Gülyaz, Erdoægan; van der Veen, Jack A.; Venugopal, Venu; Solaimani, Sam

Article

Towards a holistic view of customer value creation in Lean: A design science approach

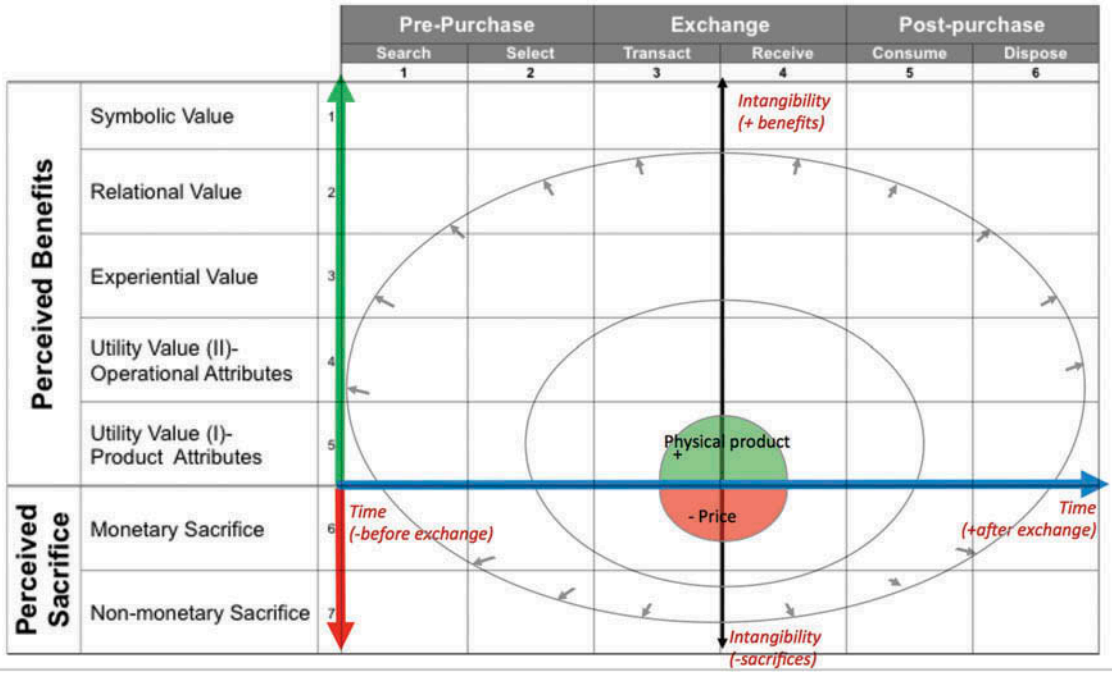
Cogent Business & Management

Provided in Cooperation with:
Taylor & Francis Group

Suggested Citation: Gülyaz, Erdoægan; van der Veen, Jack A.; Venugopal, Venu; Solaimani, Sam (2019) : Towards a holistic view of customer value creation in Lean: A design science approach, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 6, pp. 1-30, https://doi.org/10.1080/23311975.2019.1602924

This Version is available at:
https://hdl.handle.net/10419/206170

cogent business & management



MANAGEMENT | RESEARCH ARTICLE

Towards a holistic view of customer value creation in Lean: A design science approach

Erdoğan Gülyaz, Jack A.A. van der Veen, Venu Venugopal and Sam Solaimani

Cogent Business & Management (2019), 6: 1602924

cogent business & management

MANAGEMENT | RESEARCH ARTICLE

Towards a holistic view of customer value creation in Lean: A design science approach

Erdoğan Gülyaz[1]*, Jack A.A. van der Veen[1], Venu Venugopal[1] and Sam Solaimani[1]

Received: 08 January 2019
Accepted: 25 February 2019
First Published: 04 April 2019

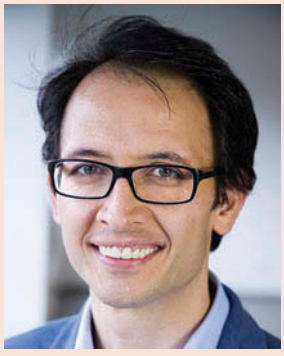
*Corresponding author: Erdoğan Gülyaz, Center for Marketing & SCM, Nyenrode Business Universiteit, Netherlands
E-mail: E.Gulyaz@nyenrode.nl

Reviewing editor:
Hung-Che Wu, Business School, Nanfang College of Sun Yat-sen University, China

Additional information is available at the end of the article

Abstract: While "identifying customer value" is the first principle of Lean thinking, the concept of customer value has largely remained unchanged in the Lean discourse - quality, cost and delivery. This research examines the problem of working from such an internal process point of view in today's highly dynamic world, where customer needs get increasingly more sophisticated. Aiming to contribute to solving this problem, this paper develops a new artifact, the so-called Customer Value Matrix (CVM) Instrument by bridging Operations Management, Strategy and Marketing literatures and following the design science approach. This paper builds the CVM instrument based on five theoretically grounded design principles, which are derived from a systematic review of 49 articles, and proposes three empirically grounded technological rules as a result of multi-stage evaluations. Supporting Service-Dominant Logic and Lean Consumption views, the CVM instrument can be considered as a novel addition to the Lean toolkit and enable managers to view what the customer truly values in a more holistic fashion and, as a result, promote a balanced view of process and customer focus.

Subjects: Operations Management; Strategic Management; Marketing Management



Erdoğan Gülyaz

ABOUT THE AUTHOR

Erdoğan Gülyaz is a Senior Project Manager - New Product Development (NPD), working for a large multinational organization. He pursued a PhD in 'Lean and Competitiveness'. Jack van der Veen is Professor of Supply Chain Management and holder of the evofenedex Chair for SCM at Nyenrode Business University. Venu Venugopal is a Professor of Supply Chain Operations at Nyenrode University. Sam Solaimani is Associate Professor at Nyenrode Business University.

As a research group, Erdoğan, Jack, Venu and Sam focus on areas including Lean management, SME Competitiveness, Value creation and appropriation, Supply Chain Collaboration and Innovation Management.

This research is part of a broader PhD research where Erdoğan investigated how organizations can achieve competitiveness through Lean and proposed new ways of creating and capturing value in a Lean system.

PUBLIC INTEREST STATEMENT

For organizations that aim to achieve operational excellence, Lean has long been a powerful method. Unfortunately, associated efforts have the tendency to become internally focused. However, in today's dynamic world, centering processes around the customer is more important than ever. Although Lean embraces the idea of creating customer value, it can be observed that the available tools in this regard are somewhat limited and do not always adhere to the new requirements.

In this paper, a new tool, coined the Customer Value Matrix (CVM) Instrument, is proposed as an addition to the Lean toolbox with the objective to facilitate organizations to identify and capture customer value. Combining important new insights from Strategy and Marketing with Operations, the CVM can help managers of different functions to get a holistic and structured view on what customer value entails and provides an associated Lean-based method to enhance customer value and become more competitive.

Keywords: Lean; customer value; service-dominant logic; design science research

1. Introduction

In the post-economic recession environment where efficient use of resources is paramount, more and more organizations across a wide range of sectors are embarking on the Lean journey along its mantra "creating customer value by reducing waste". While creating value focuses on retaining and attracting more customers thereby increasing revenue, eliminating waste helps companies improve their efficiency thereby reducing cost. However, according to a large survey, a majority of the firms (an alarming 74%) failed to extract the expected value from Lean and are not making good progress (Pay, 2008). One possible explanation would be that for many companies the major focus of Lean implementation is still at the shop floor level without any "strategic approach", which led to many unsustainable Lean transformation programs (Hines, Holweg, & Rich, 2004). Not only production-oriented organizations, but also many service organizations that adopt Lean, typically tend to work from an internal, cost-focused point of view (Seddon & O'donovan, 2010). As efficiency is becoming a necessary order qualifier (MacBryde et al., 2013), many organizations might be adopting Lean, in fact, to avoid the "competitive disadvantage" coming from inefficiency.

Although continuous customer value creation is the core of Lean philosophy, Lean practice and theory development over the years appears to have gained a somewhat one-sided approach, i.e., focusing on the firm's exploitative capability. March (1991) relates exploitative capability to efficiency, routinizing and performing better in meeting the existing needs of customers under given constraints. Many Lean firms arguably strive to provide the same value for less money or more value for the same money. In other words, in everyday Lean practice, there appears to be a strong focus on efficiency (on "doing the job right") and a weaker concern about effectiveness ("doing the right job"). In today's highly dynamic world, where customer needs change rapidly, focusing too much on efficiency can eventually reduce a firm's offerings to commodity level.

Several scholars argue that firms need to be ambidextrous, i.e., to develop a balanced view of exploitation (e.g., increasing efficiency, improving quality) and exploration (e.g., searching creative ways to satisfy customer needs, explore new markets) if they are to survive and prosper (e.g., Birkinshaw & Gibson, 2004; He & Wong, 2004; Lubatkin, Simsek, Ling, & Veiga, 2006; March, 1991). Similarly, Radnor and Johnston (2013) stress that although process focus is essential to be more efficient, Lean firms need to develop a more balanced process and customer focus in service environments.

Understanding, creating and managing customer value (CV) has been long seen by many marketing scholars as the cornerstone of a firm's business strategy (e.g., Almquist et al., 2016; Porter, 1996; Slater & Narver, 1994; Verhoef & Lemon, 2013; Woodruff, 1997). Over the years, the marketing perspective on CV has evolved. For instance, Service-Dominant logic (S-D logic) stream (e.g., Grönroos & Voima, 2013; Vargo & Lusch, 2004), which emphasizes the importance of intangibility, exchange processes, and relationships in value offerings, and customer experience stream (e.g., Lemon & Verhoef, 2016; Verhoef et al., 2009), which stresses myriad touch points in multiple channels, become the new frontiers in CV research. Despite such advancements in CV research, CV concept for many Lean practitioners and scholars has largely remained unchanged: providing customer right quality with lower cost when needed (Womack & Jones, 1996), also known as Quality Cost Delivery (QCD). Typically in Lean, value is defined by the ultimate customer in terms of a specific product or service, which meets the customer's needs at a specific price at a specific time (Womack & Jones, 1996) and it is created through a series of value-added steps (Liker, 2004). This view has three limitations when compared to contemporary marketing literature: (i) CV can be expressed by the customer; (ii) CV is embedded in a product or service through a series of value-added steps; and (iii) CV meets the practical needs of a customer. The foregoing three limitations can blindside any firm (and particular Lean

firms as they have a limited view on CV) to realize full value potential in customer's consumption space. The problem is not the key ideas of Lean management, but the lack or incompleteness of tools and techniques in the Lean toolkit that can enable practitioners to adopt true customer perspective and capture the holistic notion of CV.

This study bridges operations and marketing disciplines to design a novel management instrument to capture CV within a Lean system, so-called Customer Value Matrix (CVM) Instrument. The CVM Instrument aims to provide a holistic view of customer value creation through encouraging explorative thinking, i.e., revealing blind-spots in the CV understanding and looking for creative ways to meet customer needs, which many Lean organizations seem to be missing.

The remainder of this paper is organized as follows. First, the research method, Design Science Research (DSR) is explained. Second, the key CV characteristics in literature are systematically reviewed to develop an initial solution design. Third, based on these CV characteristics, the main design principles are derived and the CVM Instrument is built upon. Fourth, the CVM is evaluated through multiple stages. Next, the discussions about the findings are provided. Finally, the conclusions, limitations and several suggestions for future research are given.

2. Research approach: design science research (DSR)

To iteratively design and evaluate the CVM Instrument, this research uses the DSR approach (Hevner, March, Park, & Ram, 2004; Holmström, Ketokivi, & Hameri, 2009; Van Aken, 2004). The design science paradigm seeks to extend the boundaries of organizational capabilities by creating new and innovative artifacts, and by focusing on how well the artifacts work rather than why they work (Hevner et al., 2004). Similarly, Van Aken (2004) states the mission of a design science is to develop knowledge for the design and realization of artifacts, i.e., to solve construction or improvement problems.

In DSR, March and Smith (1995) highlight two main activities, building and evaluating. An artifact is built to perform a specific task and evaluated to determine if any progress has been made. Throughout this study, the artifact that is worked on is referred as the CVM Instrument, and in line with March and Smith (1995), the artifact combines a model and a method of how to use the model. Inspired by Vaishnavi and Kuechler (2008) as well as the design procedures provided by Hevner et al. (2004), Holmström et al. (2009) and (Gregor & Hevner, 2013) the development and evaluation of the CVM Instrument followed the following five steps.

2.1. Solution design (Section 3)

To build the CVM Instrument on a theoretical foundation, the CV literature is systematically reviewed. Holmström et al. (2009) refer to this phase as "solution incubation" in which the CV knowledge domain is scanned to develop an initial solution design. In this phase, the main CV characteristics are identified.

2.2. Building the CVM (Section 4)

Based on the main CV characteristics, this research develops several design principles to build the CVM Instrument. The design principles and the CVM construction have gone through multiple thought processes and trials, during which solution design and building phase are intertwined.

2.3. Evaluation of the CVM (Section 5)

Once the instrument has been constructed, it is evaluated based on explicit criteria. Since designing is inherently an iterative and incremental activity, the evaluation phase provides essential feedback to the building phase (Hevner et al., 2004). Typically, during the evaluation phase, the strengths and weaknesses of the instrument are noted for the next iteration.

2.4. Discussions results (Sections 6 and 7)

In this step, theoretical generalizability of the findings is sought and the technological rules, linking general knowledge to the desired outcome (Van Aken, 2004), are outlined. The technological rules are derived from the build-evaluate iterations.

3. Solution design: systematic review of CV literature

In order to identify the key CV characteristics, a systematic literature review was conducted (Tranfield, Denyer, & Smart, 2003). Given the high number of publications in CV, the review focused on high-impact articles. First, we selected three- and four-star journals according to ABS[1] journal rating system. Second, to make sure the influential works are not missed, Google scholar citations are used, leading to more than 100 Google citations. In all, the keyword search, screening, snowballing and filtering yielded 49 publications for the full review. The selected papers were systematically reviewed, based on the following queries: How is CV defined? What are the key characteristics of CV? What are the proposed CV models? A careful exploration of the commonalities and differences observed in the literature resulted in nine key CV characteristics that are explained in the sub-sections below.

3.1. The nine key characteristics of CV

To identify the characteristics, the various concepts discussed in the publications were coded. Following Miles and Huberman (1994), the coding process started with manageable broad categories and extended/adapted every time new categories were added. Next, the study continued to explore new categories and identify important arguments/evidence for each category. In all, nine distinctive categories have been identified, which from here on will be referred to as *CV characteristics*. Those characteristics are briefly discussed below (see Appendix A for the evidences from the selected CV literature for each characteristic).

3.1.1. CV is subjective

Almost all scholars agree on the subjective and individualistic nature of CV; it varies from one individual to another (Holbrook, 1996). In other words, a product that is highly valuable to one customer may have little value to another.

3.1.2. CV has multiple attributes

CV has both product related and non-product related attributes (Keller, 1993). For the sake of product differentiation, many firms provide products with a range of accompanying services. In addition to product-related services such as financing, delivery, customer service and recycling the product after usage, there are other possible value elements, such as providing information about the use and maintenance of the product.

3.1.3. CV has abstraction hierarchy

It is a common understanding in CV literature that customers evaluate a product at different levels of abstraction. For instance, the desired attributes at the lowest level and customer goals at the highest level (Woodruff, 1997). Or, tangible needs such as physiological and safety-related needs are at the bottom of Maslow's pyramid and intangible needs such as self-actualization are at the top (Almquist et al., 2016).

3.1.4. CV is longitudinal

The value offering is not first assessed at the time of purchase, but (long) before the exchange takes place when the customer considers the purchase and after the purchase (e.g., Huber et al., 1997; Woodall, 2003). The entire process, from start (i.e., realizing a need and beginning the search) to finish (i.e., consumption and disposal of the product) can be viewed in episodes (Ravald & Grönroos, 1996). This is related to the well-known concept of "customer journey" in Marketing discourse.

3.1.5. CV involves trade-offs
CV includes perceived benefits as well as perceived sacrifices. Following the utility theory, many scholars (e.g., Anderson & Narus, 1998; Eggert & Ulaga, 2002; Zeithaml, 1988) formulate CV as the perceived benefits minus the perceived sacrifice. The perceived sacrifices include monetary as well as non-monetary costs (e.g., Woodall, 2003; Zeithaml, 1988).

3.1.6. CV is aggregated
Although customers experience distinctive value elements at different points of time and circumstances, they assess a product holistically and form an overall judgment (e.g., Keller, 1993; Lemke, Clark, & Wilson, 2011; Woodall, 2003), which can lead to positive behavior (e.g., repurchase, passing on positive reviews) or negative behavior (e.g., switching to a competitor, posting negative reviews). In other words, CV accumulates over temporal space, as the customer moves from pre-purchase to post-purchase assessment, and over cognitive space from attribute level to higher-level abstraction.

3.1.7. CV is co-created
Over two decades ago, Normann and Ramirez (1993) noted that the distinction between physical products and intangible services were breaking down and the customer's role was changing from consuming to co-creating value with the producer. According to S-D logic (Vargo & Lusch, 2004), goods are appliances that provide services to customers and, in order for these services to be delivered, customers still need to learn to use, maintain, repair and adapt the appliances to their unique needs. Therefore, by using a product, customers create value (Grönroos & Voima, 2013). As such, suppliers and customers are *co-creators* of value (Gummesson, 2008b).

3.1.8. CV is relative
As Holbrook (1996) suggests, CV is relativistic, which suggests it involves the comparison of objects, people and situations. Perceived value can also be influenced by competitors' deliberate actions, such as "negative advertising" (Brandenburger & Stuart, 1996). Customer experiences are more social in nature, and peer customers are influencing experiences as well (Lemon & Verhoef, 2016, p. 69).

3.1.9. CV is dynamic
As technology, market, and customer need change, CV also changes over time. Companies cannot remain competitive if they address only today's customer needs and fail to anticipate their future needs. In fact, customers expect companies to anticipate their needs and desires, even though they themselves cannot (Flint, Blocker, & Boutin, 2011).

The research builds on the idea that capturing all nine key characteristics in a single instrument would provide a more holistic view of CV. The next logical step would be to identify the gap between the ideal model (that incorporates all nine characteristics) and the existing CV models. Such a gap analysis would indicate what additional features are needed in the new design. For that purpose, the next sub-section extracts and compares different CV models from the selected publications.

3.2. Review of influential CV models
The selected papers were screened for CV models and taxonomies. Table 1 compares the selected CV models from the perspective of the nine CV characteristics.

Two broadly known CV analysis methods in the Lean discourse, Quality Function Deployment (QFD) (see Marchwinski, Shook, & Schroeder, 2008) and Lean consumption (Womack & Jones, 2005b) are also added in Table 1 for comparison. The last row relates to the question as to whether the models are accompanied by a method of use (which makes it an instrument).

The various authors discuss many of these characteristics either explicitly, incorporating them in their CV model, or implicitly, as part of their CV discussion. If the selected publication conceptualizes a given

Table 1. Comparisons of the selected CV models and the Lean CV analysis methods

Selected CV Models and CV analysis methods / Nine Key CV Characteristics	Lean CV Analy.Met.		Influential CV Models/frameworks in the literature												
	QFD	*Lean Consumption Mapping*	Garvin (1987)	Zeithaml (1988)	Keller (1993)	Ravald and Grönroos (1996)	Holbrook (1996)	Woodruff (1997)	Kim and Mauborgne (2000)	Woodall (2003)	Sweeney and Soutar (2001)	Smith and Colgate (2007)	Lemke et al. (2011)	Almquist et al.(2016)	Lemon and Verhoef (2016)
1. Subjective			•	•	•	•	•	•		•	•	•	•		•
2. Multiple attributes	•	•	•	•	•		•		•	•	•	•	•	•	•
3. Abstraction hierarchy			•	•	•	•	•	•		•	•	•	•	•	
4. Longitudinal		•				•		•	•	•					•
5. Trade-off	•	•		•		•				•	•	•	•		
6. Aggregated				•	•			•		•					•
7. Co-created													•		•
8. Relative	•						•		•				•	•	•
9. Dynamic								•							•
Managerial instrument included	•	•						•	•			•		•	

characteristic by providing taxonomy or sub-constructs, the characteristic in question considered as covered and illustrated by a filled circle.

Table 1 reveals some patterns and limitations. First, while *CV Char. # 1, #2* and *#3* are strongly emphasized in almost all the CV models in the Marketing stream, the remaining CV characteristics are emphasized less. Second, there is a strong emphasis on multiple attributes (*CV Char. #2*) and trade-off (*CV Char. #5*) aspects of CV in Lean tools, which can be linked to a more functional and operational view of CV. Finally, all the nine key CV characteristics are not incorporated in a single model that has a managerial use, which is a promising starting point for the next phase, i.e., the development of a comprehensive CV model. The CVM model proposed in this research is inspired by the matrix approach of the buyer utility map proposed by Kim and Mauborgne (2000). As it will be presented in the next section, this study expands the matrix in several dimensions to arrive at an analytical exhaustion.

4. Development of the CVM instrument

The CVM instrument, consisting of the CVM Model and the method of use, went through three design iterations where all the nine CV characteristics have been incorporated. The first version of the instrument (V1) had only six out of nine characteristics of CV. As V1 of the instrument was evaluated and literature was revisited, it became clear that improvements were needed to make the instrument more complete and at the same time more efficient. Based on the early evaluations, it was understood that experiential value has to be distinguished from the rest of the value categories, which agrees with some of the CV models in the literature (e.g., Smith & Colgate, 2007; Sweeney & Soutar, 2001). As a result of this CVM Model became a (7 x 6)-matrix. As is common under DSR, similar updates of the artifact under development (here the CVM Instrument) occurred as a result of further evaluations (see the next section for more details).

4.1. Constructing the CVM model

This study first converted generally abstractly defined CV characteristics into the design principles upon which the instrument could be built. The selected literature was revisited to validate the five design principles and revised them when needed where some of the design principles were further broken down to make them more precise. Four of the five design principles and corresponding CV characteristics fall into CVM modeling efforts and are presented below. The fifth design principle and corresponding CV characteristics are related to the method of use and will be discussed in the next sub-section.

Design Principle 1: The CVM Instrument should support the individualistic perspective and involve both tangible and intangible elements (incorporates CV Char. #1, #2, and #3).

CV encompasses a broad spectrum of tangible and intangible value elements. Building on existing literature, five value categories emerged as outlined below. For illustration purpose, some examples relating to a situation where a customer is in the process of purchasing a car are given.

Utility Value (I)-product/service attributes: It is related to the bundle of product/service attributes (Woodruff, 1997), which satisfies the practical needs of the customer. For example, the customer would be looking for ABS brake, GPS navigation system, after sales service, financing options, etc.

Utility Value (II)-operational attributes: It is about appropriate performances (Smith & Colgate, 2007) in meeting customer needs such as quality, speed, reliability, availability and flexibility. This category is essentially related to the producer's operational capabilities in delivering the bundle of product/service attributes.

Examples: Customers value on-time delivery, car quality performance and dealership performance.

Experiential (hedonic) value: Experiential value is related to the sensory and cognitive stimulation (Hirschman & Holbrook, 1982) facilitated by the provider, which allow the consumer to experience enjoyment, pleasure and fun during the stages of seeking, purchasing and consuming the product.

Examples: The customer interacting with the automaker's website, dealership atmosphere, and the fun of driving.

Relational value: This has to do with the benefits customers receive as a result of engaging in long-term relational exchanges with the firm. Ravald and Grönroos (1996) suggest that in a close relationship, the customer most likely evaluates the relationship as a whole, not necessarily just the offering. Gwinner, Gremler, and Bitner (1998) proposes three categories of customer perceived relational benefits: confidence benefits, social benefits and special treatment.

Examples: A trusted relationship with dealer, relationship with after sales service.

Symbolic (brand) value: Symbolic value, sometimes referred as brand value, relates to a customer's underlying needs for social approval, personal expression, shared value and outward-oriented self-esteem (Keller, 1993, p. 4). It essentially corresponds to the beliefs about the product/service and the firm. Clearly, the symbolic value satisfies the more psychological needs of customer and is highly intangible.

Examples: Some car brands profile themselves for 'safety' such as Volvo and some others for 'speed' such as Jaguar.

Design Principle 2: The CVM Instrument should focus on the customer's consumption processes, from beginning to end (incorporates CV Char. #4).

Customer process is considered as distinct temporal positions where customers assess the firm's offerings (e.g., Huber et al., 1997; Lemon & Verhoef, 2016; Parasuraman, 1997; Woodall, 2003; Woodruff, 1997). Huber et al. (1997) define two positions—ex-ante and ex-post, whereas Woodall (2003) explicate four, which are ex-ante, transaction, ex-post and disposition. Based on the concepts from the selected publications, this study delineates three temporal positions, which are similar to the stages outlined by Lemon and Verhoef (2016).

Pre-purchase: The customer's presumptions about value when considering a purchase, which may be driven by brand, relationship, earlier purchase experience and word of mouth.

Exchange: The customer's experience during transaction, which may be influenced by many factors, such as the convenience and safety of the transaction environment, friendliness of sales personnel, delivery performance (speed and reliability).

Post-purchase: The customer's experience with the product/service during consumption, including ease–of-use, effectiveness of product features, maintenance and ease-of-disposal.

In this study, for designing the CVM Model, each phase was divided into two stages. Pre-purchase was divided into *search* and *select*, exchange into *transact* and *receive*, and post-purchase into *consume* and *dispose*. As such, the six columns in the CVM Model represent the longitudinal perspective. In addition to developing a more fine-grained approach to capture the longitudinal aspect of CV, the main reason for expanding three stages to six stages is that, at each stage, the customer and the firm may meet in distinct forms (e.g., during *search*, visiting the website of the car manufacturer, and during *select*, visiting the dealer) and engage in distinct activities (e.g., during *consume*, carrying out periodic maintenance of the car, and during *dispose*, selling the used car).

Design Principle 3: The CVM Instrument should capture explicitly both benefits and sacrifices (incorporates CV Char. #5 and #6).

Perceived value is the difference between the perceived *benefits* (tangible and intangible benefits discussed above) and the perceived *sacrifice*, monetary and non-monetary (Bowman & Ambrosini, 2000; Eggert & Ulaga, 2002; Ravald & Grönroos, 1996; Zeithaml, 1988). Perceived sacrifice has two distinct components:

Monetary sacrifice: The financial costs incurred by the customer from the start of the search and selection process up to the disposal of the product/service. Ravald and Grönroos (1996) divide total monetary cost into two broad categories: *direct costs*, which include purchase price, acquisition costs, order handling, transportation, installation and maintenance, etc., and *indirect costs*, which include delayed delivery, risk of failure, poor performance, repair, etc. From this perspective, 'value-adding activities' are related to direct costs, while 'waste' is related to indirect costs.

Non-monetary sacrifice: This category includes (undesirable) time and effort spent on acquiring and using the product/service (e.g., searching for the desired product in the shop, time spent in queues and experiencing difficulty using the product). In addition to time and effort, which is also mentioned in Lean consumption (Womack & Jones, 2005a), many scholars also consider psychological costs, which Ravald and Grönroos (1996, p. 26) describe as "worry about whether a supplier will fulfill his promises".

The three design principles provide the foundation of the CVM Model, which is depicted in Figure 1. The sub-categories given for each design principle essentially form the rows and the columns of the matrix. The rows represent five benefit and two sacrifice categories. The columns represent the longitudinal journey from search to disposal. Each field of the matrix refers to an option of creating value by improving customer benefits and/or reducing customer sacrifice.

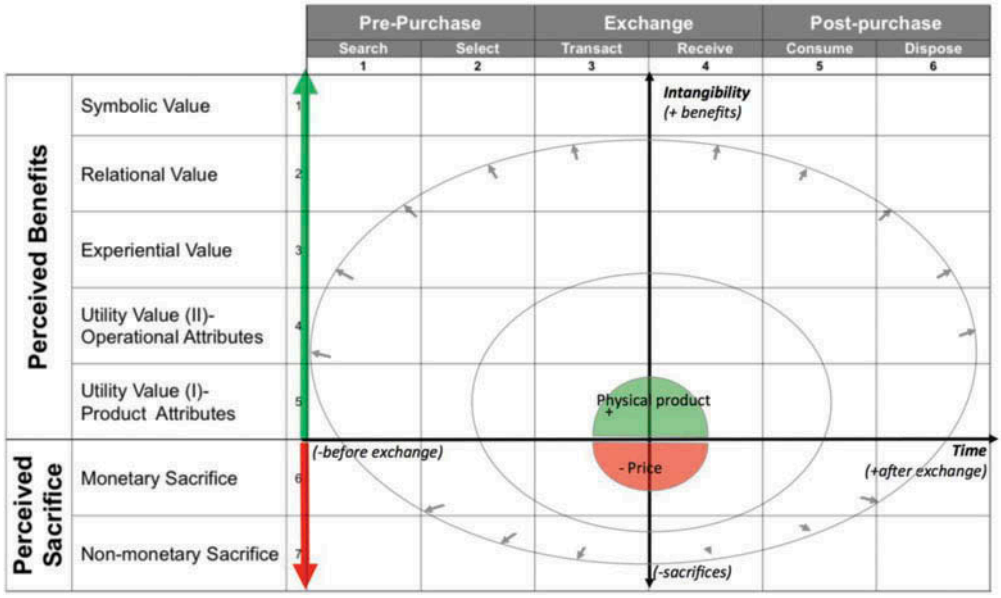


Figure 1. CVM Model sub-structure as a (7 x 6)-matrix.

Consisting of two distinct dimensions (time and perceived value), the CVM Model illustrates that CV indeed stretches along two orthogonal directions: temporal and cognitive space. At the center are the core benefits (+) such as physical product or service and the core sacrifices (-) such as price. Moving away from the center means moving away from the core product, indicated by arrows and expanding ovals, and reaching the surrounding value elements that the customer experiences at different times and at different abstraction levels. It can also be logically inferred that the (7 x 6)-matrix provides a holistic view of what the customer values throughout the consumption episode; hence, it incorporates *CV Char. #6* (CV is aggregated).

So far, the CVM Model as illustrated in Figure 1 does not distinguish whether the customer is evaluating the purchased (or to be purchased) product/service or the other encounters with the firm (e.g., joint solution development, customer's call for information). Vandenbosch and Dawar (2002) argue that customers value how they interact with their suppliers as much as or more than what they actually purchase. If interactions (also referred to as encounters) were not explicated in the design, then the source of value would remain limited with the product/service, which takes us back to the G-D logic. This observation leads to an additional design principle.

Design Principle 4: The CVM Instrument should explicate all the encounters beyond product usage (incorporates CV Char. #7).

As mentioned, the columns in the CVM Model as depicted in Figure 1 relate to a longitudinal journey where customer and firm interact, the so-called encounters. Building on the co-creation conceptualizations of Payne, Storbacka, and Frow (2008) and Ballantyne and Varey (2006), this study proposes four broad forms of encounters, each of which is treated as an additional "layer" on the CVM Model foundation:

Provider-led encounters: This form of encounter is initiated by the provider and related to the provider's proactive orientation. Essentially, the provider *pushes* information and resources to influence the customer's value creation process (e.g., advertisements, website, user manuals, installation instructions, customer visits).

Customer-led encounters: This form of encounter is initiated by the customer and related to the provider's reactive orientation. The customer *pulls* information and resources from the provider to manage his value creation process (e.g., service request, order status check).

Dialogical encounters: This type of encounter matches the notion of relationship development and knowledge generation, which can provide opportunities for learning together and developing new solutions (Ballantyne & Varey, 2006).

Product/service encounters: This is related to consumption of the product/service. Payne et al. (2008) calls this type of encounter 'usage encounters' and relate it to customer practices in using a product/service and the services supporting such usage.

Combining the (7 x 6)-matrix in Figure 1 and the four forms of encounters, the CVM Model takes its final form. To demonstrate the complete CVM Model, the car repair example discussed in Womack and Jones (2005a) is used and expanded to cover the other areas that this research proposes; the table in Appendix B illustrates the benefits and sacrifices that the customer can experience through four possible encounters.

4.2. Developing the method of use of the CVM model

While using the CVM model can help organizations unlock many value potentials, the method of use, which is built on key ideas of Lean thinking, can guide them how to prioritize and act on them effectively and efficiently. CVM Model as discussed in the previous sub-section cover CV Char. #1 through #7, clearly, also the remaining two characteristics (*CV Char. #8* and *CV Char. #9*) are also fundamental to be able to offer a holistic approach to value creation. Therefore, a fifth (and final) design principle is needed.

Design Principle 5: The CVM Instrument should support the relativistic view, i.e., the value is relative to other offerings and time (incorporates CV Char. #8 and #9).

Consisting of seven steps, the method of use (see Table 2) has been developed iteratively by incorporating the feedback after each evaluation stage.

Note that step 5 emphasizes the importance of differentiation, hence incorporates CV Char. #8 (CV is relative). To develop CV learning capability in the organization, this exercise, step 1 through 7, should be set-up and viewed as one of the organization's strategic processes, i.e., following the PDCA principal of Lean, the CVM Instrument incorporates CV Char. #9 (CV is dynamic). To summarize, the CVM Instrument proposed consists of various building blocks, namely, the CVM Model sub-structure as depicted in Figure 1, the four types of encounters (which together build the full CVM Model) and the method of use highlighted in Table 2. It has been demonstrated that indeed the CVM Instrument does adhere to all five design principles derived from Marketing literature (therefore covers all nine CV characteristics) and some key ideas and techniques in Lean.

5. Evaluating the CVM instrument

This section presents how the CVM Instrument is evaluated. Note that the scope of the evaluation is the CVM Model and the first five steps of the method of use. This is because step 6 (QFD tool) and step 7 (PDCA approach) as explained in Table 2 are well known and proven methodologies in Lean toolkit, hence out of scope of this evaluation.

Following Gregor and Hevner (2013), this study uses *validity, utility, quality*, and *efficacy* as a complete set of criteria to assess the CVM. Gregor and Hevner (2013) describe *validity* as "the artifact works and does what it is meant to do; that it is dependable in operational terms in achieving its goals" and *utility* as "whether the achievement of goals has value outside the development environment". Although the other two criteria, quality and efficacy, are not explicitly defined by the authors, this study derives the following working definitions based on DSR literature. *Quality* implies how accurately and completely an artifact achieves its goals, while *efficacy* refers to how easy and efficient it is to use the instrument.

In line with Gregor and Hevner (2013), who argue that a rigorous design evaluation may draw on multiple techniques, including expert reviews, workshops, and semi-structured interviews, this research follows a "two step analysis" approach of the case-based research (Eisenhardt, 1989; Yin,

Table 2. The method of use- seven-step guideline

Steps	Description and incorporating some key ideas from Lean
1. Map the customer's key actions from search to dispose	Womack and Jones (2005a) suggest that the best way to identify opportunities for improvement in the customer's processes is to draw a map showing the consumption steps. Also, in using the CVM, the starting point is to capture the current status of the customer's process, from search to dispose.
2. Identify the customer's tasks in each key action and categorize them in the four forms of encounters	Identifying various sources of value, including information, products and interactions, Smith and Colgate (2007) suggest that firms can develop strategies to enhance each source of value at a functional, hedonic and symbolic level. In other words, each customer action should be projected from the four forms of encounters (sources of value) onto the value categories.
3. Identify perceived sacrifices and highlight the main issues (pain points)	The activities that do not add value should be identified, as described in the value stream mapping technique in Lean management (Rother & Shook, 1998). In addition to that, both monetary and non-monetary sacrifices should be identified at each stage and entered in the corresponding fields in the matrix.
4. Assess strategically cost and differentiation advantage in reducing customer's sacrifices	Before allocating limited resources to improve the customer's process, organizations should first check the prospects for realizing cost and/or differentiation advantage relative to the competition if the selected pain point is resolved. This requires close monitoring of market trends and competitors' actions, which is generally known as 'market orientation' (e.g., Jaworski & Kohli, 1993; Slater & Narver, 1994).
5. Inject value into five value categories (perceived benefits) to reduce perceived sacrifice and differentiate	As discussed earlier, firms need to focus both inward, at processes designed to improve efficiency (exploitation) and outward, towards market (exploration), to identify new opportunities. It is essential to combine the findings from step 3 and new insights from the market to decide in which areas to inject the right amount of value in the perceived benefits area. That way, the firm can both solve the customer's problems and achieve differentiation.
6. Prioritize value elements that create synergy—reduce sacrifices, increase benefits and increase differentiation	After identifying value elements in the CVM, managers need to strategically refine and prioritize those value elements based on their importance to the customer, competition and the firm's capabilities, and bring them to a more manageable level. QFD tool can be very effective for such purpose and complement CVM.
7. Experiment- test value elements by following PDCA	Drawing lessons from Toyota's success, Spear (2004) states that proposed changes should always be structured as experiments, during which hypotheses are tested and the results are used to refine or reject the hypotheses. In this respect, the CVM should be seen as an instrument designed to formulate and test the hypothesis. Steps 1–6 can be seen as the *plan* part of a larger PDCA cycle. Step 7 has to do with testing the hypothesis (*do*), controlling results by analyzing customer feedbacks (*check*) and standardizing and expanding what works and learning from what does not work (*act*).

2013). The first step is "analyzing evaluation stages individually" (Section 5.1). Here the collected data, including discussions (voice-recorded), survey input and observations during each formal evaluation stage are transcribed. The transcriptions are reviewed by the lead author and one of the co-authors, and finally by the company contacts for in-company workshops. Those transcripts are later coded for data reduction purpose. The second step is "looking across evaluation stages" (Section 5.2) to demonstrate the evolution of the design with corresponding evaluation criteria.

5.1. Analyzing evaluation stages individually

In evaluating the various versions of the artifact under construction (i.e., the CVM Instrument), two phases are distinguished, see Figure 2 that illustrates how various versions (indicated as V) have evolved through various evaluation stages (indicated as E). Within the first phase, the evaluation was focused on *face validity*, which refers to whether or not the model appears to perform what it claims to perform (Gravetter & Forzano, 2015), which is also known as proof-of-concept (Gregor &

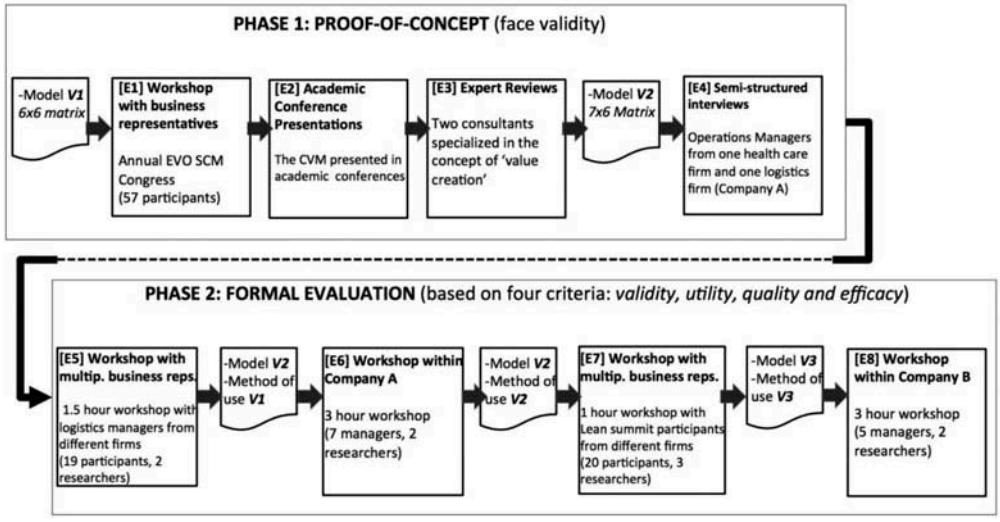


Figure 2. Evaluation stages and corresponding versions of the CVM instrument under construction.

Hevner, 2013). Following the proof-of-concept, a more *formal evaluation* is planned by incorporating all four evaluation criteria in the second phase. At the end of each stage, the model has been adjusted to the new insights drawn from the collected data.

5.1.1. Phase 1: proof-of-concept phase

The four evaluation steps [E1], [E2], [E3] and [E4] provided only "proof-of-concept", i.e., the basic CVM Model appeared to be a useful instrument in capturing the broader notion of CV, and many businesses appear to be in need of such instruments. While [E1] and [E2] provided positive feedback about face validity, [E3] and [E4] with semi-structured interviews provided more in-depth insights about the design of the instrument. Starting with [E3], all the interviews and workshops were recorded, documented and sent to the interviewees/workshop participants for their reviews. Due to space limitation, full details about the evaluation steps in Phase 1 are not presented here (but are available upon request).

5.1.2. Phase 2: formal evaluation

To determine the validity, utility, quality, and efficacy of the instrument more rigorously, a more in-depth evaluation phase took place. In this phase, two types of workshops were conducted, the first of which took place within individual companies and brought together managers from various disciplines, including supply chain management, finance, purchasing, new service development and sales (the aim was 6 to 10 participants). The second type of workshop was conducted with business representatives of organizations from various sectors, in two events. Different workshop settings provided us both the breadth (variety of sectors) and the depth (company specific) of feedback to assess the instrument.

In this evaluation round, *validity* is measured by asking whether the CVM leads to a better understanding of CV. *Quality* is related to completeness of the model, that is to say, whether or not the model is able to capture all essential aspects of CV. *Utility* has two aspects: interest in using the tool within the organization and fitness of the tool to the organization. User input about the *efficacy* of the model—how easy and efficient it is to use the model—was solicited through an open question and through group discussions.

Data are analyzed based on the coding technique proposed by Miles and Huberman (1994). First, a detailed write-up of each evaluation stage, which involves survey analysis, transcription of voice recording and observations, was carried out immediately after each workshop. For in-company workshops ([E6], [E8]), a written draft was written by the lead author, reviewed by one of the co-authors

and by the key informant in the company, which increased construct validity (Yin, 2013). Second, the transcript was coded manually for data reduction, first with open coding and then with axial coding (Miles & Huberman, 1994). The codes and their descriptions are provided in Appendix C. Finally, reduced data is displayed in a single overview (see Table 3) to facilitate searching for a pattern (Miles & Huberman, 1994, p. 239).

Further details on the set-up of the workshops at the various evaluation stages [E5]—[E8] and the finding are discussed below.

5.1.2.1. [E5] event workshop (supply chain management congress)
The workshop took place at a Supply Chain Management conference in the Netherlands. The participants – a total of 19, excluding two facilitators – were a mix of experienced professionals from various organizations and backgrounds, including SC Managers, Project Managers, CEO, CFO, Business Development Managers, Controllers and Product Managers. After introducing the basic CVM Model, the participants were asked to fill out one specific area of the matrix in pairs. They were instructed how to come up with ideas to improve CV in this specific area. After the exercise, each group was asked to give a short presentation of their best ideas. After the wrap-up, post-workshop questionnaires (translated in Dutch) were handed out to collect individual feedback.

The CVM appeared to have strong face validity and utility, which had already been concluded in the proof-of-concept phase, and was now re-confirmed. The model was considered valuable for enabling customer orientation in firms.

5.1.2.2. [E6] in company workshop (wholesaler_comp)
Wholesaler_Comp is a wholesaler involved in the installation, construction and industrial articles (lighting, plumbing, sanitary, central heating, appliances, roofing, etc.) in the Netherlands, with about 2,000 employees. The seven people who took part in the workshop represented supply chain management, project management, finance, business development, marketing & e-commerce, and purchasing.

The concept of intangibles (brand value and relational value) appeared too abstract for some participants. Although these participants found it easier to think along the customer journey with *utility value* and *experiential value*, it was less clear how *brand value* and *relational value* related to the timeline. The CVM was found to be a complete and structured approach to determining CV, but some participants indicated that it was time-consuming and ambiguous. Accordingly, efficacy, compared to other criteria, was rated the lowest.

Based on the observations and feedback, the following actions were planned for the next design iteration: providing more clarity for the value categories, making users focus more on the customer's processes and sacrifices, and simplifying the process of filling in the CVM. A second version of the method of use (V2) was developed, which is used in [E7].

5.1.2.3. [E7] event workshop (lean summit)
The workshop was carried out in a breakout session during a Lean Summit that took place in the Netherlands. The 20 participants (not including two facilitators) were professionals with a varying level of experience with Lean and coming from different sectors such as management consulting, public services and railway services. First 20 minutes, the CVM Instrument was introduced and the remaining 40 minutes spent on group exercise and discussion. For the exercise, four groups were formed. Each group was asked to choose a specific product/service line from one of the companies that the group members represented.

According to the participant's comments and survey feedback, the CVM Instrument appeared to have medium validity and quality. As indicated in the earlier evaluation, many participants found the model too complicated to use. Therefore, the instrument was scored medium-low on utility

Table 3. Analysis across evaluation stages

	Phase 1: Proof-of-concept		Phase 2: Formal Evaluation				
	[E1], [E2] and [E3]	[E4]		[E5]	[E6]	[E7]	[E8]
CVM Model version	***V1***	***V2***		***V2***	***V2***	***V2***	***V3***
Method of use version	*n/a*	*n/a*	***CODES***	*informal instructions given during the workshop*	*V1*	*V2*	*V3*
Validity			**Overall rating**	**High**	**Medium-Low**	**Medium**	**Medium-High**
The instrument works and does what it is meant to do—developing a broader understanding of CV	High interest	High interest	Survey score average	4.1	3.7	3.6	4.0
			VAL-THINK(+)	v1, v2, v3		v1, v2, v3	v4, v5
			VAL-GUI(-)		v1, v5		
			VAL-ORIE(-)		v2, v3, v4		
			VAL-SCOP(-)			v4, v5	v1, v2, v3, v7, v8
Quality			**Overall rating**	**High**	**Medium-Low**	**Medium**	**Medium**
The instrument captures broad nature of CV completely and accurately	n/a	n/a	Survey score average	4.1	3.7	3.5	3.6
			QUAL-STRUC(+)	q1	q5, q6	q1,q3,q6	q1, q2, q4, q7
			QUAL-VIS(+)		q4	q2	q3, q5, q6
			QUAL-COMP(+)			q4,q5	
			QUAL-VAG(-)		q1, q3, q7, q8	q7, q8	q8
			QUAL-INCOMP(-)		q2	q9	
Utility			**Overall rating**	**High**	**Medium**	**Medium-Low**	**High**
The instrument can be useful for organizations to develop a broader understanding of CV	n/a	n/a	Survey score average	4.0	3.5	3.1	4.0
			UTI-HELP(+)	u1, u2	u1		u1
			UTI-IRRE(-)			u1, u2	

(*Continued*)

Table 3. (*Continued*)

	Phase 1: Proof-of-concept		Phase 2: Formal Evaluation				
	[E1], [E2] and [E3]	[E4]		[E5]	[E6]	[E7]	[E8]
CVM Model version	***V1***	***V2***		***V2***	***V2***	***V2***	***V3***
Efficacy			**Overall rating**	**N/A**	**Low**	**Medium-Low**	**Medium-Low**
The instrument is easy to use and efficient way to develop a broader understanding of CV	n/a	n/a	EFF-EASY(+)	n/a		e1,e2,e3	e1,e3,e4
			EFF-COMPX(-)		e1	e4, e5, e6	e2
			EFF-TIME(-)		e2, e3	e7	e5, e6, e7

High: Average rating ≥4 AND number of positive feedbacks > number of negative feedbacks
Medium-High: (4> Average rating ≥3 AND number of positive feedbacks significantly higher than the number of negative feedbacks) OR (Average rating ≥4 AND number of positive feedbacks < number of negative feedback)
Medium: 4> Average rating ≥3 and number of positive feedbacks > number of negative feedbacks
Medium-Low: 4> Average rating ≥3 and number of positive feedbacks < number of negative feedbacks OR
Low: 3> Average rating AND negative feedbacks are significantly higher than positive feedbacks.

cogent business & management

and efficacy. Three important learning points emerged from this evaluation. First, demonstrating the model in such a short time (1 hour) frame appears to be challenging. Many users from public services struggled to identify their customers. Scoping seemed to be a crucial element of the exercise, which requires preparation before the workshop. Second, starting from "perceived sacrifice" encouraged users to focus more on the customer's processes and issues, which was the key objective. As a conclusion, further improvement, especially in utility and efficacy, were needed for the next design iteration.

5.1.2.4. [E8] in company workshop (Logistics_Comp)
Logistics_Comp is a large logistics service provider that provides solutions in freight management and contract logistics worldwide, in over 1,000 locations in 160 countries. Headquartered in the Netherlands, Logistics_Comp employs about 40,000 employees and serves to a wide range of sectors. The company adopted Lean management in 2008 and considers Lean as the key element of their business strategy. For this workshop, Logistics_Comp selected one of the services for a major telecommunication client. This was because at that moment Logistics_Comp was looking for new ways to improve their services for this particular client. Selected service was "delivering replacement hardware equipment (internet + TV) to the existing residential customer when the hardware is defect".

The discussions and survey results indicate that the CVM Instrument has strong validity and utility. In other words, using the CVM Instrument can lead to a better understanding of CV and make organizations more customer-oriented. Most participants agreed that the main strength of the CVM Instrument is its structured and complete approach to capturing CV. Although some steps were considered to be lengthy, the overall logic was relatively easy to understand. Due to multiple steps and many fields to fill in the CVM Model, the efficacy of the CVM instrument was scored medium-low. The main area of future improvement appeared to be "scoping the customers", which will be elaborated in the discussion sections.

5.2. Looking across evaluation stages
By reviewing the results as summarized in Table 3, the following observations can be made. Of the formal evaluation stages, [E5] received the highest rating. This may be due to the fact that the CVM Instrument was not intended to be fully completed, but to be tried out for the purpose of demonstration. However, in company workshops, [E6] and [E8], the users were able to examine each value category and experience the tool thoroughly. Because the value categories were not appropriately (user-friendly) defined until [E7], the users in [E6] experienced difficulty completing the exercise. In the formal evaluation phase, [E6] was the first in-depth and the lowest rated evaluation stage. Based on the rich feedback received from [E6], the method of use was improved. In [E7], it was observed that validity, quality and efficacy improved, while the utility rating fell, due to several negative comments from the users coming from public services. In [E8], the model version V3 of the CVM was introduced, which has both (7 x 6)-matrix and four forms of encounters, i.e., was theoretically more complete and more complex than earlier versions. However, when comparing the two in-company workshops, [E6] and [E8], it can be observed that there are noticeable improvements in all four criteria.

Further analysis revealed four notable patterns. First, the VAL-SCOP(-) rating, which is about the process and customer scoping, worsens, because, in [E7] and [E8], determining who the customer was posed a challenge and led to lengthy discussions. Second, the overall quality of the instrument increased noticeably; while QUAL-STRUC (+) and QUAL-VIS (+), which are related to structural and visual aspects of the instrument, increased, QUAL-VAG(-), which is related to the vagueness of the value category definitions, decreased. Third, although the final version of the method of use (V3) improved the ease of use, the overall exercise remained "lengthy" in the eyes of the participants. In other words, EFF-TIME(-) did not improve. Therefore, it can be concluded that from the perspective of efficacy, the instrument has not matured yet. Fourth, out of a total of 50 workshop

participants in [E5]—[E8], an overwhelming majority of the participants (about 80%) does not have a well-structured approach to determining CV.

The overall conclusion from all evaluations can be that, although there can be deviations in the performance of the instrument in DSR as Vaishnavi and Kuechler (2008, p. 21) point out, the results at the end of [E8] can be considered as "satisfactory".

6. Discussion

The first point of discussion is the theoretical generalizability of the findings (Holmström et al., 2009) and grounded technological rules (Van Aken, 2004) to contribute to the CV knowledgebase. Formal evaluation phase revealed four challenges in the use of the CVM some of which are addressed in the next iteration and improved.

Firstly, the common feedback from many users in [E5]-[E8] was that the CVM Instrument is complete and structured but at the same time ambiguous and time-consuming. Clearly, the aim of being complete by incorporating all nine CV characteristics in the CVM Instrument has reduced the efficacy of the model. Although a trade-off between completeness and efficiency was to be expected, this should be managed in order to make the tool useful for organizations. In fact, adding the four layers of encounters during [E8] increased completeness and improved efficiency at the same time as well-defined encounters helped the users to sort their thoughts better. Based on these findings, the following technological rule is derived:

> *Rule 1. Striving to capture the holistic notion of CV with a fine-grained instrument such as CVM Instrument can reduce efficiency of the use of instrument, hence the organizational interest in it.*

Secondly, at [E8] it was observed that in fact, Logistics_Comp had to satisfy two types of customers: the residential customers (consumers receiving telecom service and that Logistics_Comp delivered hardware to) and non-residential customer (the Telecom provider as the direct customer). Because the CVM Instrument is designed from a single customer perspective, it was not immediately clear how to capture the value of the end user. Similarly, during [E7], some users from the public sector voiced their concerns about how to scope their customers and deal with multiple stakeholders. One Lean expert in [E7] suggested that using the Lean SIPOC (Supplier, Input, Process, Output, Customer) tool might provide a relational overview of the key stakeholders. Gummesson (2008a) state that value is not created just by the supplier and the customer but in a network of activities involving multiple stakeholders. Therefore, the following rule can be derived:

> *Rule 2. Before determining CV in a multiple stakeholder context, the scope has to be first, broadened from dyad (seller-buyer) to network and then, the network of interactions has to be mapped. Only after this exercise, organizations should decide which customer category to focus.*

Thirdly, during [E6] it was observed that without guidance the users tend to focus on the top part of the CVM (adding more benefits) while the bottom part (perceived sacrifices) was largely ignored. At [E6] many of the ideas that were proposed on enhancing CV were about how to add to the current perceived customer benefits (i.e., on how to do the current tasks better). However, as stressed in Ravald and Grönroos (1996), "adding more value" or introducing "extras" may not be driven by genuine customer needs can only offer short-term solutions. In [E8] the users were instructed to focus on first to customers' perceived sacrifices. This simple change made a striking difference in terms of generating more relevant ideas. The users were more engaged in brainstorm sessions about understanding the process of customers (customer journey) and customers' gains and pains. This finding leads to the following rule:

Rule 3. In order to generate rich and relevant CV ideas, it is necessary to first understand the customer's perceived sacrifices, which can promote customer focus. Conversely focusing first on perceived customer benefits, organizations might fall into trap of 'adding more of the same', which can reinforce an internal process focus.

Another point of discussion is on why the CVM Instrument is positioned as being a contribution to the Lean toolbox. Or, more broadly: what is Lean about the CVM Instrument? First, at the outset of the paper, it was argued that the current CV tools are limited and are basically focused on the internal processes. Although the field of Operations Management is frequently considered as the "natural habitat" of Lean, arguably the essence of Lean management lies beyond internal processes; after all the objective of Lean is to remove waste and improve customer value in processes that span the entire organization (or rather the entire end-to-end supply chain). From this perspective, taking a multi-functional approach, i.e., integrating ideas from the Strategy and Marketing Management into the CVM Instrument, can be considered as a Lean way of working.

Second, several components of the CVM Instrument fit well within the Lean approach. Some examples are; (a) using a disciplined and standardized way of getting a broader and deeper understanding of customer value by considering all fields in the CVM; (b) incorporating the existing Lean QFD tool to prioritize customer value elements in Step 6 of the method of use; and (c) using PDCA on a continuous basis to develop, test and refine CV hypothesis in Step 7 of the method of use.

Third, as has been explained in Rule 3, using the CVM instrument can benefit largely by first focusing on "perceived customer sacrifices". This can be associated with the typical Lean practice to look for "waste". That is, rather than only looking for internal waste, the CVM Instrument suggests that in order to create customer value, a good starting point would be to remove waste in integrated firm-customer processes, which supports Lean consumption view.

Fourth, the practitioners involved in the various experiments had no difficulty in seeing the use of the CVM Instrument from a Lean perspective. For example, at [E8] a user stated that CVM is an interesting addition to their Lean way of working. Another user stressed that CVM is a hands-on tool and that the tool can be adopted straight away in many Lean organizations.

7. Conclusions

In today's highly competitive and fast moving business world, organizations increasingly need to look deeper into the needs of their customers. However, it can be observed that many organizations lack a sophisticated technique to capture CV in a holistic way. Therefore, in this paper, a new tool dubbed CVM Instrument is developed and tested.

Theoretically speaking, this study aims to add to the observed limited conceptual understanding of CV in the Lean literature by bridging between Operations, Strategy and Marketing disciplines. Based on design theory approach, this research integrates various CV concepts from Strategy and Marketing management research to develop five design principles needed to build the CVM Instrument. Compared to previous studies, which typically focus on only some characteristics of CV this research incorporates nine CV characteristics in a comprehensive design. The proposed CVM Instrument includes key elements from S-D logic (Vargo & Lusch, 2004) and Lean consumption (Womack & Jones, 2005a), thereby responds to the research calls from Gummesson (2008b) and Lusch (2011) on having a more holistic research agenda in the Lean discourse. More specifically, Lusch (2011) proposes that a new research frontier in supply chain management is integrating the customer into the supply chain—moving from viewing customer as the destination of supply to someone to co-create value with. This research does exactly this, hence contributes to the discussions about the boundaries of the Operations Management field, which is frequently considered as the "natural habitat" of Lean. Furthermore, build-evaluate iterations have provided new insights about how a CV capturing exercise can support a more

holistic understanding of CV as well as the challenges that need to be overcome. In addition, this study contributes to the limited but growing DSR-based research in the Operations Management community (Van Aken, Chandrasekaran, & Halman, 2016). Finally, the CVM instrument should be seen as a "boundary object" (Spee & Jarzabkowski, 2009), which, as an artifact, enables knowledge sharing across semantic boundaries of organizational departments (e.g., between Production and Marketing departments). As Talmar, Walrave, Podoynitsyna, Holmström, and Romme (2018) argue, boundary objects are needed to carry scientific knowledge to management practice and bring practical wisdom into science thereby expand our knowledge.

More from a practical viewpoint, this study demonstrates that the CVM Instrument enables firms to deepen their understanding of CV. It enables managers to view CV in a more structured, explicit, balanced and complete, i.e., holistic fashion. By thinking through each cell of the (7 x 6)-matrix from multiple encounter perspectives, organizations can discover value possibilities that would otherwise remain unexplored. For instance, car repair service example in Appendix B illustrates many value potentials in a structured and complete way. Such a holistic view of CV can help the service providers tap into different value areas that are typically ignored such as explaining the repair to the customer with a friendly video. In addition, the CVM encourages managers from different areas to increase their customer focus and align on a common end-to-end product/service vision. In that sense, CVM as a management instrument might be the right recipe to develop a more balanced customer and process focus for organizations adopting Lean, which can create a cycle of improvement as pointed by Radnor and Johnston (2013). Finally, the seven-step approach in the method of use can facilitate a systematic, continuous CV learning process in organizations.

There are various areas in which the CVM Instrument requires further work. First, the "intangible dimensions" of the CVM Model should be made more practical to think through at each stage such as how organizations can increase brand value during the transaction stage. Second, more workshops and various setting with different sectors can be organized to improve the reliability of data and theoretical generalizability. Finally, to be able to thoroughly evaluate the CVM Instrument, a longitudinal study is needed, making it possible to not only fully evaluate the instrument, but also to validate whether indeed the usage of the CVM Instrument leads to a better customer orientation. Each of these limitations points to potential future research through which CV understanding and conceptualization can be further advanced, within Lean discourse as well as in CV literature.

Funding
The authors received no direct funding for this research.

Author details
Erdoğan Gülyaz[1]
E-mail: E.Gulyaz@nyenrode.nl
Jack A.A. van der Veen[1]
E-mail: J.vdVeen@nyenrode.nl
Venu Venugopal[1]
E-mail: V.Venugopal@nyenrode.nl
Sam Solaimani[1]
E-mail: s.solaimani@nyenrode.nl
[1] Center for Marketing & SCM, Nyenrode Business Universiteit, Breukelen, The Netherlands.

Cover image
Source: Author.

Citation information
Cite this article as: Towards a holistic view of customer value creation in Lean: A design science approach, Erdoğan Gülyaz, Jack A.A. van der Veen, Venu Venugopal & Sam Solaimani, *Cogent Business & Management* (2019), 6: 1602924.

Note
1. https://charteredabs.org/academic-journal-guide-2015/.

References
Almquist, E., Senior, J., & Bloch, N. (2016). The elements of value: Measuring-and delivering- what consumers really want. *Harvard Business Review*, *94*(9), 46–53.
Anderson, J. C., & Narus, J. A. (1998). Business marketing: Understand what customers value. *Harvard Business Review*, *76*(6), 53–65.
Ballantyne, D., & Varey, R. J. (2006). Creating value-in-use through marketing interaction: The exchange logic of relating, communicating and knowing. *Marketing Theory*, *6*(3), 335–348. doi:10.1177/1470593106066795
Birkinshaw, J., & Gibson, C. (2004). Building ambidexterity into an organization. *MIT Sloan Management Review*, *45*(4), 47–55.
Bowman, C., & Ambrosini, V. (2000). Value creation versus value capture: Towards a coherent definition of value in strategy. *British Journal of Management*, *11*(1), 1–15. doi:10.1111/bjom.2000.11.issue-1

Brandenburger, A. M., & Stuart, H. W. (1996). Value-based business strategy. *Journal of Economics & Management Strategy*, *5*(1), 5–24. doi:10.1111/j.1430-9134.1996.00005.x

Butz, H. E., Jr, & Goodstein, L. D. (1996). Measuring customer value: Gaining the strategic advantage. *Organizational Dynamics*, *24*(3), 63–77. doi:10.1016/S0090-2616(96)90006-6

Eggert, A., & Ulaga, W. (2002). Customer perceived value: A substitute for satisfaction in business markets? *Journal of Business & Industrial Marketing*, *17*(2/3), 107–118. doi:10.1108/08858620210419754

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, *14* (4), 532–550. doi:10.5465/amr.1989.4308385

Flint, D. J., Blocker, C. P., & Boutin, P. J., Jr. (2011). Customer value anticipation, customer satisfaction and loyalty: An empirical examination. *Industrial Marketing Management*, *40*(2), 219–230. doi:10.1016/j.indmarman.2010.06.034

Garvin, D. A. (1987). Competing on the eight dimensions of quality. *Harvard Business Review*, *65*(6), 101–109.

Gravetter, F., & Forzano, L.-A. (2015). Research methods for the behavioral sciences. Belmont, CA: Wadsworth Cengage Learning. .

Gregor, S., & Hevner, A. R. (2013). Positioning and presenting design science research for maximum impact. *MIS Quarterly*, *37*(2), 337–355. doi:10.25300/MISQ

Grönroos, C., & Voima, P. (2013). Critical service logic: Making sense of value creation and co-creation. *Journal of the Academy of Marketing Science*, *41*(2), 133–150. doi:10.1007/s11747-012-0308-3

Gummesson, E. (2002). Relationship marketing in the new economy. *Journal of Relationship Marketing*, *1*(1), 37–57. doi:10.1300/J366v01n01_04

Gummesson, E. (2008a). Extending the service-dominant logic: From customer centricity to balanced centricity. *Journal of the Academy of Marketing Science*, *36*(1), 15–17. doi:10.1007/s11747-007-0065-x

Gummesson, E. (2008b). Quality, service-dominant logic and many-to-many marketing. *The TQM Journal*, *20* (2), 143–153. doi:10.1108/17542730810857372

Gwinner, K. P., Gremler, D. D., & Bitner, M. J. (1998). Relational benefits in services industries: The customer's perspective. *Journal of the Academy of Marketing Science*, *26*(2), 101–114. doi:10.1177/0092070398262002

He, Z.-L., & Wong, P.-K. (2004). Exploration vs. exploitation: An empirical test of the ambidexterity hypothesis. *Organization Science*, *15*(4), 481–494. doi:10.1287/orsc.1040.0078

Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). Design science in information systems research. *MIS Quarterly*, *28*(1), 75–105. doi:10.2307/25148625

Hines, P., Holweg, M., & Rich, N. (2004). Learning to evolve: A review of contemporary lean thinking. *International Journal of Operations & Production Management*, *24*(10), 994–1011. doi:10.1108/01443570410558049

Hirschman, E. C., & Holbrook, M. B. (1982). Hedonic consumption: Emerging concepts, methods and propositions. *Journal of Marketing*, *46*(3), 92–101. doi:10.1177/002224298204600314

Holbrook, M. B. (1996). Customer value – A framework for analysis and research. *Advances in Consumer Research*, *23*(1), 138–142.

Holmström, J., Ketokivi, M., & Hameri, A. P. (2009). Bridging practice and theory: A design science approach. *Decision Sciences*, *40*(1), 65–87. doi:10.1111/j.1540-5915.2008.00221.x

Huber, J., Lynch, J., Corfman, K., Feldman, J., Holbrook, M. B., Lehmann, D., … Simonson, I. (1997). Thinking about values in prospect and retrospect: Maximizing experienced utility. *Marketing Letters*, *8* (3), 323–334. doi:10.1023/A:1007964630841

Jaworski, B. J., & Kohli, A. K. (1993). Market orientation: Antecedents and consequences. *Journal of Marketing*, *57*(3), 53. doi:10.1177/002224299305700304

Keller, K. L. (1993). Conceptualizing, measuring, managing customer-based brand equity. *Journal of Marketing*, *57*(1), 1–22. doi:10.1177/002224299305700101

Khalifa, A. S. (2004). Customer Value: A review of recent literature and an integrative configuration. *Management Decision*, *42*(5), 645–666. doi:10.1108/00251740410538497

Kim, W. C., & Mauborgne, R. (2000). Knowing a Winning Business Idea When You See One. *Harvard Business Review*, *78*(5), 129–138.

Lemke, F., Clark, M., & Wilson, H. (2011). Customer experience quality: An exploration in business and consumer contexts using repertory grid technique. *Journal of the Academy of Marketing Science*, *39*(6), 846–869. doi:10.1007/s11747-010-0219-0

Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing*, *80*(6), 69–96. doi:10.1509/jm.15.0420

Liker, J. K. (2004). *The Toyota way: 14 management principles from the world's greatest manufacturer*. New York: McGraw-Hill.

Lubatkin, M. H., Simsek, Z., Ling, Y., & Veiga, J. F. (2006). Ambidexterity and performance in small-to medium-sized firms: The pivotal role of top management team behavioral integration. *Journal of Management*, *32*(5), 646–672. doi:10.1177/0149206306290712

Lusch, R. F. (2011). Reframing supply chain management: A service-dominant logic perspective. *Journal of Supply Chain Management*, *47*(1), 14–18. doi:10.1111/jscm.2011.47.issue-1

MacBryde, J., Paton, S., & Clegg, B. (2013). Understanding high-value manufacturing in Scottish SMEs. *International Journal of Operations & Production Management*, *33*1, 1579–1598. doi:10.1108/IJOPM-07-2010-0205

Macdonald, E. K., Wilson, H., Martinez, V., & Toossi, A. (2011). Assessing value-in-use: A conceptual framework and exploratory study. *Industrial Marketing Management*, *40*(5), 671–682. doi:10.1016/j.indmarman.2011.05.006

Magids, S., Zorfas, A., & Lemon, D. (2015). The new science of customer emotions. *Harvard Business Review*, *93*(11), 1–8.

March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, *2*(1), 71–87. doi:10.1287/orsc.2.1.71

March, S. T., & Smith, G. F. (1995). Design and natural science research on information technology. *Decision Support Systems*, *15*(4), 251–266. doi:10.1016/0167-9236(94)00041-2

Marchwinski, C., Shook, J., & Schroeder, A. (2008). *Lean Lexicon: A graphical glossary for lean thinkers*. Cambridge, MA: Lean Enterprise Institute.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks,CA: Sage.

Normann, R., & Ramirez, R. (1993). From value chain to value constellation: Designing interactive strategy. *Harvard Business Review*, *71*(4), 65–77.

Oh, H. (1999). Service quality, customer satisfaction, and customer value: A holistic perspective. *International Journal of Hospitality Management*, *18*(1), 67–82. doi:10.1016/S0278-4319(98)00047-4

Parasuraman, A. (1997). Reflections on gaining competitive advantage through customer value. *Journal of the Academy of Marketing Science*, *25*(2), 154–161. doi:10.1007/BF02894351

Pay, R. (2008). Everybody's jumping on the lean bandwagon, but many are being taken for a ride. *Industry Week, March 05*.

Payne, A. F., Storbacka, K., & Frow, P. (2008). Managing the co-creation of value. *Journal of the Academy of Marketing Science*, *36*(1), 83–96. doi:10.1007/s11747-007-0070-0

Porter, M. E. (1996). What is strategy? *Harvard Business Review*, *74*(6), 61–78.

Priem, R. L. (2007). A consumer perspective on value creation. *Academy of Management Review*, *32*(1), 219–235. doi:10.5465/amr.2007.23464055

Radnor, Z., & Johnston, R. (2013). Lean in UK Government: Internal efficiency or customer service? *Production Planning & Control*, *24*(10–11), 903–915. doi:10.1080/09537287.2012.666899

Ravald, A., & Grönroos, C. (1996). The value concept and relationship marketing. *European Journal of Marketing*, *30*(2), 19–30. doi:10.1108/03090569610106626

Rother, M., & Shook, J. (1998). *Learning to see*. Brookline, MA: Lean Enterprise Institute.

Seddon, J., & O'donovan, B. (2010). Rethinking lean service. *Management Services, 54*(2), 14-19.

Slater, S. F. (1997). Developing a customer value-based theory of the firm. *Journal of the Academy of Marketing Science*, *25*(2), 162. doi:10.1007/BF02894352

Slater, S. F., & Narver, J. C. (1994). Market orientation, customer value, and superior performance. *Business Horizons*, *37*(2), 22. doi:10.1016/0007-6813(94)90029-9

Slater, S. F., & Narver, J. C. (2000). Intelligence generation and superior customer value. *Journal of the Academy of Marketing Science*, *28*(1), 120. doi:10.1177/0092070300281011

Smith, J. B., & Colgate, M. (2007). Customer value creation: A practical framework. *Journal of Marketing Theory and Practice*, *15*(1), 7–23. doi:10.2753/MTP1069-6679150101

Spear, S. J. (2004). Learning to lead at Toyota. *Harvard Business Review*, *82*(5), 78–91.

Spee, A. P., & Jarzabkowski, P. (2009). Strategy tools as boundary objects. *Strategic Organization*, *7*(2), 223–232. doi:10.1177/1476127009102674

Sweeney, J. C., & Soutar, G. N. (2001). Consumer perceived value: The development of a multiple item scale. *Journal of Retailing*, *77*(2), 203–220. doi:10.1016/S0022-4359(01)00041-0

Talmar, M., Walrave, B., Podoynitsyna, K. S., Holmström, J., & Romme, A. G. L. (2018). Mapping, analyzing and designing innovation ecosystems: The Ecosystem Pie Model. *Long Range Planning.* .doi:10.1016/j.lrp.2018.09.002

Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, *14*(3), 207–222. doi:10.1111/bjom.2003.14.issue-3

Vaishnavi, V. K., & Kuechler, W. (2008). *Design science research methods and patterns: Innovating information and communication technology*. Boca Raton, FL: Auerbach Publications.

Van Aken, J., Chandrasekaran, A., & Halman, J. (2016). Conducting and publishing design science research: Inaugural essay of the design science department of the journal of operations management. *Journal of Operations Management*, *47*, 1–8. doi:10.1016/j.jom.2016.06.004

Van Aken, J. E. (2004). Management research based on the paradigm of the design sciences: The quest for field-tested and grounded technological rules. *Journal of Management Studies*, *41*(2), 219–246. doi:10.1111/j.1467-6486.2004.00430.x

Vandenbosch, M., & Dawar, N. (2002). Beyond better products: Capturing value in customer interactions. *MIT Sloan Management Review*, *43*(4), 35–42.

Vargo, S. L., & Lusch, R. F. (2004). Evolving to a new dominant logic for marketing. *Journal of Marketing*, *68*(1), 1–17. doi:10.1509/jmkg.68.1.1.24036

Verhoef, P. C., & Lemon, K. N. (2013). Successful customer value management: Key lessons and emerging trends. *European Management Journal*, *31*(1), 1–15. doi:10.1016/j.emj.2012.08.001

Verhoef, P. C., Lemon, K. N., Parasuraman, A., Roggeveen, A., Tsiros, M., & Schlesinger, L. A. (2009). Customer experience creation: Determinants, dynamics and management strategies. *Journal of Retailing*, *85*(1), 31–41. doi:10.1016/j.jretai.2008.11.001

Womack, J. P., & Jones, D. T. (1996). *Lean thinking: Banish waste and create wealth in your corporation*. New York: Simon and Schuster.

Womack, J. P., & Jones, D. T. (2005a). Lean consumption. *Harvard Business Review*, *83*(3), 58–68.

Womack, J. P., & Jones, D. T. (2005b). *Lean solutions: How companies and customers can create value and wealth together*. New York: Free Press.

Woodall, T. (2003). Conceptualising 'value for the customer': An attributional, structural and dispositional analysis. *Academy of Marketing Science Review*, *12*(1), 1–42.

Woodruff, R. B. (1997). Customer value: The next source for competitive advantage. *Journal of the Academy of Marketing Science*, *25*(2), 139–153. doi:10.1007/BF02894350

Yin, R. K. (2013). *Case study research: Design and methods*. London: Sage publications.

Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *Journal of Marketing*, *52*(3), 2–22. doi:10.1177/002224298805200302

Appendix A. Nine main characteristics of CV- evidences from the CV literature

	Illustrative Contributors
1. Subjective	Garvin (1987): Among nine quality dimensions, aesthetics and perceived quality are the most subjective. Zeithaml (1988): Perceived quality is a consumer's assessment of the superiority of a product; value is more individualistic than quality, therefore it is higher-level concept than quality. Keller (1993): Brand equity model is conceptualized from the perspective of the individual consumer. Ravald and Grönroos (1996): Perceived customer value is related to a person's own value chain and highly contextual. Holbrook (1996): CV varies from one individual to another. Bowman and Ambrosini (2000): Judgments about user value are subjective, they pertain to the individual consumer. Eggert and Ulaga (2002): Different customer segments perceive different values within the same product. Gummesson (2002): The traditional marketing management approach is mass marketing, however each customer is an individual; heterogeneity, not homogeneity, is the key concept. Priem (2007): The differences in consumer valuations of the same event are not due simply to differences in taste; instead, they are due to asymmetries in knowledge and expertise across potential customers. Grönroos and Voima (2013): "Value is always uniquely and both experientially and contextually perceived and determined by the customer"
2. Multiple attributes	Garvin (1987): Eight dimensions of quality: Performance, Features, Reliability, Conformance, Durability, Serviceability, Aesthetics and Perceived Quality Zeithaml (1988): Intrinsic attributes (e.g., flavor, color); extrinsic attributes (e.g., price, brand name) Keller (1993): Product related attributes (e.g., product/service composition); non-product related attributes (e.g., price, packaging) Ravald and Grönroos (1996): Physical attributes; service attributes; purchase price; perceived quality Woodruff (1997): Desired product attributes and attribute performances Anderson and Narus (1998): Value elements could be technical, economic, service and social in nature. Kim and Mauborgne (2000): Six utility levers (customer productivity, simplicity, convenience, risk, fun and image, environmental friendliness) Sweeney and Soutar (2001): Functional value (price/value for money) and functional value (performance/quality) Eggert and Ulaga (2002): Combination of physical attributes, service attributes and technical support in relation to particular use situation Woodall (2003): Goods Quality, Service Quality, Core Product Features, Added Service Features, Customization Lemke et al. (2011): Product quality (variety, value for money), service quality (SERVEQUAL dimensions) and network quality Almquist et al. (2016): 30 'elements of value'—fundamental attributes of value in their most essential and discrete forms. Lemon and Verhoef (2016): customer experience is a multidimensional construct focusing on a customer's cognitive, emotional, behavioral, sensorial, and social responses to a firm's offerings
3. Abstraction hierarchy	Garvin (1987): Perceived quality is a high level abstraction (e.g., image, reputation) Zeithaml (1988): At low level—perceptions of int./ext. attributes of the simple product; at high level—personal value Keller (1993): Three categories: 1. Attributes; 2.Benefits (personal value attached to the attributes); 3. Attitudes: highest abstraction level, overall evaluative judgment (less thoughtful decision-making process) Ravald and Grönroos (1996): Relationship benefits are deeper than episode benefits. Safety, credibility, continuity and security increase trust thereby increases loyalty Woodruff (1997): CV hierarchy-At the bottom attribute level, in the middle consequences in use, and at the highest level customers' goal Parasuraman (1997): CV becomes increasingly more abstract as new buyers progress toward becoming long-term customers. Anderson and Narus (1998): One intangible elements of value is peace of mind Sweeney and Soutar (2001): Emotional value (feelings a product generates; Social value (enhancement of social self-concept) Vargo and Lusch (2004): Focus is shifting from tangibles (goods) to intangibles (e.g., skills, information) in exchange process. Smith and Colgate (2007): Experiential Value; Symbolic Value Lemke et al. (2011); Macdonald, Wilson, Martinez, and Toossi (2011):Goal Hierarchy; Value-in-use Magids, Zorfas, and Lemon (2015): Emotional motivators (e.g., "helps me be creative", "feel revived and refreshed") Almquist et al. (2016): 30 value elements fall into four categories: functional; emotional; life changing and social impact. The authors emphasize the analogy between Maslow's 'hierarchy of needs' and their model.

(*Continued*)

(*Continued*)

	Illustrative Contributors
4. Longitudinal	Garvin (1987): Reliability and durability are related to the longitudinal aspect of quality. Zeithaml (1988): Depending on the availability, intrinsic and/or extrinsic attributes are evaluated during pre-purchase, point of purchase and consumption. Keller (1993): Brand knowledge can be linked to past experience; belief association is created on the basis of direct experience with the product/service. Holbrook (1996): CV resides not in the purchase but rather in the consumption. Ravald and Grönroos (1996): "…customer-perceived value of an offering, seen through the eyes of the customer and related to his own value chain, must also be highly situation specific." Woodruff (1997): Customers may perceive value differently at different times, such as when making a purchase decision or experiencing product performance during or after use. Parasuraman (1997): Research shows that customers attach new meanings to products after using them for some time. Anderson and Narus (1998): Entire life-cycle of the offering has to be considered (from acquiring the offering to disposal)—total solution package. Slater and Narver (2000): Life-cycle costs include search costs, operating costs and disposal costs, as well as purchase price. Eggert and Ulaga (2002): CV has pre-/post-purchase perspectives, whereas customer satisfaction has a post-purchase perspective. Kim and Mauborgne (2000): Six stages of the buyer experience cycle: purchase, delivery, use, supplements, maintenance and disposal. Woodall (2003): CV could be perceived in four distinct temporal forms: Ex-ante CV (pre-purchase), Transaction CV, Ex-poste CV (post-purchase) and Disposition CV. Verhoef et al. (2009): "the customer experience encompasses the total experience, including the search, purchase, consumption, and after-sale phases of the experience" Lemke et al. (2011); Macdonald et al. (2011); Grönroos and Voima (2013):Value-in-use (i.e., customer assesses value in a longitudinal and experiential process of usage). Lemon and Verhoef (2016): Customer journey consists of three stages: pre-purchase, purchase and post-purchase
5. Trade-off	Garvin (1987): Ranking high on all quality dimensions requires consumers to pay a price premium. Zeithaml (1988): Monetary price is not the only sacrifice perceived by consumers. Ravald and Grönroos (1996): CV is the ratio between perceived benefits and perceived sacrifice. Eggert and Ulaga (2002): CV in business markets is the trade-off between the multiple benefits and sacrifices. Anderson and Narus (1998): Customers evaluate benefits and cost with the best alternative on the market to make decision. Oh (1999): Perceived price and perceived service quality are the antecedents of perceived customer value. Bowman and Ambrosini (2000): Perceived use value and exchange value. Slater and Narver (2000): Benefits minus life-cycle costs. Woodall (2003): Net CV (a utilitarian balancing of benefits and sacrifices) includes Benefits (Attributes and Outcomes) and Sacrifices (Monetary and Non-monetary)
6. Aggregated	Zeithaml (1988): Perceived value is the consumer's overall assessment of the utility of a product based on perceptions. Keller (1993): The agreement among the subcategories (brand associations) of the brand image determines 'cohesiveness'. "The cohesiveness of the brand image may determine consumers' more holistic or gestalt reactions to the brand" p. 8. Woodall (2003): Consumers are largely unconscious about the valuation process and this 'overall' perspective may best be represented as a gestalt (an organized whole in which each part affects every other part). "It is likely that a succession of different CV determinations and associated critical incidents may influence the customer's 'overall' CV perception, and that CV will be accumulated and/or aggregated through a largely non-rational process." p. 20. Khalifa (2004): "The customer value accumulates as the satisfied needs advance from utility to psychic, as the customer benefits offered transcend tangibles to intangibles. This accumulation of value may take one of four distinct forms: functionality; solution; experience; and meaning. Verhoef et al. (2009): "the customer experience construct is holistic in nature and involves the customer's cognitive, affective, emotional, social and physical responses to the retailer" Lemke et al. (2011): Customers assess their experience holistically and this assessment includes a judgment of the quality of their experience. Grönroos and Voima (2013): "Value-in-use accumulating from past, current, and future experiences" p. 139. Lemon and Verhoef (2016): "Customer experience construct is holistic in nature" p.70

(*Continued*)

	Illustrative Contributors
7. Co-created	Normann and Ramirez (1993): "Successful companies do not just add value, they reinvent it…Their focus of strategic analysis is not the company or even the industry but the value-creating system itself, within which different economic actors-suppliers, business partners, allies, customers- work together to *co-produce* value." pp. 65–66 . "if the key to creating value is to co-produce offerings that mobilize customers (e.g., IKEA), then the only true source of competitive advantage is the ability to conceive the entire value-creating system and make it work" p. 69. Vargo and Lusch (2004): "The customer is always a co-producer" is one of the eight foundational premises of S-D logic. More specifically, "an enterprise can only offer value propositions; the consumer must determine value and participate in creating it through the process of coproduction." p. 11. Gummesson (2008a): "[…] co-creation of service is a necessity. We therefore have to move away from one-party centricity—either supplier-centric or customer-centric—to two-party centricity, which simultaneously zooms in on both suppliers and customers." p. 16. Payne et al. (2008): This study develops a framework for understanding and managing value co-creation. "…value proposition exists in order to facilitate the co-creation of experiences. Creating customer experiences is less about products and more about relationships which the customer has vis-à-vis the total offering." p. 86. Grönroos and Voima (2013): "The customer's resources/processes interact with the service provider's resources/processes/outcomes in a merged dialogical process" p. 143. Lemon and Verhoef (2016): Customer interact with following touch points: brand-owned, partner-owned, customer-owned and social/external touch points
8. Relative	Zeithaml (1988): Perception of quality changes due to increased competition. Keller (1993): Brand associations can be easily changed by competitive actions. Slater and Narver (1994): Firms should continuously examine competitive threats. Competitive intelligence is part of everyone's job. Ravald and Grönroos (1996): To achieve sustainable competitive advantage, the firm must provide a greater net value than its competitors. Butz and Goodstein (1996): An important piece of information to obtain during customer understanding process is how much of the total budget the customer spends with you as compared to the competition. Holbrook (1996): CV is relativistic; comparative (among objects), personal (across people) and situational (specific to context). Anderson and Narus (1998): Gauge the differences in functionality and performance compared to the next best alternative. Bowman and Ambrosini (2000): It is the idiosyncratic ways of doing things in the organization, and notably entrepreneurial labor, that allows an organization to offer more consumer surplus than its competitors, and that may enable it to achieve above average profits. Kim and Mauborgne (2000): "An innovation can increase customers' productivity by helping them do their thing faster, better, or in different ways." p. 30. Eggert and Ulaga (2002): Value is relative to competition. Better trade-off between benefits and sacrifices help company to create competitive advantage.
9. Dynamic	Zeithaml (1988): The cues signal quality changes over time. Keller (1993): Consumer knowledge about brand changes over time. Slater and Narver (1994): "To create superior value for buyers continuously requires that a seller understand a buyer's entire value chain, not only as it is today but also as it evolves over time." p. 22. Butz and Goodstein (1996):"The first goal is to determine how the customer decides today's 'best value'; the second, to begin the process of discovering how to provide unanticipated value in the future." p. 73. Slater (1997): One aspect of market orientation is continuously learning about customers and generating new intelligence about their needs and how best to meet those needs. Woodruff (1997): Customer value changes over time. Although hard to predict, patterns of change in the market can be used as a predictor. Parasuraman (1997): Customer value changes over time as the attributes customers use to judge value may also change. Vargo and Lusch (2004): Being consumer-oriented means learning from customers and adapting to their individual and dynamic needs. Verhoef et al. (2009): Customer experience can be influenced by a combination of experiences, which evolve over time. Macdonald et al. (2011): Customer perception of value changes over time (demonstrated through the case study Year 1 vs Year 4). Flint et al. (2011): Customers expect suppliers to anticipate their needs and desires (even if they themselves cannot). Lemon and Verhoef (2016): ''preferences, and the influence of specific touch points, may change over time." p.88

Appendix B. CVM Model illustration -car repair service

Perceived Benefits	Symbolic Value	1. The repair facility is highly reputable-customer satisfaction score 9.2	3. Operator speaks in an assuring tone; high level of expertise	(1) Parking space marked with the brand plates (1) The look of the person and the reception area match with the firm's brand	7. Caller speaks in an assuring tone and demonstrates high level of expertise	9. Reinforcing trust with the level of expertise	11. Reinforcing brand during the check up call	12.Thank you letter-reinforcing the brand image
	Relational Value	1. Offering some loyalty programs; peer recommendations	3. Friendly voice	5. Friendly and personal approach	7. Friendly and personal approach	9. Friendly and personal approach	11. Nice that they check after 3 days how things are	12. Thank you letter with a feedback request—
	strengthening the bond							
	Experiential Value	1. It is a pleasure to browse at the website	3. Pleasant and comforting conversation	5. Nice reception area; well designed waiting arean with coffie machines	7.Visual documents about the diagnosis are provided	9. Repair is explained through a video	11. Nice that they leave a gift on the seat	12. Nicely prepared a thank you letter
	Utility Value (II)-Operational Attributes	1. Website is easily accessible through google search	3. Earliest availability meets customer's expectation	5. No queueing; person is available;expertise level is high	7. Quick and accurate diagnosis	9. Repair is effective and quick	11. No second visit is needed	12. Timely letter to say thank you
	Utility Value (I)-Product Attributes	(1) Well-designed website providing all necessary information (2) FAQ	3. Operator asks all necessary information; nothing is missed	(1) Easy parking (2) Full understanding of the problem (3) Provide a loaner	7. Full description of the diagnostic	9. Detailed description of the repair	11. The repair is effective	12. Thank you letter

(*Continued*)

(Continued)

Customer's Process		**Search earch for a repair facility**	**Select and book**	**Visit**	**Authorize**	**Receive**	**Consume**	**Dispose**
		(1) **Learn about the problem**	**3. Select a facility and book repair**	**4. Drive to the facility** **5. Queue and discuss the problem** **6. Leave the car and drive home**	**7. Authorize repair**	**8. Drive to the facility** **9. Queue, be briefed about the repair and pay** **10. Drive home**	**11. Use the car**	**12. End of service (no second visit or call needed)**
Encounters	Provider-led encounters	(1) Website, internet advertisements (2) Website, technical information	-	-	7. Authorization request	-	-	-
	Customer-led Encounters	(1) Ask friends/families (2) Read online customer forums	3. Call for an appointment	4 and 6. Driving to/from facility 5. Queue up	-	8 and 10. Driving to/from facility 9. Queue up 9. Pay	11. Asking about the noise just noticed	12. Appointment for a second visit?
	Dialogical Encounters	-	3. Setting time for drop off	5. Discussion about the problem; customer provides the full story; Q&A	7. Agreement about diagnosis and repair	9. Discussion about the repair and instructing customer how to listen to the noise	-	-
	Service Encounters	-	-	-	-	-	11. Driving the (fixed) car	12. Assessment of the repair outcome

(*Continued*)

(Continued)

Perceived Sacrifice								
Monetary Sacrifices	-	-	Travel cost; Opportunity cost of the visit	-	10. Agreed repair amount 10. Unexpected cost emerged during the repair; Travel cost; Opportunity cost of the visit	-	-
Non-monetary Sacrifices	(1) Searching for a facility (2) Trying to understand the complicated technical issue; worrying about the safety of driving	3. Waiting on the line (too long?); waiting for the repair day; need to reschedule the agenda to drop off the car; anxiety in case of no availability in expected time	4. Driving time 5. Queueing time; waiting for the diagnosis (1) 5. Complexity of the issue – cannot visualize; insecurity due to lack of understanding (2) 6. Finding alternative transport and driving home	7.Waiting for the repair 7. Checking the price estimate 7. Lack of confidence about authorization; "Was it a fair price?"-mistrust	8. Finding alternative transport and driving to the facility 9. Queueing time; the complexity of the repair – cannot fully comprehend; "It is not fair to pay that much"- mistrust 10. Driving time to home	11. Worry about the problem; "will that occur again?"- perceived risk	12. "Is problem fully fixed?"- worry

Appendix C. Categorized Codes

EVALUATION CRITERIA	CODES	DESCRIPTION
Validity: *The instrument works and does what it is meant to do—developing a broader understanding of CV*	VAL-THINK(+)	CVM encourages thinking from a customer perspective
	VAL-GUI(-)	The method of use does not provide sufficient guidance to use the instrument properly
	VAL-ORIE(-)	The method of use does not provide sufficient customer orientation to use the instrument properly
	VAL-SCOP(-)	The method of use does not provide sufficient process and customer scoping
Quality: *The instrument captures broad nature of CV completely and accurately*	QUAL-STRUC(+)	CVM design is well-structured
	QUAL-VIS(+)	CVM makes CV visual
	QUAL-COMP(+)	CVM provides complete view of CV
	QUAL-VAG(-)	CVM's value categories are vague (e.g., brand value)
	QUAL-INCOMP(-)	CVM is incomplete (e.g., does not incorporate all the stakeholders)
Utility: *The instrument can be useful for organizations to develop a broader understanding of CV*	UTI-HELP(+)	CVM is effective and useful
	UTI-IRRE(-)	CVM is irrelevant for my context (e.g., public services)
Efficacy: *The instrument is easy to use and efficient way to develop a broader understanding of CV*	EFF-EASY(+)	CVM is easy to use
	EFF-COMPX(-)	CVM is too complex/theoretical to use
	EFF-TIME(-)	CVM approach is time consuming

Cogent Business & Management **(ISSN: 2331-1975) is published by Cogent OA, part of Taylor & Francis Group.**

Publishing with Cogent OA ensures:

- Immediate, universal access to your article on publication
- High visibility and discoverability via the Cogent OA website as well as Taylor & Francis Online
- Download and citation statistics for your article
- Rapid online publication
- Input from, and dialog with, expert editors and editorial boards
- Retention of full copyright of your article
- Guaranteed legacy preservation of your article
- Discounts and waivers for authors in developing regions

Submit your manuscript to a Cogent OA journal at www.CogentOA.com