the system in today's empirical world. Additionally, the absence of assumptions is something for re-consideration in future research. Overall, the theory seemed to strike a balance of

parsimony and simplicity for the benefit of its intended audiences (i.e., practitioners and researchers).

Comprehensiveness

Rate and comment on the comprehensiveness of "A theory of the Business Model Concept". A theory is comprehensive if it completely covers the area of interest and includes all known data in the field.

Comprehensiveness Rating: 7. The theory's comprehensiveness was rated six because it appears to have met many of its objectives, such as completing the theory building cycle, covering the entire body of knowledge, and incorporating recent empirical data from the literature. After completing all eight steps of Dubin's (1978) theory-building methodology, the theory is considered complete and has explored several bodies of literature (i.e., business model concept, innovation, and patterns) on the topic during its development. In particular, the focal theory was very effective in employing Remané et al.'s (2017) comprehensive database on 182 business model patterns for empirically testing the theory.

Operationality

Rate and comment on the operationality of "A theory of the Business Model Concept". "A theory should be capable of being reduced to procedures for testing its propositions or prediction." (Patterson, 1986). Key concepts should be operationally defined with enough precision to be measurable. While not all concepts of a theory need to be operationalized, concepts can be used to indicate relationships and organization among concepts (Patterson, 1986).

Operationality Rating: 5. The theory was given a rating of five for operationality, based on its procedures for testing, limited measurement of values of units of the theory, and organization of concepts and relationships. Having completed the research operation steps 6-8, the theory seems to have achieved a level of operationality and procedural repeatability for testing. The limited measurements of values on units of the theory seemed to affect the operationality and testing of the scientific model. However, the units of the theory were employed appropriately to indicate the concepts, laws of interactions, and organization of the scientific model.

Empirical Validity

Rate and comment on the potential of the empirical validity of "A theory of the Business Model Concept" in terms of its support from experiments or experience that confirm or disconfirm the theory, new knowledge creation, and indirect stimulation of the development of better theory.

Empirical Validity Rating: 7. The primary reasons for rating the theory's empirical validity as seven were its use of empirical testing to confirm portions of the theory, its new knowledge generated by completing Dubin's (1978) eight step theory-building methodology, and the possibility that the experiments will indirectly stimulate more research on business models. Testing the units' empirical indicators and reporting their intra-dimension independence provided support the scientific model and some confirmation for the theory. The experiments also seemed to generate new knowledge on finding empirical indicators and conducting tests in Dubin's theory-building methodology. Beyond the experiments conducted in this study, it also seems possible that

the theoretical framework could stimulate additional quantitative research on business models.

Fruitfulness

Fruitfulness refers to the capacity of a theory to lead to predictions, which in turn leads to the development of new knowledge. Even if a theory is not capable of leading to specific predictions, it can be fruitful by provoking thinking and the development of new ideas, even if it causes disbelief or resistance from others.

Fruitfulness Rating: 6. The theory's fruitfulness is rated as six because of its capacity to generate propositions, limited potential for additional predictions, and likelihood to provoke thinking and new opportunities for research. In its present state of development, the theory has six propositions and perhaps some capacity to generate more. This may indicate that the theory requires enhancements and advancements, which is understandable and expected in the beginning stage of theory building. Moreover, the theory also is likely to promote thinking of additional and alternative forms of research on business models.

Practicality

Rate and comment on the practicality of "A theory of the Business Model Concept". A theory is practical if it is useful to researchers and practitioners in organizing their thinking by providing a conceptual framework for application. A theory allows the practitioner to move beyond the empirical level of trial-and-error application of techniques to the rational level of application of principles.

Practicality Rating: 7. The theory is given a practicality rating of seven for its ability to provide a straightforward conceptual framework, logical descriptions of the

interactions of core aspects of a business, and the potential for aiding practitioners in applying theory to practice. The conceptual framework is straightforward, with four basic units of value: customer, infrastructure, and profit. The logical descriptions of the four units would seem to help practitioners think rationally and conceptually about how the core aspects of a business relate to and interact with one another. Thinking about and compartmentalizing four core aspects of a business appears to have the potential to help practitioners apply this theory in their practice.

Comment on Any Other Aspect of A theory of the Business Model Concept

An important and remaining aspect of the theory's development is its submission to professional researchers and practitioners for evaluation, approval or disapproval, and subsequent revision. Once the initial review and revision are completed and the theory has been reduced to an article-length study, it could be considered for further review in both practical and academic literature.

Summary of the Theory Evaluation Phase

The theory evaluation phase of a theory of the business model concept yielded an average rating of six and revealed some of the theory's strengths and weaknesses. Some of the strengths identified in the theory's evaluation included its comprehensiveness, empirical validity, and practicality. Each criterion was rated at seven, and these criteria seemed to relate to construct validity. Some weaknesses identified in the theory were in the areas of importance, parsimony and clarity, and operationality. These criterion, which averaged a rating of five, appeared to indicate the content validity has only established itself at median support levels (i.e., based on the 10 point rating scale). This could be due to the novelty of the theory and may be typical of an initial theory.

Answering the Research Questions

The initial research question of this study asked, what is the theoretical framework of the theory of the business model concept? The theoretical framework consists of the four units of the theory (i.e., value, customer, infrastructure, and profit), the laws of interaction, boundaries, and system states. Figure 31 illustrates the theoretical framework of the business model concept.

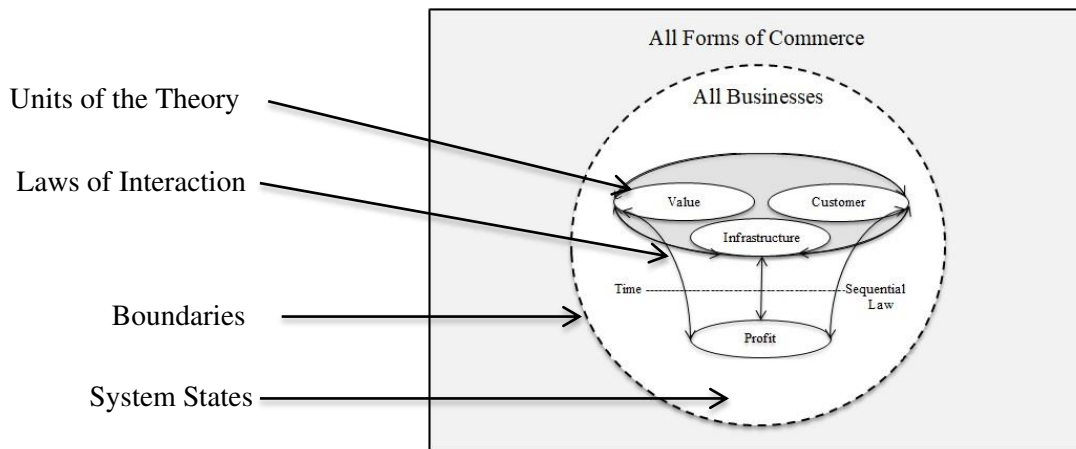


Figure 31

The theoretical framework of the Theory of The Business Model Concept

The second research question asked, is there an association between the individual empirical indicators for each of the theoretical constructs? The results of the empirical testing did not find an association between the individual empirical indicators for each of the theoretical constructs or units of the theory.

The third research question asked, what is the reflexive evaluation of the content and construct validity of the theory of the business model concept. The results of the evaluation indicated that the theory appears to have some degree of construct validity in the areas of comprehensiveness, empirical validity, and practicality, but a median level of content validity in the areas of importance, parsimony and clarity, and operationality.

Summary of the Eight Steps of Theory Building of the Business Model Concept

Step One: The units of a theoretical model of the business model concept and the answer to the first research sub-question, what are the units of the theory, are:

1. Value
2. Customer
3. Infrastructure
4. Profit

Step Two: The laws of interaction of a theoretical model of the business model concept and the answer to the second research sub-question, what are the laws of interaction of the theory?

The categoric laws of interaction of the business model theory are as follows:

1. All four units of the theory (i.e., value, customer, infrastructure, profit) are required for integrity of the interrelationship of the theory.
2. Each unit of the theory has individual interaction (i.e., one-to-one) with each other unit of the theory, such that:
 - a. The value unit has interactions with the customer, infrastructure, and profit units.
 - b. The customer unit has interactions with the infrastructure and profit units.
 - c. The infrastructure unit has interaction with the profit unit.

The sequential law of interaction of the theoretical model of business model theory are as follows:

1. Interactions between the units of value, customer, and infrastructure precede the profit. All four units of the theory (i.e., value, customer, infrastructure, profit) are required for integrity of the interrelationship of the theory.

Step Three: The boundaries of the theoretical model of the business model concept are:

Interior boundary criteria

1. All units within the boundary of the theoretical model
2. All levels of abstraction within a company use the theoretical model
3. All types of business use the theoretical model

Exterior boundary criteria

4. No exchange beyond a business commerce environment

Step Four: The system states of the theoretical model of the business model concept are:

Therefore the categoric law system state is:

1. If..., then... under conditions of
2. If..., then... under conditions of

The sequential law is

3. A change in the value of A (in a given direction; by a given amount; in and by both) is accompanied by a change in values of B (in a given direction; by a given amount; in and by both) under conditions...

Step Five: The propositions of the theoretical model of the business model concept are:

1. Proposition 1: If one or more of units of the theory is not present or has a null/zero value, then the scientific model is non-operational.
2. Proposition 2: If value is associated with customer, then customer will change as a result of the change in value.

3. Proposition 3: If customer is associated with infrastructure, then infrastructure will change as a result of customer.
4. Proposition 4: If infrastructure is associated with value, then value will change as a result in the approach of infrastructure.
5. Proposition 5: If changes in profit is associated with value, customer, and infrastructure, then value, customer, and infrastructure will change as a result of the change in profit (wrong, re-word).
6. Proposition 6: (Negative) Profit cannot have the value of “customer relationship management”.

Step Six: The empirical indicators of the theory of the business model concept are:

Empirical Indicator 1: The value of unit Value as measured by the operation of the *business model pattern taxonomy-building structure* instrument will change as result of a change in the characteristics per dimension indicator.

Empirical Indicator 2: The value of unit Customer as measured by the operation of the *business model pattern taxonomy-building structure* instrument will change as result of a change in the characteristics per dimension indicator.

Empirical Indicator 3: The value of unit Infrastructure as measured by the operation of the *business model pattern taxonomy-building structure* instrument will change as result of a change in the characteristics per dimension indicator.

Empirical Indicator 4: The value of unit Profit as measured by the operation of the *business model pattern taxonomy-building structure* instrument will change as result of a change in the characteristics per dimension indicator.

Step Seven: The hypotheses of the business model concept are:

Hypothesis 1. There will *not* be an association between the empirical indicators of each characteristic per dimension of the *value* unit.

Hypothesis 2. There will *not* be an association between the empirical indicators of each characteristic per dimension of the *customer* unit.

Hypothesis 3. There will *not* be an association between the empirical indicators of each characteristic per dimension of the *infrastructure* unit.

Hypothesis 4. There will *not* be an association between the empirical indicators of each characteristic per dimension of the *profit* unit.

Hypothesis 5. There will be an association between the empirical indicators of the *value* unit and *customer* unit.

Hypothesis 6. There will be an association between the empirical indicators of the *customer* unit and *infrastructure* unit.

Hypothesis 7. There will be an association between the empirical indicators of the *infrastructure* unit and *value* unit.

Hypothesis 8. There will be an association between the empirical indicators of the *value* unit and *profit* unit.

Hypothesis 9. There will be an association between the empirical indicators of the *customer* unit and *profit* unit.

Hypothesis 10. There will be an association between the empirical indicators of the *infrastructure* unit and *profit* unit.

Step Eight: The testing of the theory of the business model concept indicated:

There does not appear to be an association between the empirical indicators of each dimension of the units of the theory.

Conclusion

This chapter served three purposes: to report on the results of theory development, research operations, and theory evaluation. The theory development completed steps one through five of Dubin's methodology and resulted in a theoretical model. The theoretical model specified the theoretical constructs or units of the theory, their interrelationships or laws of interaction, the limits or boundaries of the model, the conditions or system states under which the model is expected to operate, and the truth statements or propositions of the theoretical model. The significance of this was that it provided a theoretical model upon which the research operation took place, and it addressed the research question, what the theoretical framework of the theory of the business model concept. The research operation completed steps six through eight of Dubin theory-building methodology and specified empirical indicators of the scientific model, constructed 10 hypotheses for testing, and conducted testing to determine if there is empirical support for the scientific model and emergent theory. The theory evaluation assessed the overall theory based on Patterson's formal criteria of good theory and identified areas of strength and weakness of the theory. The next chapter discusses the implication of the research results, future research, limitations of the research, and conclusions of the study.

CHAPTER 5 – DISCUSSION

This chapter examines the research study from a broader perspective and provides discussion of the summary of the research study and results, implications for practice and theory, recommendations for future research, and a conclusion. The summary provides context for the research by interpreting and explaining how the study agrees and disagrees with previous literature on the subject. The discourse also considers the implications of the research results in terms of consequences and significance for practice and theory. Several recommendations are made as well for future research and theory development. Lastly, some closing remarks are provided to bring the discussion and research study to a conclusion.

Summary of the Research Study and Results

In the 21st century, business models are the foremost way of describing how businesses create, deliver, and monetize the value of their products and services. The conventional view among scholars is that every business has a business model, and substantially, it is how a business goes to market to earn a profit (Teece, 2010). Hundreds of articles on business models are published annually in practice and research journals. However, research on the underlying business model concept appears to be primarily based on conceptual frameworks and design tools (e.g., the Business Model Canvas; Osterwalder & Pigneur, 2010), rather than on theoretical research (i.e., “unit theories and relevant theoretical and applied research”; Berger & Zelditch, 1993, p3). Therein lies the problem: theoretical research on the business model concept is notably inadequate, with no published theoretical framework or scientific model. The purpose of this study was to

conduct structured theory-building research on the business model concept and to contribute a theoretical framework to the body of knowledge on business models.

A substantial portion of the research was conducted using Dubin's (1978) theory-building methodology for developing a theoretical model and testing whether the model's hypotheses were supported by empirical observations. To develop the theoretical model, the process included identifying the units of the theory (i.e., theoretical constructs), specifying the laws of interactions, deducing the boundaries or limits of the model, and designating the system states of operation. Once the initial framework was completed, several propositions or truth statements about the model in operation were specified. At this point, the research shifted its focus from descriptive research to research-operation, in search of empirical indicators for the units of the theory. Perhaps the most significant result of discovering empirical indicators that measured unit values was that the research was now regarded as a scientific model and "scientific theory" (Dubin, 1978, p. 219). Following that, several hypotheses were developed and tested to see if the empirical indicators' independence supported the scientific model. After developing and testing the scientific model, a reflexive assessment was conducted to compare the emergent theory to Patterson's formal criteria for theory evaluation.

Some notable results from the study included the units of the theory, their interactions, the independence of the units' empirical indicators, and the theory's construct and content validity. At its core, the theory of the business model concept has four units: value, customer, infrastructure, and profit. It was theorized that all units of the theory are interrelated and interact with each other, with consideration that value, customer, and infrastructure interact sequentially before profit. In the final step of theory building, the

empirical indicators of units were tested for association with other indicators of the same unit-dimension, and the results revealed independence of all but one of the empirical indicators. The empirical indicators were also tested for interaction with empirical indicators of other units of the theory, and some support was found in the sample data. This particular finding provided some confirmation of the theoretical laws of interaction of the units. The overall findings from the empirical tests provided support for the six propositions of the theory. The final research activity evaluated the theory's construct and content validity and received mixed ratings. The theory was evaluated with an above-the-median rating (i.e., seven out of 10 on the rating scale) in terms of the degree of construct validity. This evaluation rating provided some support and confirmation for the units of the theory and empirical validity of the test result. The evaluation also produced a median rating of five out of 10 for the theory's content validity, indicating that theory would benefit from refinement in the areas of parsimony, clarity, and operationality.

This research study agreed with previous literature in several key areas, including the informing bodies of knowledge, core components of a business model, and literature geared toward practitioners. During the literature review process, the literature seemed to fall into three bodies of knowledge: business model concept, business model innovation, and business model patterns. Remané et al.'s (2017) review of the literature identified these same bodies of knowledge, and Fielt (2014) grouped the literature somewhat similarly into definitions, conceptual frameworks, and business model classifications (i.e., patterns). The business model definitions and conceptual frameworks found in the literature also agreed with the units of the theory. For example, Teece's (2010) definition, which has become the de facto definition for a business model, included the ideas of

“value creation, delivery, and capture mechanisms” and aligns well with the units of the focal theory. The theory's units also coordinate with the core components of the majority of conceptual frameworks found in the literature, which is understandable given that the units were derived from the most popular frameworks. One final area of agreement between the focal study and the literature is the intention of producing research that is practical for business practitioners. Two bodies of knowledge in the literature, namely business model innovation and business model patterns, seem to produce knowledge specifically for business professionals. Business model innovation informs practitioners on how to design, innovate, and integrate new business models, and the business model pattern literature spotlights business model prototypes and solutions patterns already in practice. Given that descriptive research comprised a substantial portion of this research study, it was expected that the findings would mostly agree with and corroborate prior scholarly works in the literature.

The focal study differs from the literature in one significant way: the number of units included in the business model's framework. The current study, which is based on Remané et al.'s (2017) research and database, limited the number of units to just four units of value, customer, infrastructure, and profit. This differs from the two studies (i.e., Osterwalder, 2004; Wirtz et al. 2016) mentioned in Chapter 2's literature review as the most relevant and informing literature (in terms of theory building) for the business model concept. Both Osterwalder and Wirtz et al. focused their research on and developed their business model frameworks around nine components. While Osterwalder initially identified four foundational pillars, which are similar to the focal study's units, his research expressly stated,

“do not want to stay at this level of low granularity and description and want[ed] to move towards something more detailed and formal [therefore] I split the four pillars of the business model ontology into nine interrelated business model building blocks, or simply business model elements” (p.43).

Similarly, Wirtz et al. viewed their framework as a nine-component integrated business model and only presented the overarching categories of components “for reasons of an abstract presentation” (p.42). In contrast, the current study focused on only four units in the theoretical framework, primarily because, as Giddings (2008) stated, humans have limited attention spans and abilities to absorb and process large amounts of information for business decision-making purposes. Giddings argued that “human reaction to too much information is essentially to pay less attention to information sources, shut off communications, ignore some sources of information” (p.35). For this reason, this study disagrees with the literature and limits the number of units in the theoretical framework.

Implications

The implications of this research study are discussed in terms of consequences and significance for practice and theory. Some of the consequences for practice include a new tool for conceptualizing a business, a professional approach to applying theoretical principles to practice, and opportunities for innovation and sustainable business outcomes. The new tool for conceptualizing businesses is the Business Model Funnel, which was developed for the laws of interaction in step two of Dubin’s theory-building methodology. Figure 23 illustrates the Business Model Funnel and the interaction of the four units of the theory.

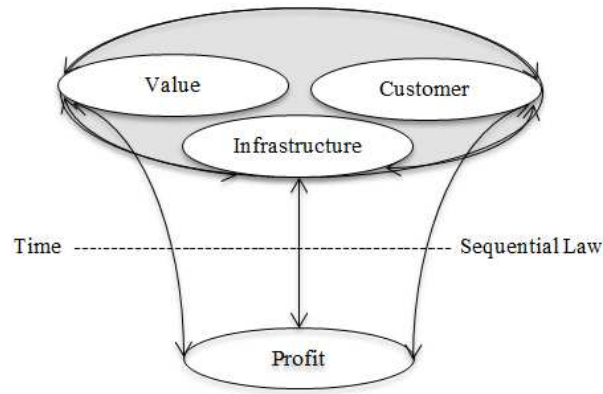


Figure 23

The Business Model Funnel

To conceptualize a business using the Business Model Funnel, it is recommended that business practitioners think about their product or service in ways related to the four units of the theory, (a) value for the customer, (b) customers for target and outreach, (c) infrastructure from supply chain through delivery chain, and (d) profit through the monetization of business activities. In each of these areas, the practitioner should fluently know what that area represents in the business, and what resources, activities, processes, etc. are involved with it. Readily knowing and describing each of these core aspects of a business should enable practitioners to take a macro-view of a business, as well as a professional approach in applying the theoretical principles to the organizational systems. The Business Model Funnel is also significant because it should help practitioners gain a better understanding of how to organize a business around the four core areas of a business model and ensure that these areas fit together logically. With a deeper understanding of business models, it is argued that practitioners are better equipped to identify opportunities for business innovation, organizational development, and

sustainable business outcomes. It was a goal of this study to produce practical theory that informed practitioners and promoted the continuous information-sharing cycle between practice, research, and theory described by Lynham and McDonald's (2011) concept of praxis.

The emergent theory has several implications for theory building of business models. First, the theory has significance for its utilization of a quantitative hypothetico-deductive theory-building research of business models. The research produced a testable and hypothetico-deductive (i.e., falsifiable) starting point for theoretical research on the business model concept. It may also have revealed a broader range of research directions for scholars by utilizing the theoretical framework. Second, integrating and layering existing perspectives and conceptual frameworks into a theoretical framework should lead to a better understanding of the phenomenon by emphasizing the nuances and details of the business model concept in the body of literature. Finally, the emergent theory should make clear the crucial importance and scientific challenges of theory building of the business model concept.

Recommendations for Future Research

The recommendations for future research on the business model concept arise in three main areas. First, while the current research explored and theorized a general business model concept, it is recommended that the theory be expanded to include the notion of sustainable business models (Geissdoerfer et al., 2018). Numerous articles have been written in recent years on sustainable business models, and this appears to be a new area of crucial importance for forward-looking businesses. A second recommendation for future research is in the area of purely digital business models. Many digital technologies

have opened new frontiers for business in the areas of artificial intelligence, cryptocurrency, non-fungible token, name-image-likeness licensing, etc., and these business models should be investigated. The final recommendation for research is to recompile, refine, and confirm or disconfirm the focal theory. The research could begin by recompiling the focal theory into an article-length document of 20-30 pages and refining the substantive quality, utility, and trustworthiness of the theory (i.e., version 2.0). In addition, the study could include a large-scale survey of business practitioners, scholars, researchers, and graduate students to assess the theory using Patterson's formal theory evaluation criteria. Having external practitioners and academicians evaluate the theory would greatly help to keep it current, relevant, and practical, as well as identify potential areas of confirmation or disconfirmation (i.e., falsification). Dubin (1978) stated that “the “intellectually interesting feature of a model [i.e., scientific theory] ... is its disproof, not its proof” (p.225). These recommendations for future research are consistent with Lynham's (2002a) recommendation of "continuous refinement and development" (p233) of a theory.

Limitation

Two notable limitations of the study became known during the course of the research, and both involved the nature of the data in Remané et al. (2017) database. First, it was determined that Chi-square tests were the lone statistical analyses (for the purposes of this study) that could be performed on the data in Remané et al. (2017) database. Those Chi-square tests also would simply analyze whether there was an association between (or independence of) the empirical indicators of the units of the theory. The test results indicated that the empirical indicators were indeed independent of each other, thus

supporting the theorist-researcher argument for the existence of the theory's units. A second limitation of the study involved Chi-square's ability (using data in Remané et al.'s database) to indicate the existence of associations/relationships between the empirical indicators across the units of the theory (i.e., inter-unit relationships). The research study theorized and the scholarly literature supported the notion that there are relationships between all four units of the theory. However, the Chi-square tests found few statistically significant instances of the existence of those associations/relationships, and this limited the study's ability to provide empirical existence of relationships between the units of the theory.

Conclusion

The purpose of this study was to address the inadequacy of theoretical research on the business model concept by developing and testing of theoretical framework that makes explicit a theory of the business model concept. The study also ventured to establish a reflexive system of praxis for the business model concept, where practice prompts scholarly research, research generates theory, and theory both informs research and leads to practice (Lynham & McDonald, 2011). Lastly, the research study attempted to provide a deeper understanding of the phenomenon of business models in the empirical world. This research study contributes to the existing body of knowledge on business models and the scientific investigation of the business model concept.

REFERENCES

- Abdelkafi, N., Makhotin, S., & Posselt, T. (2013). Business model innovations for electric mobility—what can be learned from existing business model patterns? *International Journal of Innovation Management*, 17(01), 1340003.
- Afuah, A., & Tucci, C. L. 2001. *Internet business models and strategies: Text and cases* (2nd ed.). Mc-Graw-Hill.
- American Psychological Association. (2015). Content validity. In *APA dictionary of psychology* (2nd ed., p. 242).
- American Psychological Association. (2015). Construct validity. In *APA dictionary of psychology* (2nd ed., p. 240).
- American Psychological Association. (2015). hypothetico-deductive method. In *APA dictionary of psychology* (2nd ed., p. 515).
- Amit, R., & Zott, C. (2001). Value creation in e-business. *Strategic management journal*, 22(6-7), 493-520.
- Amshoff, B., Dülme, C., Echterfeld, J., & Gausemeier, J. (2015). Business model patterns for disruptive technologies. *International Journal of Innovation Management*, 19(03), 1540002.
- Applegate, LM (2000). E-business models: Making sense of the Internet business landscape. In *Information technology and the Future Enterprise: New Models for- Managers*, pp. 49–94. Prentice Hall.

- Baden-Fuller, C., & Haefliger, S. (2013). Business models and technological innovation. *Long range planning*, 46(6), 419-426.
- Baden-Fuller, C., & Mangematin, V. (2013). Business models: A challenging agenda. *Strategic Organization*, 11(4), 418-427.
- Baden-Fuller, C., & Morgan, M. S. (2010). Business models as models. *Long range planning*, 43(2-3), 156-171.
- Barnes, C., Blake, H., & Pinder, D. (2009). *Creating and delivering your value proposition: Managing customer experience for profit*. Kogan Page Publishers.
- Berger, J., & Zelditch, M. (1993). *Theoretical research programs: Studies in the growth of theory*. Stanford University Press.
- Billig, M. (2015). The myth of Kurt Lewin and the rhetoric of collective memory in social psychology textbooks. *Theory & Psychology*, 25(6), 703-718.
- Boston University. (2008). The syntax of predicated logic.
https://www.bu.edu/linguistics/UG/course/lx502/_docs/lx502-predicate%20logic%201.pdf
- Branch, J., & Rocchi, F. (2015). Concept development: a primer. *Philosophy of Management*, 14(2), 111-133.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77-101.

- Bucherer, E., Eisert, U., & Gassmann, O. (2012). Towards systematic business model innovation: lessons from product innovation management. *Creativity and innovation management*, 21(2), 183-198.
- Burke, M. E. (2007). Making choices: research paradigms and information management: Practical applications of philosophy in IM research. *Library review*, 56(6), 476-484.
- Calabrese, R. L. (2006). *The Elements of an Effective Dissertation and Thesis: A Step-by-Step Guide to Getting it Right the First Time*. Rowman & Littlefield Publishing Group.
- Callahan, J. L. (2014). Writing literature reviews: A reprise and update. *Human resource development review*, 13(3), 271-275.
- Campbell, N. R. (1921). *What is science?*. Methuen & Company Limited.
- Casadesus-Masanell, R., & Ricart, J. E. (2010). From strategy to business models and onto tactics. *Long range planning*, 43(2-3), 195-215.
- Chesbrough, H. (2006). *Open business models: How to thrive in the new innovation landscape*. Harvard Business Press.
- Chesbrough, H. (2010). Business model innovation: opportunities and barriers. *Long range planning*, 43(2-3), 354-363.
- Chesbrough, H., & Rosenbloom, R. S. (2002). The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spin-off companies. *Industrial and corporate change*, 11(3), 529-555.

- Clark, D.L., Guskin, S. L., & Guba, E.G, (1977, p.A-3). *Understanding and Formulating Problems for Inquiry*.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.
- Crossan, M. M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of management studies*, 47(6), 1154-1191.
- De Reuver, M., Bouwman, H., & Haaker, T. (2013). Business model roadmapping: A practical approach to come from an existing to a desired business model. *International Journal of Innovation Management*, 17(01), 1340006.
- Demil, B., & Lecocq, X. (2010). Business model evolution: in search of dynamic consistency. *Long range planning*, 43(2-3), 227-246.
- Drisko, J. W. (2005). Writing up qualitative research. *Families in Society*, 86(4), 589-593.
- Drucker, P. F. (1994). *The Theory of the Business*. Harvard Business Press.
- Dubin, R. (1969). *Theory building: A practical guide to the construction and testing of theoretical models*. New York: Free Press.
- Dubin, R. (1978). *Theory building* (Rev. ed.). New York: Free Press.
- Dubosson-Torbay, M., Osterwalder, A., & Pigneur, Y. (2002). *E-business model design, classification, and measurements*. Thunderbird International Business Review, 44(1), 5-23.

- Ellinger, A. D., & Yang, B. (2011). Creating a whole from the parts: Qualities of good writing. In *The handbook of scholarly writing and publishing*, 115-124.
- Fielt, E. (2014). Conceptualizing business models: Definitions, frameworks and classifications. *Journal of Business Models*, 1(1), 85-105.
- Foss, N. J., & Saebi, T. (2017). Fifteen years of research on business model innovation: How far have we come, and where should we go? *Journal of Management*, 43(1), 200-227.
- Frankenberger, K., Weiblen, T., Csik, M., & Gassmann, O. (2013). The 4I-framework of business model innovation: A structured view on process phases and challenges. *International journal of product development*, 18(3/4), 249-273.
- Gassmann, O., Frankenberger, K., and Csik, M. (2013) *The St. Gallen business model navigator*. Working Paper, University of St. Gallen, Switzerland.
- Gassmann, O., Frankenberger, K., & Csik, M. (2014). *The business model navigator: 55 models that will revolutionise your business*. Pearson.
- Geissdoerfer, M., Savaget, P., & Evans, S. (2017). The Cambridge business model innovation process. *Procedia Manufacturing*, 8, 262-269.
- Geissdoerfer, M., Vladimirova, D., & Evans, S. (2018). Sustainable business model innovation: A review. *Journal of cleaner production*, 198, 401-416.
- George, G., & Bock, A. J. (2011). The business model in practice and its implications for entrepreneurship research. *Entrepreneurship theory and practice*, 35(1), 83-111.

- Giddings, G. (2008). Humans versus computers: Differences in their ability to absorb and process information for business decision purposes—and the implications for the future. *Business information review*, 25(1), 32-39.
- Gioia, D. A., & Pitre, E. (1990). Multiparadigm perspectives on theory building. *Academy Of Management Review*, 15(4), 584-602.
- Glaser, B. G. (1965). The constant comparative method of qualitative analysis. *Social problems*, 12(4), 436-445.
- Gruber, T. R. (1993). A translation approach to portable ontology specifications. *Knowledge acquisition*, 5(2), 199-220.
- Hedman, J., Kalling, T., 2003. The business model concept: theoretical underpinnings and empirical illustrations. *European Journal of Information Systems* 12, 49e59.
- Holton III, E. F. (2003). Where are the theory-building research methods articles? *Human Resource Development Review*, 2(3), 227-228.
- Holton, E. F., & Lowe, J. S. (2007). Toward a general research process for using Dubin's theory building model. *Human Resource Development Review*, 6(3), 297-320.
- Hultgren, F., & Coomer, D. (1989). *Alternative modes of inquiry in home economics education*. Glencoe Publishing.
- Inwood, M., & Honderich, T. (1995). *The Oxford companion to philosophy*.
- Jacobs, R. L. (2011). Developing a research problem and purpose statement: In *The Handbook of Scholarly Writing and Publishing*, TS Rocco and T. Hatcher.
- Johnson, M. W., Christensen, C. M., & Kagermann, H. 2008. Reinventing your business model. *Harvard Business Review*, 86: 50–59.

- Kaplan, R. S., & Norton, D. P. (1992). The Balanced Scorecard: Measure that Drive Performance, *Harvard Business Review*, Jan.
- Kaplan, A. (1964). *The conduct of inquiry*. Transaction Publishers.
- Kerlinger, F. N. (1973). *Foundations of behavioral research: Educational, psychological and sociological inquiry*. Holt Rinehart and Winston.
- Kotler, P., & Armstrong, G. (2012). *Principles of marketing*. Pearson education.
- Krathwohl, D.R., (1998) *Methods of educational and social science research: An integrated approach*, (2nd ed.). Addison-Wesley Longman.
- Kuhn, T. S. (1970). *The structure of scientific revolutions* (Vol. 111). University of Chicago Press: Chicago.
- Lincoln, Y.S., (2007). *EDAD 690, Spring 2007*. Texas A&M University.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage Publications.
- Lüttgens, D., & Diener, K. (2016). Business model patterns used as a tool for creating (new) innovative business models. *Journal of Business Models*, 4(3).
- Lynham, S. A. (1998). The development and evaluation of a model of responsible leadership for performance: Beginning the journey. *Human Resource Development International*, 1(2), 207–220.
- Lynham, S. A. (2000b). Theory building in the human resource development profession. *Human Resource Development Quarterly*, 11(2), 159-178.
- Lynham, S. A. (2002a). The general method of theory-building research in applied disciplines. *Advances in developing human resources*, 4(3), 221-241.

- Lynham, S. A. (2002b). Quantitative research and theory building: Dubin's method. *Advances in developing human resources*, 4(3), 242-276.
- Lynham, S. A., & Chermack, T. J. (2006). Responsible leadership for performance: A theoretical model and hypotheses. *Journal of Leadership & Organizational Studies*, 12(4), 73-88.
- Lynham, S. A., & McDonald, K. S. (2011). There's nothing quite as practical as good research. *Advances in developing human resources*, 13(2), 131-134.
- Magretta, J. (2002) 'Why Business Models Matter.' *Harvard Business Review*, vol. 80, no. 5, pp. 86-92.
- Markides, C. (1999). All the Right Moves. Boston, Harvard Business School Press.
- Markides, C. (2006). Disruptive innovation: In need of better theory. *Journal of product innovation management*, 23(1), 19-25.
- Marsick, V. J. (1990a). Altering the paradigm for theory building and research in human resource development. *Human Resource Development Quarterly*, 1(1), 5-24.
- Massa, L., Tucci, C. L., & Afuah, A. (2017). A critical assessment of business model research. *Academy of Management Annals*, 11(1), 73-104.
- McGrath, R. G. (2010). Business models: A discovery driven approach. *Long range planning*, 43(2-3), 247-261.
- McIntire, S. A., & Miller, L. A. (2007). Foundations of psychological testing: A practical approach (2nd ed.). Sage publications.
- Miller, L. A., & Lovler, R. L. (2018). *Foundations of psychological testing: A practical approach*. Sage publications.

- McLean, G. N. (2011). Writing theory, conceptual, and position articles for publication. *The handbook of scholarly writing and publishing*, 209-221.
- Merriam-Webster. (n.d.). Concept. In *Merriam-Webster.com dictionary*. Retrieved April 25, 2024, from <https://www.merriam-webster.com/dictionary/concept>
- Merriam-Webster. (n.d.). Deconstruct. In *Merriam-Webster.com dictionary*. Retrieved April 25, 2024, from <https://www.merriam-webster.com/dictionary/deconstruct>
- Merriam-Webster. (n.d.). Commerce. In *Merriam-Webster.com dictionary*. Retrieved April 25, 2024, from <https://www.merriam-webster.com/dictionary/commerce>
- Merriam-Webster. (n.d.). Homologous. In *Merriam-Webster.com dictionary*. Retrieved April 25, 2024, from <https://www.merriam-webster.com/dictionary/homologous>
- Merton, R. K. (1968). *On sociological theories of the middle range* [1949]. na.
- Mitchell, D. W., & Coles, C. (2003). The ultimate competitive advantage of continuing business model innovation. *Journal of Business Strategy*, 24(5), 15-21.
- Mitchell, D., & Coles, C. (2004). Business model innovation breakthrough moves. *Journal of business strategy*, 25(1), 16-26.
- Mitchell, D., & Coles, C. (2004a). Establishing a continuing business model innovation process. *Journal of business strategy*, 25(3), 39-49.
- Morgan, G. A., Barrett, K. C., Leech, N. L., & Gloeckner, G. W. (2011). *IBM SPSS for Introductory Statistics: Use and Interpretation: Use and Interpretation*. Routledge.
- Morris, M., Schindehutte, M., & Allen, J. (2005). The entrepreneur's business model: toward a unified perspective. *Journal of business research*, 58(6), 726-735.

- Moustakas, C. (1994). *Phenomenological research methods*. Sage publications.
- Mylopoulos, J. (1992). Conceptual modelling and Telos. *Conceptual modelling, databases, and CASE: An integrated view of information system development*, 49-68.
- Nielsen, C., & Lund, M. (2014). An introduction to business models. In *The basics of business models*, 8-20. Ventus.
- Nickels, W. G., McHugh, J. M., & McHugh, S. M. (2016). *Understanding Business* 11th ed. McGraw-Hill Irwin.
- Ormondroyd, J., Engle, M., & Cosgrave, T. (2004). *Critically analyzing information sources*. www.library.cornell.edu.okuref/research/skill26.htm
- Osterwalder, A., 2004. *The Business Model Ontology - a proposition in a design approach*. http://www.hec.unil.ch/aosterwa/PhD/Osterwalder_PhD_BM_Ontology.pdf
- Osterwalder, A., & Pigneur, Y. (2002). *Business models and their elements*. Position paper for the international workshop on business models, Lausanne, Switzerland.
- Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game changers, and challengers*. John Wiley & Sons.
- Osterwalder, A., Pigneur, Y., & Tucci, C. L. (2005). Clarifying business models: Origins, present, and future of the concept. *Communications of the association for Information Systems*, 16(1), 1.

- Pateli, A. G., & Giaglis, G. M. (2004). A research framework for analysing eBusiness models. *European journal of information systems*, 13(4), 302-314.
- Patterson, C. (1986) *Theories of Counseling and Psychotherapy*, 4th ed, Harper & Row, pp. xix-xxii.
- Priem, R. L., & Butler, J. E. (2001). Tautology in the resource-based view and the implications of externally determined resource value: Further comments. *Academy of Management Review*, 26(1), 57-66.
- Porter, M. E. (1985) *Competitive advantage: creating and sustaining superior performance*. The Free Press.
- Porter, M. E. (2008), The Five Competitive Forces that Shape Strategy, *Harvard Business Review*, Vol. 86, No. 1, pp. 2-17.
- Remané, G., Hanelt, A., Tesch, J. F., & Kolbe, L. M. (2017). The business model pattern database—a tool for systematic business model innovation. *International Journal of Innovation Management*, 21(01), 1750004.
- Richardson, J. E. (2005). The business model: an integrative framework for strategy execution. *Available at SSRN 932998*.
- Sandulli, F.D., & Chesbrough, H., (2009). The Two Sides of Open Business Models.
<http://dx.doi.org/10.2139/ssrn.1325682>
- Schaltegger, S., Hansen, E. G., & Ludeke-Freund, F. 2016. Business models for sustainability origins, present research, and future avenues. *Organization & Environment*, 29: 3–10.

- Shafer, S. M., Smith, H. J., & Linder, J. C. (2005). The power of business models. *Business Horizons*, 48: 199–207.
- Schneider, S., & Spieth, P. (2013). Business model innovation: Towards an integrated future research agenda. *International Journal of Innovation Management*, 17(01), 1340001.
- Snow, R. E. (1973). Theory construction for research on teaching. *Second handbook of research on teaching*, 77-112.
- Spieth, P., Schneckenberg, D., & Ricart, J. E. (2014). Business model innovation—state of the art and future challenges for the field. *R&D Management*, 44(3), 237-247.
- Stock, W. A. (1994). Systematic coding for research synthesis. *The handbook of research synthesis*, 236, 125-138.
- Storberg-Walker, J. (2003). Comparison of the Dubin, Lynham, and Van de Ven theory-building research methods and implications for HRD. *Human Resource Development Review*, 2(2), 211-222.
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Sage Publications.
- Suddaby, R. (2010). Construct clarity in theories of management and organization: Editor's comments. *Academy of Management Review*, 35(3), 346-357.
- Swanson, R. A., & Chermack, T. J. (2013). *Theory building in applied disciplines*. Berrett-Koehler Publishers.

- Swanson, R. A., Lynham, S. A., Ruona, W. E., & Torraco, R. J. (2000, March). Theory building research in HRD—Pushing the envelope. In *Proceedings of the Academy of Human Resource Development 2000 annual conference* (pp. 1125-1130). Baton Rouge, LA: Academy of Human Resource Development.
- Teece, D. J. (2010). Business models, business strategy and innovation. *Long range planning*, 43(2-3), 172-194.
- Teece, D. J. (2017). Business models and dynamic capabilities. *Long Range Planning*, 51(1), 40-49.
- Timmers, P., 1998. Business Models for Electronic Markets. *Electronic Markets* 8 (2), 3e8.
- Topp, W. K. (1995). *The organizational change agent as an appreciative system: Increasing effectiveness in business reengineering through the systems approach* (Unpublished master's thesis). University of Cape Town, South Africa.
- Topp, W. (2000). Generative conversations: Applying Lyotard's discourse model to knowledge creation within contemporary organizations. *Systems Research & Behavioral Science*, 17, 333-340.
- Torraco, R. J. (2005a). Theory development research methods. In R. A. Swanson & E. F. Holton III (Eds.), *Research in organizations* (p. 351 – 374). Berrett - Koehler.
- Torraco, R. J. (2005b). Writing integrative literature reviews: Guidelines and examples. *Human resource development review*, 4(3), 356-367.
- Torraco, R. J. (2016). Writing integrative literature reviews: Using the past and present to explore the future. *Human Resource Development Review*, 15(4), 404-428.

- Turner, J. R., Baker, R., & Kellner, F. (2018). Theoretical literature review: Tracing the life cycle of a theory and its verified and falsified statements. *Human Resource Development Review*, 17(1), 34-61.
- Velu, C., & Stiles, P. (2013). Managing decision-making and cannibalization for parallel business models. *Long Range Planning*, 46(6), 443-458.
- University of Washington, (n.d.). *Writing Critical Analysis Papers*. Retrieved April 25, 2024, from, <http://depts.washington.edu/pswrite/Handouts/CriticalAnalysisPapers.pdf>
- Weick, K. E. 1989. Theory construction as disciplined imagination. *Academy of Management Review*, 14: 516-531.
- Weill, P., Malone, T. W., D'Urso, V. T., Herman, G., & Woerner, S. (2005). Do some business models perform better than others? A study of the 1000 largest US firms. *MIT Center for coordination science working paper*, 226, 1-39.
- Whetten, D. A. 1989. What constitutes a theoretical contribution? *Academy of Management Review*, 14: 490-495.
- Wirtz, B., & Daiser, P. (2018). Business model innovation processes: A systematic literature review. *Journal of Business Models*, 6(1), 40-58.
- Wirtz, B. W., Pistoia, A., Ullrich, S., & Göttel, V. (2016). Business models: Origin, development and future research perspectives. *Long range planning*, 49(1), 36-54.
- Woodall, T. (2003). Conceptualising 'value for the customer': an attributional, structural and dispositional analysis. *Academy of Marketing Science Review*, 12(1), 1-42.

- Woodward-Kron, R. (2002). Critical analysis versus description? Examining the relationship in successful student writing. *Journal of English for academic purposes*, 1(2), 121-143.
- Yang, B. (2002). Meta-analysis research and theory building. In S. A. Lynham (Ed.), *Theory building in applied disciplines. Advances in Developing Human Resources*, 4(3), 296–316.
- Yin, R. (1994). *Case study research*. Sage.
- Zott, C., Amit, R., & Massa, L. (2011). The business model: recent developments and future research. *Journal of management*, 37(4), 1019-1042.

APPENDIX A

Empirical Indicators (Columns) Remané et al. (2017) Business Model Pattern Database

[illegible]

(Continued)

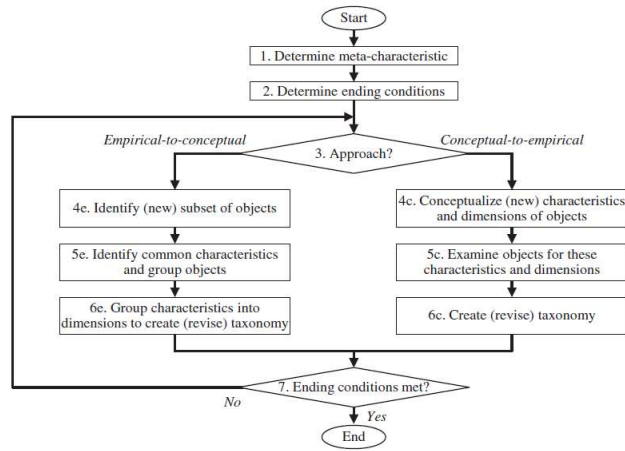
[illegible]

(Continued)

Interaction	Source		Pattern		Dimensions											
	D1: Hier. impact	D2: Degree of digitalization	D3: Product type	D4: Strategy for differentiation	D5: Target customers	D6: Value delivery process	D7: Sourcing	D8: Third parties involved	D9: Value creation process	D10: Revenue model	D11: Pricing strategy	D12: Direct profit effect				
	Prototypical pattern Solution pattern Partly digital Digitally enabled Not necessarily digital	Physical Financial Hybrid Intellectual property Product type not specified	Customization Combination Access/ownership Price Network effects Specific, new customer segment Lock-in existing customers Other companies (B2B) No impact on target customers Brand and marketing Sales channel Customer relationship management No impact on delivery process	Make Buy No impact on sourcing Suppliers Customers Competitors Multiplication No impact on third parties involved Innovation Supply Production Multiple steps No impact on creation process	Sell Lend Intermediary Advertising No impact on revenue model Premium Cheap No impact on pricing strategy Increase revenue Reduce cost Multiple effects No direct profit impact											
Ragau (2001)	Audience measurement services	X	X					X	X					X	X	X
	Brand integrated content	X	X					X	X					X	X	X
	Buy/sell fulfillment	X	X	X				X	X					X	X	X
	Classifieds	X	X	X			X	X	X					X	X	X
	Content-targeted advertising	X	X		X			X	X					X	X	X
	Demand collection system	X	X		X		X	X	X					X	X	X
	Marketplace exchange	X	X				X	X	X					X	X	X
	Open content	X	X					X	X					X	X	X
	Query-based paid placement	X	X	X	X		X	X	X		X			X	X	X
	Search agent	X	X					X	X					X	X	X
	Trust intermediary	X	X	X				X	X		X			X	X	X
	Trust services	X	X				X	X	X		X			X	X	X
	Clemens (2009)	Selling experience	X	X					X	X					X	X
Selling online services		X	X					X	X		X					
Selling virtual accessories		X	X	X				X	X		X					
Social search		X	X		X			X	X							
Contextual mobile advertising		X	X	X				X	X		X			X	X	X
Misdirection		X	X	X				X	X					X	X	X
Digitally charged products		X	X		X			X	X		X			X	X	X
Physical freemium		X	X					X	X		X			X	X	X
Digital add-on		X	X	X				X	X		X			X	X	X
Digital lock-in		X	X	X				X	X		X			X	X	X
Object self service		X	X		X			X	X		X			X	X	X
Product as point of sales		X	X					X	X		X			X	X	X
Remote usage and condition monitoring		X	X		X			X	X		X			X	X	X
Wirtz et al. (2010)	Sensor as a service	X	X		X			X	X		X			X	X	X
	Context	X	X	X			X	X	X					X	X	X
	Iteration	1	4	2	2	3	3	3	3	3	2	3	2	3	2	3

APPENDIX B

Illustration of the Nickerson' flowchart for applying a taxonomy-building structure



Taxonomy-Building Structure (Nickerson, 2013; Remané et al., 2017)

APPENDIX C

Summary of Patterson's (1986) Formal Rating Criteria and the Numerical Evaluation

Ratings of the Theory of the Business Model Concept

Rating Criteria	1	2	3	4	5	6	7	8	9	10
Importance					1					
Precision and Clarity						1				
Parsimony and Simplicity					1					
Comprehensiveness							1			
Operationality					1					
Empirical Validity							1			
Fruitfulness						1				
Practicality							1			
Evaluation Average : 6.0										