

Value Co-creation in a Digitalised and Dematerialised World

Critical Factors Contributing to Success or Failure of Business Models in Value Networks

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Abstract: Due to increased digitalisation and dematerialisation, the traditional value chain concept appears to be outdated. Instead, the term value network has emerged to describe how organisations co-create value in today's economy. However, it remains unclear what contributes to success or failure of collaborative business models in value networks. The article closes this research gap. The authors identify relevant papers through a systematic literature review process and review them using qualitative content analysis. From the 45 papers analysed, 21 critical factors contributing to success or failure of business models in value networks were extracted. They can be structured along 6 dimensions. From a theoretical perspective, the article deepens the understanding of business models in value networks and provides clear perspectives for future research. From a practical perspective, managers can use the results as target variables for strategic management to ensure success of their value network.

Keywords: business model, value network, systematic literature review, success factors, failure factors

Introduction

Digitalisation and dematerialisation have fundamentally changed the way in which organisations create and capture value ([Ricciotti, 2020](#)). To succeed in today's economy, businesses are moving away from product-centric value propositions, leaning more and more towards providing innovative services and solutions that rely heavily on digital technologies ([Kindström, 2010](#)). Economic value is increasingly created through the exchange of knowledge and intangible benefits, rather than transactions around goods, services and revenue alone ([Wild, 2009](#)). Subsequently, instead of operating in a sequential and linear logic of value creation as implied by the traditional value chain concept ([Porter, 1985](#)), organisations need to transform their business models to co-create value in a networked manner ([Rachinger et al., 2019](#)).

However, it remains unclear which target variables are critical to ensure competitive success in such a value network ([Ricciotti, 2020](#)). Existing research is insufficient to answer this question: first, because authors integrate the concept of value networks in their studies without elaborating on the implications that the differing organisational context might have on business practices (e.g., [Centobelli et al., 2020](#); [Pies & Schultz, 2023](#)); secondly, because existing research is fragmented. Several case studies are focused on describing particular value networks in terms of business model, composition, roles and activities (e.g., [Mair & Schoen, 2007](#)). However, these empirical findings have yet to be condensed to higher-level patterns. While systematic reviews of the research landscape on the co-creation of value in networks exist, they are limited to more conceptual aspects ([Jocovski et al., 2020](#); [Ricciotti, 2020](#)). In sum, there is a need for a systematic overview of factors contributing to success or failure of businesses cooperating in value networks. By conducting a qualitative content analysis on papers identified using a systematic literature review process, this study closes this gap by answering the following research question:

RQ: What are critical factors contributing to success or failure of business models in value networks?

Our paper contributes to theory and practice alike. From a theoretical perspective, researchers will benefit from a structured analysis of critical factors contributing to success or failure of business models in value networks, which previously did not exist in the literature. The overview and analysis can guide future research in the field. From a practical perspective, managers can use the information derived as target variables for strategic management to ensure success of their value network ([Rockart, 1979](#)).

The remainder of the study is organised as follows. Section 2 will introduce the theoretical foundation central to our study. Section 3 will outline in detail our research approach. Section

4 will report the results of our analysis. Section 5 will discuss the findings, directions for future research and limitations of the study.

Theoretical Foundation

As our paper aims to extract critical factors contributing to success or failure of business models in value networks, the following chapter is dedicated to introducing the concepts central to this research question.

First, a value network can be defined as any web of relationships generating tangible and intangible value based on complex dynamic exchanges between two or more network participants, such as individuals, groups or organisations ([Allee, 2000](#)). While there exists no structured analysis of the specific differences of businesses operating in a value network as opposed to a value chain, several aspects stand out from the literature. In a value network, value is not created in a linear manner as was the case for many industrial-age business models that followed clearly fleshed out supply chains. Rather, value is co-created in a cooperation of different organisations, whose goal it is to jointly add value for the end user or customer ([Kartseva et al., 2004](#)). The end-product or service defines the market for the entire value network ([Allee, 2000](#)). Subsequently, business models of organisations operating in a value network are interconnected and interplaying to deliver the joint value proposition ([Ghezzi, 2013](#)). The constellation of actors and their interaction is in constant flux, rather than in static linear chains. While tangible goods continue to be exchanged, in particular the exchange of intangible goods contributes to joint value creation ([Allee, 2008](#)).

Secondly, a business model describes how organisations create, deliver, and capture value, whether economic, social, or of some other form ([Osterwalder, 2004](#)). The concept can be used to understand and define the underlying core logic and strategic choices of value creation ([Shafer et al., 2005](#)). Historically, authors typically referred to a single organisation when describing a business model ([Jocovski et al., 2020](#)). Other organisations were included in the analysis but considered as partners for delivering a firm-centric value proposition (e.g., in the role of a supplier). In light of the previous section on the key aspects of value creation in value networks, it becomes apparent that the business model concept must be expanded in order to capture the aspect of value co-creation in the sense of an interorganisational value proposition. [Jocovski et al. \(2020\)](#) suggest four questions to describe a network-oriented business model: who (referring to the actors that are interconnected through the business model and their orchestration); what (referring to the joint value proposition); how (referring to the value flow and activities needed to deliver the joint value proposition); and why (referring to reasons and practices behind the utilization of the value network). However, the implications on managerial practices of this network-oriented view on business models remain unclear. The

authors suggest a more in-depth analysis that goes beyond empirical examples and case studies to deepen the understanding of networked business models.

To meet this need, and in order to support theory and practice alike, we chose to investigate critical factors contributing to success or failure of business models in value networks. The concept of success factors was first introduced by Bullen & Rockart (1981). They can be defined as “the limited number of areas in which satisfactory results ensure successful competitive performance” for an organisation. The concept has established itself in the management literature in various contexts for practical research (Rohn *et al.*, 2021; Trkman, 2010). However, other authors also suggest to study challenges or failure factors (Özcan *et al.*, 2022). These are also critical because, if not considered, they may lead to partial maldevelopment or complete failure of an organisation (Gargeya & Brady, 2005). We agree with Taherdoost & Keshavarzsaleh (2016) that success factors and failure factors can be considered two sides of the same coin. Therefore, we choose the term critical factors in order to indicate the ambivalence of the factors identified, namely that they can play a decisive role in both success and failure of business models in value networks.

Research Approach

We followed two steps to identify critical factors contributing to success or failure of business models in value networks. First, we followed a systematic literature review process to identify papers that cover business models in value networks. Secondly, these papers were analysed using a qualitative content analysis to answer our research question. The combination of these methods is established (e.g., Centobelli *et al.*, 2020; Hanelt *et al.*, 2021) and has also been used to extract critical success factors from the literature (e.g., Hietschold *et al.*, 2014; Medeiros *et al.*, 2022). Both steps are described in detail below.

Identification of relevant literature

We conducted a systematic literature review process to identify literature relevant to answer our research question, following established recommendations for this methodology (Tranfield *et al.*, 2003; Webster & Watson, 2002). Figure 1 depicts the flow chart of the different steps conducted, following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) reporting guidelines (Page *et al.*, 2021).

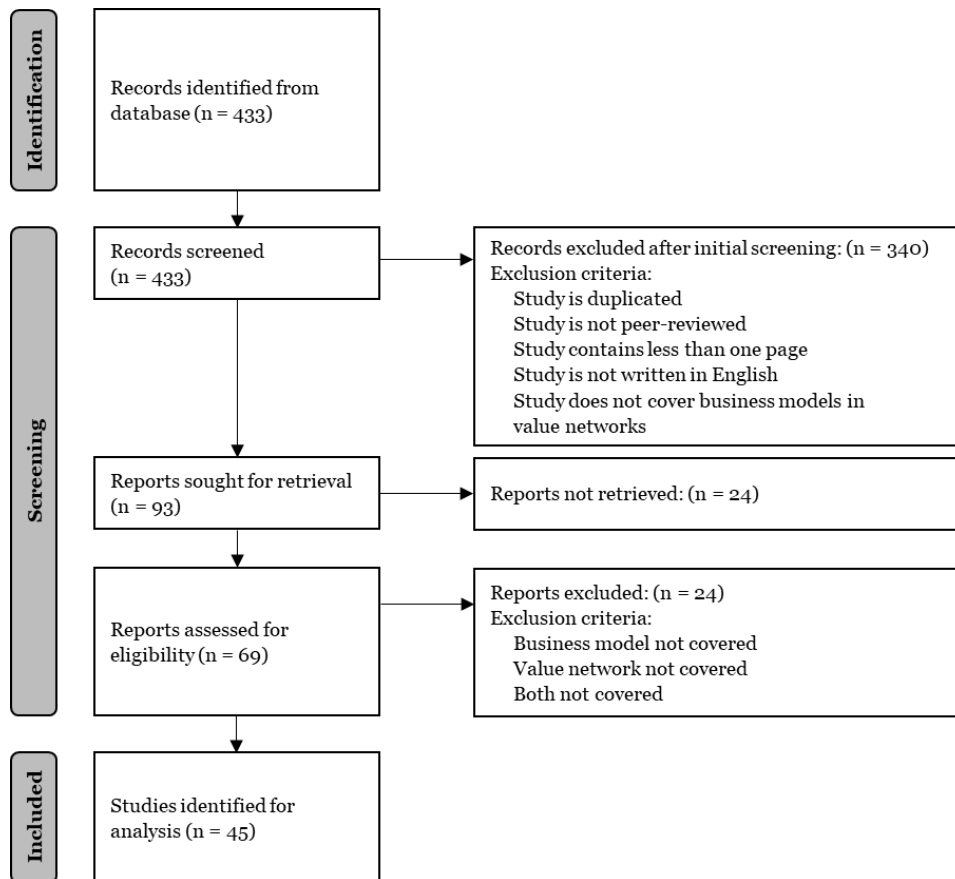


Figure 1. Flow diagram of systematic literature review process

In the identification phase, we undertook a keyword search in Scopus in April 2023 to collect relevant literature. We conducted separate queries for “value network” and “business model” in singular or plural in article title, abstract and keywords. We combined both queries with the Boolean operator AND, yielding 443 results eligible for further analysis (see Table 1).

Table 1. Number of studies by search string

	Scopus
#1 “value network” OR “value networks”	1,993
#2 “business model” OR “business models”	44,052
TOTAL (#1 AND #2)	443

For the screening process, we defined five exclusion criteria. First, the study is duplicated. Second, the study is not peer-reviewed (e.g., presentation slides, extended abstracts, invited papers, keynote speech, workshop reports, book chapters). Third, the study contains less than one page. Fourth, the study is not written in English. Fifth, the study does not present any type of findings or discussion about business models in value networks. In an initial screening step, we focused on screening the abstracts of the papers, applying the exclusion criteria. Subsequently, 93 records were sought for retrieval of which 24 could not be retrieved. A full-text screening was conducted with the remaining 69 reports. In this step, we were able to more thoroughly assess whether the concepts “business model” and “value networks” were covered

in the article. All screening steps were conducted by at least two reviewers to ensure quality and reliability (Snyder, 2019). Disagreements were resolved through discussion. The procedure led to 45 papers eligible for full text analysis.

Deduction of critical factors for success or failure

To extract critical factors contributing to success or failure of business models in value networks, we conducted a qualitative content analysis (Mayring, 2000). Qualitative content analysis has been steadily used in business research (Neuendorf, 2002). It is an established methodology to condense existing knowledge about a phenomenon into categories (Krippendorff, 1980) and thus suitable to answer our research question. We followed a deductive approach in three phases, as outlined by Elo & Kyngäs (2008) (see Figure 2).

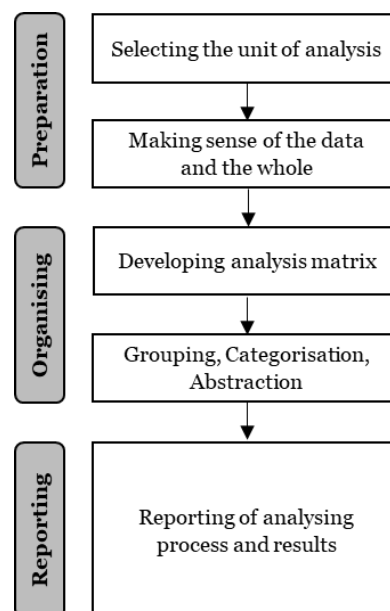


Figure 2. Deductive qualitative content analysis process

In the preparation phase, the unit of analysis was selected as the 45 papers identified through our systematic literature review process outlined before. To make sense of the data, the researchers conducted several high-level analyses to better understand the papers in scope. This included extracting the general theme of the papers, research strategy (conceptual vs empirical), the definitions adopted for value network and business model, and getting an initial sense if factors contributing to success or failure of business models in value networks are present.

As we have already made sure through our selection process that all papers cover business models in value networks, our analysis routine in the organising phase only needed to ensure we extract critical factors contributing to success or failure from the papers. To achieve that, we applied the definitions outlined in the previous chapter to our coding protocol: success factors were defined as areas in which satisfactory results ensure successful competitive

performance of the value network; while failure factors were defined as factors that may lead to partial maldevelopment or complete failure of a value network. Coding was conducted using the software MAXQDA; relevant text passages were coded as either success or failure factor. At least two reviewers assessed every paper. This resulted in a list of quotes that were grouped as being either a success or failure factor for business models in value networks. To come up with more abstract critical factors, we assigned a sub-category to each quote that closely mirrors the original wording. These sub-categories were then summarized into higher-order categories, i.e., the critical factors of interest to answer our research question. Lastly, these categories were aggregated into abstract dimensions. Table 2 illustrates the grouping, categorisation and abstraction process deployed.

Table 2. Illustration of category formation process

Coded quote	Group	Sub-category	Category (critical factor)	Dimension
“One element of this is the need for an innovative business model to be developed that focuses on the achievement of strategic outcomes by aligning ICT [Information and communications technology] services” (Al-Debei & Fitzgerald, 2010)	Success factor	Development of innovative business model that focuses on strategic outcomes based on aligned services	Business model design for value network	Cooperative business practices
“Different firms usually participate with firm-centric BMs [business models] that could be in mutual conflict” (Jocevski et al., 2020)	Failure factor	Firm-centric business models that could be in mutual conflict		
...		
“Investments sometimes are too large or involve too high risks set in relation to the returns” (Ek et al., 2022)	Failure factor	Too large/risky investments in relation to return	Alignment and understanding of finances (revenue, cost, investment agendas)	
“Unclear and unbalanced distribution of costs and benefits, since often most of the benefits are not received by the actors making the largest portion of the investment” (Ghanbari et al., 2017)	Failure factor	Unclear and unbalanced distribution of costs and benefits		
...		...		

Table 3. Overview of papers identified for analysis

Source	Theme	Research strategy	Definition of value network/business model provided?	Success/failure factors coded?
Al-Debei <i>et al.</i> (2013)	Design of a value network model for creating innovative mobile data services	Empirical	Yes/No	Yes
Al-Debei & Fitzgerald (2010)	Development of a business model ontology for mobile data services	Empirical	Yes/Yes	Yes
Alves & Roque (2005)	Mapping of value nets to analyse business models of Massively Multiplayer Online Role-Playing Games (MMORPGs)	Empirical	No/Yes	-
Baumöl & Winter (2001)	Analysis of impact of IT potentials on value-added networks and the organisational innovation related to it	Conceptual	Yes/No	Yes
Brehmer <i>et al.</i> (2018)	Analysis of business models of innovative sustainable organisations in the Netherlands	Empirical	No/Yes	-
Breuer <i>et al.</i> (2015)	Analysis of location-based services in terms of business model and value network with focus on user data	Conceptual	Yes/No	Yes
Camps-Aragó <i>et al.</i> (2021)	Analysis of monetisation strategies for cooperative intelligent transport systems	Conceptual	No/No	Yes
Capo <i>et al.</i> (2014)	Analysis on how business models can complement each other in a value network and survive an industry crisis	Empirical	No/Yes	Yes
Cavallo <i>et al.</i> (2021)	Combination of strategic network and value network, impact of the network on participants and vice-versa	Conceptual	Yes/Yes	Yes
Costa & Da Cunha (2009)	Combination of business modelling and actor-network theory	Conceptual	No/No	-
Costa & Da Cunha (2015a)	Combination of business modelling and actor-network theory	Conceptual	No/No	Yes
Costa & Da Cunha (2015b)	Combination of business modelling and actor-network theory with focus on social dimension of business models	Conceptual	No/No	-
Darzanos <i>et al.</i> (2022)	Evaluation of business model for 5G-experimental environments	Conceptual	No/No	-
Darzanos <i>et al.</i> (2023)	Introduction of a framework for 5G-business model assessment	Empirical	No/No	-
Dellyana <i>et al.</i> (2018)	Analysis of business model innovation to support multi-dimensional value networks	Empirical	Yes/Yes	Yes
Derks <i>et al.</i> (2022)	Proposition of a collaborative sustainable business modelling approach to achieve transition to more sustainability	Empirical	Yes/Yes	Yes
Eaton <i>et al.</i> (2010)	Analysis of value network and control points as a valid methodology to identify profitable business models for the mobile telecoms industry	Conceptual	Yes/Yes	-

Source	Theme	Research strategy	Definition of value network/business model provided?	Success/failure factors coded?
Ek <i>et al.</i> (2022)	Design, reconfiguration and development of Green Symbiosis Business Value Networks (GSBVs)	Conceptual	Yes/No	Yes
Fjeldstad & Snow (2018)	Proposition of value configuration as a business model contingency variable which affects the properties of business model elements	Conceptual	Yes/Yes	Yes
Gao & Krogstie (2015)	Analysis of business models of mobile ecosystems in China	Empirical	Yes/Yes	Yes
Gao & Zhang (2016)	Analysis of business models of sharing economy in China	Empirical	Yes/Yes	Yes
Ghanbari <i>et al.</i> (2017)	Analysis of vertical, cooperative business models in the Internet of Things (IoT)	Empirical	Yes/Yes	Yes
Ghezzi (2013)	Proposition of a framework for business models, value networks and resource management as a tool to identify discontinuous phenomena and trigger strategic re-planning	Empirical	Yes/Yes	-
Ghezzi <i>et al.</i> (2013)	Proposition of a methodological framework for developing innovative interconnection business models	Empirical	Yes/Yes	-
Granjo <i>et al.</i> (2014)	Mapping of different business modelling perspectives based on ontologies	Empirical	Yes/No	-
Guo <i>et al.</i> (2013)	Investigation of top managers' human and social capital on business model innovation by adopting a value network-based definition for business models	Empirical	Yes/No	Yes
Hung <i>et al.</i> (2010)	Combination of business values (value chain, value shop, value network) and design of an organic farming system	Empirical	Yes/No	Yes
Jocevski <i>et al.</i> (2020)	Literature review on interconnected business models	Conceptual	Yes/Yes	Yes
Nieuwenhuis & Kijl (2010)	Proposal of an early-stage business model and value network development approach for an e-health service in the research and development phase	Empirical	No/Yes	-
Kytölä <i>et al.</i> (2011)	Analysis of dynamic nature of the business model concept and illustration of its key elements within a healthcare supply chain	Empirical	No/Yes	Yes
Leviäkangas & Öörni (2020)	Exploration of relationship between business models, value chains and business ecosystems with a meta-model for transport-related services	Conceptual	Yes/Yes	Yes
Li & Whalley (2002)	Transformation from value chains to value networks in telecommunication industry	Conceptual	Yes/Yes	Yes
Lindman <i>et al.</i> (2014)	Investigation on emerging open data value network structure based on empirical findings from 14 Finnish organisations	Empirical	No/Yes	Yes

Source	Theme	Research strategy	Definition of value network/business model provided?	Success/failure factors coded?
Mair & Schoen (2007)	Analysis of social entrepreneurial organisations which managed to achieve scale and sustainability in developing economies	Empirical	No/Yes	Yes
Moro & Cauchick-Miguel (2022)	Analysis of a bike-sharing system implemented in the south of Brazil from business model perspective by focussing on the value network	Empirical	No/No	Yes
Nieuwenhuis & Kijl (2010)	Proposition of a business model engineering approach for the introduction of telemedicine services	Empirical	No/Yes	Yes
Reinhold <i>et al.</i> (2022)	Proposition of a value creation framework and roles for smart services within the manufacturing industry	Conceptual	Yes/No	Yes
Rezazadeh & Carvalho (2017)	Identification of business model innovation types	Conceptual	Yes/Yes	Yes
Riasanow <i>et al.</i> (2017)	Visualisation of the current automotive ecosystem, by evolving a generic value network using the E3 method	Empirical	Yes/No	Yes
Roelens & Poels (2013)	Identification of strategic elements of the Value Delivery Modelling Language (VDML) meta model	Conceptual	Yes/No	-
Spruytte <i>et al.</i> (2017)	Definition of the concept of dynamic value network configurations	Conceptual	Yes/No	Yes
Stanoevska-Slabeva & Fricke (2015)	Proposition of a design procedure and an overview of design options for development of inter-organisational business models for composite software products	Conceptual	Yes/No	Yes
Suherman & Simatupang (2017)	Proposition of an ontology and a concept for cloud-computing based business models	Conceptual	Yes/No	Yes
Tian <i>et al.</i> (2008)	Proposition of a framework for the modelling and analysis of business model designs involving a network of interconnected business entities	Conceptual	Yes/Yes	Yes
Wu <i>et al.</i> (2012)	Redefinition of the concept of business model and proposition of an analytical framework of business model from the perspective of value network	Conceptual	No/Yes	Yes

Findings

Table 3 shows the 45 studies identified for analysis through our systematic literature review process, as well as the information gathered through our preparation process of our qualitative content analysis. In line with existing literature (Ricciotti, 2020), our sample shows that

business models in value networks have been studied for quite some time, as the studies date from 2001 to 2022. The studies pursue a conceptual and an empirical approach in equal measure (23 empirical, 22 conceptual papers). Although (by definition of our search procedure) all papers utilise the terms “value network” and “business model”, not all of them provide definitions for the concepts. Out of the 45 papers, 29 papers provide a definition for value network (64%), while 25 provide a definition for business model (55%). The definitions adopted vary. For value network, the definition mostly adopted is the one by Allee (2000) also adopted in our study. For business model, the definitions mostly refer to Chesbrough & Rosenbloom (2002), which emphasizes the role of technical innovation to create and capture value. Regarding the general theme of the papers, it can be observed that the research domain varies – while most papers are grounded in an ICT context, others are also taking place in a sustainability context.

Regarding our research question, we identified 33 papers to be relevant for coding of critical factors contributing to success or failure of business models in value networks. From these papers, we were able to code 172 quotes using our coding protocol. Based on this total number of quotes, 108 were grouped as success factors, 64 as failure factors. Applying the categorisation and abstraction process outlined in the previous section, we were able to extract 21 critical factors contributing to success or failure of business models in value networks. We consider success and failure factors to be two sides of the same coin (Taherdoost & Keshavarzsaleh, 2016), allowing us to aggregate them to overarching factors. Still preserving the initial grouping of the quote as a success or failure factor allows us to maintain the context in which it is discussed in the literature. Abstracting the critical factors further, they can be structured along 6 dimensions. Table 4 provides an overview of the findings from the qualitative content analysis regarding our research question.

Cooperative business practices is the dimension mentioned the most (33% of all mentions), followed by *Interaction between actors* (21%) and *Value network architecture* (21%). *Value network context*, *Organisational readiness*, and *Value network infrastructure* only account for a smaller share of mentions (10%, 9% and 4%, respectively). The five most mentioned critical factors contributing to success or failure of business models in value networks are: Business model design for value network (26 mentions); Definition, design and alignment of roles, activities, and competencies (18 mentions); Alignment and understanding of finances (revenue, cost, investment agendas; 14 mentions); Adapted product development that includes customers (13 mentions); Dynamic character of network (11 mentions); Human resources readiness (i.e., availability of employees and leadership with required skillset; 11 mentions). We will continue to describe the dimensions and associated factors in more detail below.

Table 4. Results of qualitative content analysis regarding our research question

Dimension	Critical factor for success or failure of business models in value networks	Number of Mentions		
		Success factor	Failure factor	Total
Cooperative business practices	Business model design for value network	15	11	26
	Alignment and understanding of finances (revenue, cost, investment agendas)	2	12	14
	Adapted product development that includes customers	10	3	13
	Feasibility assessment and piloting	3	0	3
Interaction between actors	Dynamic character of network	3	8	11
	Active engagement of actors	5	4	9
	Cooperative data management (collection, sharing, analysis)	6	3	9
	Active management of communication	5	3	8
	Relationship management within value network	4	0	4
Value network architecture	Definition, design and alignment of roles, activities, and competencies	16	2	18
	Inclusion of relevant players	8	2	10
	Long-term strategies, agreements, and contracts within value network	4	1	5
	Openness of value network	3	0	3
Value network context	Favourable regulations	2	6	8
	Relationship management with government	4	0	4
	Understanding of institutional factors and conditions	2	1	3
	Competitive environment	0	2	2
Organisational readiness	Human resources readiness (i.e., availability of employees and leadership with required skillset)	7	4	11
	Organisational readiness for collaboration (in terms of infrastructure and capacity)	3	1	4
Value network infrastructure	Efficiency of infrastructure (stability, reliability)	4	0	4
	Design of adequate infrastructure (physical / financial / technical)	2	1	3
Total	-	108	64	172

Cooperative business practices: Organisations cooperating in value networks need to adapt their business practices to align them to a shared value creation. This first and foremost includes the adaptation of the business model. An overarching value proposition needs to be defined ([Derks et al., 2022](#); [Ghanbari et al., 2017](#)), tested ([Nieuwenhuis & Kijl, 2010](#)), and aligned across actors of the value network ([Dellyana et al., 2018](#); [Moro & Cauchick-Miguel, 2022](#)), as well as with partners and suppliers ([Rezazadeh & Carvalho, 2017](#)). This is a complex process ([Leviäkangas & Öörni, 2020](#)) because the business model should be designed to be attractive for each participant of the value network ([Costa & Da Cunha, 2015a](#)), while also preventing conflict between firm-centric business models ([Jocevski et al., 2020](#)). The alignment of finances in a value network is often a challenge. This concerns mainly the difficulty to outline a compelling outlook regarding return on investments for all participants ([Derks et al., 2022](#); [Ek et al., 2022](#); [Ghanbari et al., 2017](#); [Wu et al., 2012](#)), as well as securing the financing for the necessary investments ([Camps-Aragó et al., 2021](#); [Ek et al., 2022](#); [Moro & Cauchick-Miguel, 2022](#)). It is also essential to adapt product development for a joint value creation ([Fjeldstad & Snow, 2018](#); [Mair & Schoen, 2007](#)) and to ensure proximity to the customer throughout ([Al-Debei & Fitzgerald, 2010](#); [Hung et al., 2010](#); [Moro & Cauchick-Miguel, 2022](#)). Feasibility studies and pilot projects are encouraged to validate the potential of the identified synergies ([Derks et al., 2022](#); [Ek et al., 2022](#); [Ghanbari et al., 2017](#)).

Interaction between actors: Shared value creation in value networks also places specific demands on the interaction between participating actors. Participating organisations must have the capacity for dynamic adaptation of cooperation patterns, for example due to changes in the competitive or legal landscape or the structure of the value network ([Baumöl & Winter, 2001](#); [Dellyana et al., 2018](#); [Ghanbari et al., 2017](#); [Spruytte et al., 2017](#)). It is essential to actively involve all actors in the joint value creation process to ensure alignment and prevent isolated organisational developments ([Gao & Krogstie, 2007](#); [Reinhold et al., 2022](#); [Derks et al., 2022](#); [Capo et al., 2014](#)). As the exchange of knowledge and intangible goods is integral to value networks, businesses should also implement cooperative data management practices ([Cavallo et al., 2021](#); [Lindman et al., 2014](#)). This includes assessing which (sensitive) data is essential to be shared to identify and exploit collective business opportunities ([Ek et al., 2022](#); [Lindman et al., 2014](#)). The operationally high communicative demands of value networks require the design and active usage of appropriate communication channels between the relevant business roles ([Costa & Da Cunha, 2015a](#); [Dellyana et al., 2018](#); [Ek et al., 2022](#)). On a higher level, actors should also invest in a close and trustful relationship among each other that is required for cooperation ([Ek et al., 2022](#); [Gao & Zhang, 2016](#); [Stanoevska-Slabeva & Fricke, 2015](#)).

Value network architecture: To design a successful value network architecture, organisations need to have an aligned understanding of roles, activities, and value flows ([Al-Debei et al., 2013](#); [Breuer et al., 2015](#); [Capo et al., 2014](#); [Dellyana et al., 2018](#)) that ensures complementary contributions from involved actors ([Jocevski et al., 2020](#); [Li & Whalley, 2002](#); [Stanoevska-Slabeva & Fricke, 2015](#)). Organisations should identify relevant partners to join the overarching business model and persuade them to become part of the value network to realise a diverse but synergistic network ([Derks et al., 2022](#); [Li & Whalley, 2002](#); [Moro & Cauchick-Miguel, 2022](#); [Riasanow et al., 2017](#)). In terms of value network governance, long-term strategies, agreements, and contracts between the actors should be formulated on how to implement, finance and scale value co-creation opportunities ([Derks et al., 2022](#); [Ek et al., 2022](#)). The value network structure should also be set up to be inclusive for new actors to enter ([Dellyana et al., 2018](#); [Riasanow et al., 2017](#)).

Value network context: The success of a value network is also dependent on external conditions. Most notably, legislation has been identified as a potent factor to affect competitive dynamics of a value network ([Gao & Zhang, 2016](#); [Kytölä et al., 2011](#); [Leviäkangas & Öörni, 2020](#); [Tian et al., 2008](#)). While it can act both as a driving force as well as a barrier ([Ek et al., 2022](#)), the dependency on favourable regulations has been identified more often as a challenge. Hence, actors of the value network should invest in a positive relationship with government officials and lobby to change the applicable legal framework ([Derks et al., 2022](#); [Gao & Krogstie, 2007](#); [Gao & Zhang, 2016](#)). Furthermore, a deep understanding of the institutional factors and conditions surrounding and potentially impacting the value network is essential ([Ek et al., 2022](#); [Leviäkangas & Öörni, 2020](#)). Lastly, value networks often operate in extremely volatile market dynamics and thus may be subject to a rapidly changing competitive landscape ([Al-Debei et al., 2013](#); [Li & Whalley, 2002](#)).

Organisational readiness: Organisations also need to be fit individually for collaboration in a value network.; first, in terms of human resources. Managers need to be equipped with entrepreneurial skills that allow them to identify opportunities in value networks, as well as managerial skills to effectively allocate appropriate resources ([Al-Debei & Fitzgerald, 2010](#); [Guo et al., 2013](#); [Kytölä et al., 2011](#)). Employees need a good understanding of the local market conditions and capabilities to cope with the dynamic nature of value networks ([Gao & Krogstie, 2007](#); [Gao & Zhang, 2016](#)). It is important for an organisation to invest in personal development and retention measures to ensure availability of resources with the appropriate skillset ([Gao & Krogstie, 2007](#); [Gao & Zhang, 2016](#); [Suherman & Simatupang, 2017](#)). Secondly, organisations also need to have suitable infrastructure, effective business processes and sufficient capacity to deliver a collaborative value proposition ([Al-Debei & Fitzgerald, 2010](#); [Derks et al., 2022](#); [Wu et al., 2012](#)).

Value network infrastructure: Lastly, organisations collaborating in value networks require suitable infrastructure for value co-creation. Due to the high level of interaction and exchange of value, an essential requirement for the infrastructure is to be stable and reliable. This has been found as especially important for the technological architecture of value networks ([Ek et al., 2022](#); [Gao & Krogstie, 2007](#); [Al-Debei & Fitzgerald, 2010](#); [Suherman & Simatupang, 2017](#)). Besides ensuring efficiency of infrastructure, the actual design of an adequate infrastructure has also been identified as a success factor. Actors in value networks should align their physical, financial, and technical infrastructure to the joint value proposition ([Derks et al., 2022](#); [Ek et al., 2022](#)).

Conclusions

The paper presents critical factors contributing to success or failure of business models in value networks through combing a systematic literature review process with qualitative content analysis. We were able to identify 21 critical factors that can be structured along 6 dimensions. Both are summarized in Figure 3.

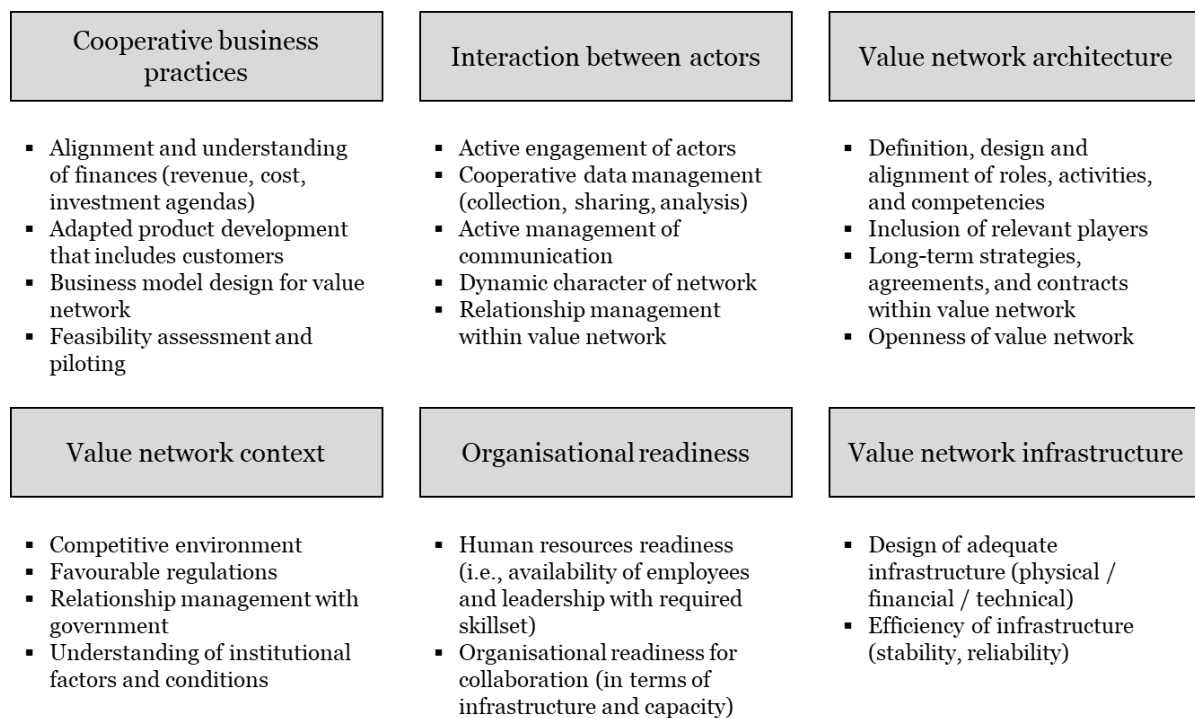


Figure 3. Overview of dimensions and critical factors contributing to success or failure of business models in value networks

Discussion of the results and implications for future research

Reviewing the reported results, several observations can be made that also lead to implications for future research. These are summarized in Table 5 and will be explained in detail below.

Table 5. Results of qualitative content analysis regarding our research question

Observation	Implication for future research
1. Number of mentions of critical factors in literature may not correspond to actual relevance in practice	Conduct quantitative studies to assess relative importance of critical factors and their actual impact on value network performance indicators
2. Reporting of critical factors qualitative – actual impact on performance indicators remains unclear	
3. Critical factors are mentioned as a by-product and not central to studies	Conduct in-depth analysis of individual critical success factors
4. Lack of managerial recommendations to ensure success of value networks	
5. Studies conducted in different contexts that might affect relevance of critical factors	Consider contextual factors in analysis (e.g., industry, business model maturity, value network maturity)

First, looking at the representation of the dimensions as well as the critical factors in the literature, one can notice an asymmetrical distribution of mentions (see Table 4). For example, the three dimensions *Cooperative business practices*, *Interaction between actors*, and *Value network architecture* account for three-quarters of all mentions, while the other three dimensions account for the remaining quarter of all mentions. Similarly, the factors *Business model design for value network* and *Definition, design, and alignment of roles, activities, and competencies* are mentioned the most in the literature, together accounting for roughly 20% of all mentions. One might be tempted to infer causal conclusion and a prioritisation from these asymmetries. For example, as critical factors from the *Value network architecture* dimension are mentioned more often than critical factors from the *Value network infrastructure* dimension, one might infer that these are more decisive for a successful business model in a value network. However, although the extracted number of mentions might be a valuable hypothesis for a prioritisation, the extent to which a certain critical factor or dimension is covered in the literature might not necessarily coincide with its actual relevance in practice. For example, if it is difficult to collect data for a given factor, it may naturally appear less often in the literature. Second, and in a similar vein, most of the papers in our analysis report critical factors for success or failure only in a qualitative manner. It thus remains unclear how large their impact on tangible performance indicators of a value network is in practice.

We thus call for future research to choose quantitative methodologies to assess the relative importance of critical factors and their actual impact on value network performance indicators. This can be achieved by conducting a survey with practitioners. This has already been done in the managerial field for critical success factors in other domains (e.g., [Chow & Cao, 2008](#); [Yusof & Aspinwall, 2000](#)). The 21 factors identified in our study can be used as a fixed set of independent variables whose significance and influence on various dependent

variables are analysed. In the long run, the more in-depth analyses on specific critical factors are available (see the following section), systematic literature reviews can be deployed to collect and aggregate empirical data on their individual and relative importance. Currently, this is not possible due to lack of studies reporting data that quantifies the impact of critical factors for success or failure of business models in value networks.

Third, in most of the studies in our sample, the reporting of critical factors for business models of value networks was merely a by-product. Usually, they were reported as learnings from conducting a case study (e.g., [Derks et al., 2022](#)) or by citing other literature (e.g., [Ek et al., 2022](#)). Fourth, both conceptual and empirical papers often remain unclear why specific factors have contributed to success or failure of a particular business model in a value network. We thus call for further research to conduct in-depth investigations of individual critical factors. Such analyses can then also derive more concrete managerial implications. We would suggest utilising the number of mentions collected through our analysis to guide a prioritisation, drawing on existing frameworks and tools and implementing them in practice. For example, for the factor *Business model design for value networks*, two papers in our sample have made contributions in outlining steps to develop an inter-organisational business model ([Ghezzi, 2013](#); [Stanoevska-Slabeva & Fricke, 2015](#)). Similarly, authors have proposed ontologies to support implementation of the factor *Definition, design, and alignment of roles, activities, and competencies* (e.g., [Al-Debei & Fitzgerald, 2010](#); [Camps-Aragó et al., 2021](#); [Cavallo et al., 2021](#)). These methods can be applied in a case study to gain in-depth experience of their implementation. As mentioned in the previous section, this should also entail the collection of empirical data to facilitate the quantification of the impact of critical factors.

Fifth, the studies considered for our analysis were rooted in different context. For example, the studies by [Derks et al. \(2022\)](#) and [Ek et al. \(2022\)](#) took place in a sustainability setting, while the studies by [Ghanbari et al. \(2017\)](#) and [Reinhold et al. \(2022\)](#) are anchored in an ICT context. Depending on the context, the importance of critical factors on the success or failure of a value network might differ. We suggest that future research differentiates by contextual factors (e.g., industry, business model maturity, value network maturity) to further elevate our knowledge of critical factors for success or failure of business models in value networks.

Research limitations and contributions

Our study has three main limitations. First, as with any systematic literature analysis process, the selection of papers can be challenged. Specifically, it can be questioned whether our study would have benefitted from extracting literature from other databases besides Scopus. However, Scopus has been shown to have a substantial overlap with Web of Science as the other predominantly used database for bibliometric analysis ([Singh et al., 2021](#)), while

surpassing it in the Technology and Management areas that are of interest to this study ([Gavel & Iselid, 2008](#)). We thus believe our findings to be valid while still benefitting from cross-validation with another database (e.g., EBSCO Business Source Premiere). Secondly, the formulation of critical factors for success or failure can be criticised as being subjective. However, we believe through rigorously applying the principles outlined by [Elo & Kyngäs \(2008\)](#), as well as having each step of the analysis conducted by at least two researchers ([Snyder, 2019](#)), to have limited that risk as much as possible. Third, our analysis did not differentiate by contextual factors, for example by industry, value network or business model maturity. As pointed out in the previous section, the impact of critical factors might differ by context. However, we still believe our analysis to be valid on a high level, as the common denominator of all value networks is the impact of digitalisation and dematerialisation on business practices ([Ricciotti, 2020](#)).

Despite these limitations, we believe our study significantly contributes to theory and practice. From a theoretical perspective, it closes a research gap by identifying critical factors contributing to success or failure of business models in value networks. This meets the demand of [Jocevski et al. \(2020\)](#) calling for studies that go beyond empirical examples and case studies to deepen our understanding of networked business models. The list of critical factors and the corresponding literature provides an extensive knowledge base that can help researchers target their activities to contribute to the further theorisation of business models in value networks. For practitioners, the factors and dimensions identified can serve as target variables when designing value networks or to guide business practices in existing value networks to ensure their success. This meets the demand of [Ricciotti \(2020\)](#), calling for levers that managers can utilise to ensure a sustainable competitive advantage of their value network.

References

- Al-Debei, M. M., Al-Lozi, E., & Fitzgerald, G. (2013). Engineering innovative mobile data services: Developing a model for value network analysis and design. *Business Process Management Journal*, 19(2), 336–363. <https://doi.org/10.1108/14637151311308349>
- Al-Debei, M. M., & Fitzgerald, G. (2010). The design and engineering of mobile data services: Developing an ontology based on business model thinking. In *IFIP Working Conference on Human Benefit through the Diffusion of Information Systems Design Science Research* (pp. 28–51). Springer. https://doi.org/10.1007/978-3-642-12113-5_3
- Allee, V. (2000). Reconfiguring the value network. *Journal of Business Strategy*, 21(4), 36–39. <https://doi.org/10.1108/ebo40103>
- Allee, V. (2008). Value network analysis and value conversion of tangible and intangible assets. *Journal of Intellectual Capital*, 9(1), 5–24. <https://doi.org/10.1108/14691930810845777>

- Alves, T. R., & Roque, L. (2005). Using value nets to map emerging Business Models in Massively Multiplayer Online games. In *9th Pacific Asia Conference on Information Systems: I.T. and Value Creation, PACIS 2005*. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-80053552889&partnerID=40&md5=d7dd7a501c6e0e67e87a22a3315bb50f>
- Baumöl, U., & Winter, R. (2001). Intentions value network: A business model of the information age. In *ICEIS - Proc. of the Third International Conference on Enterprise Information Systems* (Vol. 2, pp. 1075–1080).
- Brehmer, M., Podoyntsyna, K., & Langerak, F. (2018). Sustainable business models as boundary-spanning systems of value transfers. *Journal of Cleaner Production*, *172*, 4514–4531. <https://doi.org/10.1016/j.jclepro.2017.11.083>
- Breuer, J., Buchinger, U., Ranaivoson, H., & Ballon, P. (2015). Control & value trade-offs in handling user-data: The example of location-based-services. In *International Conference on E-Business and Telecommunications* (pp. 96–111). Springer. https://doi.org/10.1007/978-3-319-25915-4_6
- Bullen, C. V., & Rockart, J. F. (1981). A primer on critical success factors. CISR Working Paper, No. 69. Center for Information Systems Research, Sloan School of Management, MIT.
- Camps-Aragó, P., Delaere, S., & D’Hauwers, R. (2021). Value Networks and Monetization Strategies for C-ITS Safety Use Cases. In *7th International Conference on Vehicle Technology and Intelligent Transport Systems (VEHITS)*. <https://doi.org/10.5220/0010404103410349>
- Capo, F., Brunetta, F., & Boccardelli, P. (2014). Innovative business models in the pharmaceutical industry: A case on exploiting value networks to stay competitive. *International Journal of Engineering Business Management*, *6*(1), 1–11. <https://doi.org/10.5772/59155>
- Cavallo, A., Ghezzi, A., & Sanasi, S. (2021). Assessing entrepreneurial ecosystems through a strategic value network approach: evidence from the San Francisco Area. *Journal of Small Business and Enterprise Development*, *28*(2), 261–276. <https://doi.org/10.1108/JSBED-05-2019-0148>
- Centobelli, P., Cerchione, R., Chiaroni, D., Del Vecchio, P., & Urbinati, A. (2020). Designing business models in circular economy: A systematic literature review and research agenda. *Business Strategy and the Environment*, *29*(4), 1734–1749. <https://doi.org/10.1002/bse.2466>
- Chesbrough, H., & Rosenbloom, R. S. (2002). The role of the business model in capturing value from innovation: evidence from Xerox Corporation’s technology spin-off companies. *Industrial and Corporate Change*, *11*(3), 529–555. <https://doi.org/10.1093/icc/11.3.529>
- Chow, T., & Cao, D. B. (2008). A survey study of critical success factors in agile software projects. *Journal of Systems and Software*, *81*(6), 961–971. <https://doi.org/10.1016/j.jss.2007.08.020>
- Costa, C. C., & Da Cunha, P. R. (2009). Business model design from an ANT perspective: Contributions and insights of an open and living theory. In *Value Creation in E-*

- Business Management* (pp. 957–965). Springer. <https://aisel.aisnet.org/amcis2009/103/>
- Costa, C. C., & Da Cunha, P. R. (2015a). More than a gut feeling: Ensuring your inter-organizational business model works. In *BLED 2015 Proceedings*, Bled, Slovenia.
- Costa, C. C., & Da Cunha, P. R. (2015b). The social dimension of Business Models: An Actor-Network Theory perspective. In *Twenty-first Americas Conference on Information Systems*, Puerto Rico.
- Darzanos, G., Kalogiros, C., Stamoulis, G. D., Hallingby, H. K., & Frias, Z. (2022). Business Models for 5G Experimentation as a Service: 5G Testbeds and beyond. In *Proceedings of the 25th Conference on Innovation in Clouds, Internet and Networks, ICIN 2022*. <https://doi.org/10.1109/ICIN53892.2022.9758131>
- Darzanos, G., Kalogiros, C., Stamoulis, G. D., Hallingby, H. K., & Frias, Z. (2023). An Open Framework for the Assessment of 5G Business Cases and Investments. *IEEE Communications Magazine*, 61(2), 44–50. <https://doi.org/10.1109/MCOM.001.2200304>
- Dellyana, D., Simatupang, T. M., & Dhewanto, W. (2018). Managing the actor's network, business model and business model innovation to increase value of the multidimensional value networks. *International Journal of Business and Society*, 19(1), 209–218. <http://www.ijbs.unimas.my/images/repository/pdf/Vol19-no1-paper14.pdf>
- Derks, M., Berkers, F., & Tukker, A. (2022). Toward Accelerating Sustainability Transitions through Collaborative Sustainable Business Modeling: A Conceptual Approach. *Sustainability (Switzerland)*, 14(7). <https://doi.org/10.3390/su14073803>
- Eaton, B. D., Elaluf-Calderwood, S. M., & Sorensen, C. (2010). The role of control points in determining business models for future mobile generative systems. In *Ninth International Conference on Mobile Business and 2010 Ninth Global Mobility Roundtable* (pp. 459–463). IEEE. <https://doi.org/10.1109/ICMB-GMR.2010.39>
- Ek, E., Valter, P., & Lindgren, P. (2022). From Green Business Models to Green Symbiosis Business Value Network. In *25th International Symposium on Wireless Personal Multimedia Communications (WPMC)* (pp. 526–531). IEEE. <https://doi.org/10.1109/WPMC55625.2022.10014759>
- Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, 62(1), 107–115. <https://doi.org/10.1111/j.1365-2648.2007.04569.x>
- Fjeldstad, Ø., & Snow, C. C. (2018). Business models and organization design. *Long Range Planning*, 51(1), 32–39. <https://doi.org/10.1016/j.lrp.2017.07.008>
- Gao, S., & Krogstie, J. (2007). Understanding business models of mobile ecosystems in China: A case study. In *7th International ACM Conference on Management of Computational and Collective Intelligence in Digital EcoSystems* (pp. 64–71). <https://doi.org/10.1145/2857218.2857229>
- Gao, S., & Krogstie, J. (2015). Understanding business models of mobile ecosystems in China: A case study. In *7th International ACM Conference on Management of Computational and Collective Intelligence in Digital EcoSystems, MEDES 2015* (pp. 64–71). <https://doi.org/10.1145/2857218.2857229>

- Gao, S., & Zhang, X. (2016). Understanding business models in the sharing economy in China: A case study. In *Social Media: The Good, the Bad, and the Ugly* (pp. 661–672). Springer. https://doi.org/10.1007/978-3-319-45234-0_59
- Gargeya, V. B., & Brady, C. (2005). Success and failure factors of adopting SAP in ERP system implementation. *Business Process Management Journal*, 11(5), 501–516. <https://doi.org/10.1108/14637150510619858>
- Gavel, Y., & Iselid, L. (2008). Web of Science and Scopus: a journal title overlap study. *Online Information Review*, 32(1), 8–21. <https://doi.org/10.1108/14684520810865958>
- Ghanbari, A., Laya, A., Alonso-Zarate, J., & Markendahl, J. (2017). Business Development in the Internet of Things: A Matter of Vertical Cooperation. *IEEE Communications Magazine*, 55(2), 135–141. <https://doi.org/10.1109/MCOM.2017.1600596CM>
- Ghezzi, A. (2013). Revisiting business strategy under discontinuity. *Management Decision*, 51(7), 1326–1358. <https://doi.org/10.1108/MD-05-2012-0388>
- Ghezzi, A., Georgiades, M., Reichl, P., Le-Sauze, N., Cairano-Gilfedder, C. D., & Mangiaracina, R. (2013). Generating innovative interconnection business models for the future internet. *Info*, 15(4), 43–68. <https://doi.org/10.1108/info-12-2012-0054>
- Granjo, J., Bakhshandeh, M., Pombinho, J., Da Silva, M. M., & Caetano, A. (2014). Validating value network business models by ontologies. In *Fourth International Symposium on Business Modeling and Software Design* (pp. 142–147). <https://doi.org/10.5220/0005425201420147>
- Guo, H., Zhao, J., & Tang, J. (2013). The role of top managers' human and social capital in business model innovation. *Chinese Management Studies*, 7(3), 447–469. <https://doi.org/10.1108/CMS-03-2013-0050>
- Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A systematic review of the literature on digital transformation: Insights and implications for strategy and organizational change. *Journal of Management Studies*, 58(5), 1159–1197. <https://doi.org/10.1111/joms.12639>
- Hietschold, N., Reinhardt, R., & Gurtner, S. (2014). Measuring critical success factors of TQM implementation successfully – a systematic literature review. *International Journal of Production Research*, 52(21), 6254–6272. <https://doi.org/10.1080/00207543.2014.918288>
- Hung, C. L., Yu, T. Y., & Huang, C. H. (2010). Incorporating business value models into organic e-farming system. In *International Conference on Management of Innovation and Technology* (pp. 1025–1030). <https://doi.org/10.1109/ICMIT.2010.5492880>
- Jocevski, M., Arvidsson, N., & Ghezzi, A. (2020). Interconnected business models: present debates and future agenda. *Journal of Business and Industrial Marketing*, 35(6), 1051–1067. <https://doi.org/10.1108/JBIM-06-2019-0292>
- Kartseva, V., Godijn, J., & Tan, Y. (2004). Value Based Business Modelling for Network Organizations: Lessons Learned from the Electricity Sector. In *ECIS 2004 Proceedings*, 94. <https://aisel.aisnet.org/ecis2004/94>

- Kindström, D. (2010). Towards a service-based business model—Key aspects for future competitive advantage. *European Management Journal*, 28(6), 479–490. <https://doi.org/10.1016/j.emj.2010.07.002>
- Krippendorff, K. (1980). *Content analysis: An introduction to its methodology*. Sage Publications, Inc.
- Kytölä, O., Pynnönen, M., & Immonen, M. (2011). Future medical supply: Challenges for business concept formation. *International Journal of Business Innovation and Research*, 5(5), 493–509. <https://doi.org/10.1504/IJBIR.2011.042446>
- Leviäkangas, P., & Öörni, R. (2020). From business models to value networks and business ecosystems – What does it mean for the economics and governance of the transport system? *Utilities Policy*, 64. <https://doi.org/10.1016/j.jup.2020.101046>
- Li, F., & Whalley, J. (2002). Deconstruction of the telecommunications industry: From value chains to value networks. *Telecommunications Policy*, 26(9-10), 451–472. [https://doi.org/10.1016/S0308-5961\(02\)00056-3](https://doi.org/10.1016/S0308-5961(02)00056-3)
- Lindman, J., Kinnari, T., & Rossi, M. (2014). Industrial open data: Case studies of early open data entrepreneurs. In *2014 47th Hawaii International Conference on System Sciences* (pp. 739–748). IEEE. <https://doi.org/10.1109/HICSS.2014.99>
- Mair, J., & Schoen, O. (2007). Successful social entrepreneurial business models in the context of developing economies: An explorative study. *International Journal of Emerging Markets*, 2(1), 54–68. <https://doi.org/10.1108/17468800710718895>
- Mayring, P. (2000). Qualitative content analysis. *Forum: Qualitative Social Research*, 1(2). <http://www.qualitative-research.net/index.php/fqs/article/view/1089/2385>
- Medeiros, J. F. de, Garlet, T. B., Ribeiro, J. L. D., & Cortimiglia, M. N. (2022). Success factors for environmentally sustainable product innovation: An updated review. *Journal of Cleaner Production*, 345, 131039. <https://doi.org/10.1016/j.jclepro.2022.131039>
- Moro, S. R., & Cauchick-Miguel, P. A. (2022). An Analysis of a Bike-Sharing System from a Business Model Perspective. *Brazilian Journal of Operations and Production Management*, 19(2). <https://doi.org/10.14488/BJOPM.2021.050>
- Neuendorf, K. (2002). *The Content Analysis Guidebook*. SAGE Publications, Inc.
- Nieuwenhuis, L., & Kijl, B. (2010). Business model engineering for a wireless telerehabilitation service. In *Second International Conference on e-Health, Telemedicine, and Social Medicine*, Saint Maarten, Netherlands Antilles.
- Osterwalder, A. (2004). *The Business Model Ontology: A Proposal in a Design Science Approach* [Doctoral dissertation]. Université de Lausanne, Lausanne. Retrieved from <https://www.academia.edu/download/30373644/thebusinessmodelontology.pdf>
- Özcan, L., Koldewey, C., Duparc, E., van der Valk, H., Otto, B., & Dumitrescu, R. (2022). Why do Digital Platforms succeed or fail? - A Literature Review on Success and Failure Factors. In *AMCIS 2022 Proceedings*, 15. https://aisel.aisnet.org/amcis2022/sig_dite/sig_dite/15
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Cynthia, D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., & Brennan, S. E. (2021). The

- PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *International Journal of Surgery*, 88. <https://doi.org/10.1016/j.ijssu.2021.105906>
- Pies, I., & Schultz, F. C. (2023). The governance of sustainable business model innovation—An Ordonomic Approach. *Scandinavian Journal of Management*, 39(1), 101246. <https://doi.org/10.1016/j.scaman.2022.101246>
- Porter, M. E. (1985). *The Competitive Advantage: Creating and Sustaining Superior Performance*. Free Press.
- Rachinger, M., Rauter, R., Müller, C., Vorraber, W., & Schirgi, E. (2019). Digitalization and its influence on business model innovation. *Journal of Manufacturing Technology Management*, 30(8), 1143–1160. <https://doi.org/10.1108/JMTM-01-2018-0020>
- Reinhold, J., Koldewey, C., & Dumitrescu, R. (2022). Value Creation Framework and Roles for Smart Services. *Procedia CIRP*, 109, 413–418. <https://doi.org/10.1016/j.procir.2022.05.271>
- Rezazadeh, A., & Carvalho, A. (2017). Advancing a typology of business model innovation: A value-based perspective. In *Proceedings of the 12th European Conference on Innovation and Entrepreneurship*, Paris, France. Retrieved from https://www.researchgate.net/profile/Mmakgabo-Malebana/publication/320101768_Relationship_between_entrepreneurship_education_prior_entrepreneurial_exposure_entrepreneurial_self-efficacy_and_entrepreneurial_intention/links/59ce3348aca272boec1a4d59/Relationship-between-entrepreneurship-education-prior-entrepreneurial-exposure-entrepreneurial-self-efficacy-and-entrepreneurial-intention.pdf#page=779
- Riasanow, T., Galic, G., & Böhm, M. (2017). Digital transformation in the automotive industry: Towards a generic value network. In *Twenty-Fifth European Conference on Information Systems (ECIS)*, Guimarães, Portugal. https://aisel.aisnet.org/ecis2017_rip/66
- Ricciotti, F. (2020). From value chain to value network: a systematic literature review. *Management Review Quarterly*, 70(2), 191–212. <https://doi.org/10.1007/s11301-019-00164-7>
- Rockart, J. F. (1979). Chief executives define their own data needs. *Harvard Business Review*, 57(2), 81–83.
- Roelens, B., & Poels, G. (2013). Towards a strategy-oriented value modeling language: Identifying strategic elements of the VDML meta-model. In *Conceptual Modeling: 32th International Conference* (pp. 454–462). Springer. https://doi.org/10.1007/978-3-642-41924-9_38
- Rohn, D., Bican, P. M., Brem, A., Kraus, S., & Clauss, T. (2021). Digital platform-based business models – An exploration of critical success factors. *Journal of Engineering and Technology Management*, 60, 101625. <https://doi.org/10.1016/j.jengtecman.2021.101625>
- Shafer, S. M., Smith, H. J., & Linder, J. C. (2005). The power of business models. *Business Horizons*, 48(3), 199–207. <https://doi.org/10.1016/j.bushor.2004.10.014>

- Singh, V. K., Singh, P., Karmakar, M., Leta, J., & Mayr, P. (2021). The journal coverage of Web of Science, Scopus and Dimensions: A comparative analysis, *126*, 5113–5142. <https://doi.org/10.1007/s11192-021-03948-5>
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, *104*, 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Spruytte, J., Devocht, B., van der Wee, M., Verbrugge, S., & Colle, D. (2017). Dynamic value networks: An insightful way to represent value exchanges in fast-moving industries. In *2017 Internet of Things Business Models, Users, and Networks*, Copenhagen, Denmark.
- Stanoevska-Slabeva, K., & Fricke, R. (2015). Commercialization of composite software resulting from collaborative research. In *eChallenges e-2015 Conference* (pp. 1–11). IEEE. <https://doi.org/10.1109/eCHALLENGES.2015.7441091>
- Suherman, A. G., & Simatupang, T. M. (2017). The network business model of cloud computing for end-to-end supply chain visibility. *International Journal of Value Chain Management*, *8*(1), 22–39. <https://doi.org/10.1504/IJVC.2017.082684>
- Taherdoost, H., & Keshavarzsaleh, A. (2016). Critical factors that lead to projects' success/failure in global marketplace. *Procedia Technology*, *22*, 1066–1075. <https://doi.org/10.1016/j.protcy.2016.01.151>
- Tian, C. H., Ray, B. K., Lee, J., Cao, R., & Ding, W. (2008). BEAM: A framework for business ecosystem analysis and modeling. *IBM Systems Journal*, *47*(1), 101–114. <https://doi.org/10.1147/sj.471.0101>
- 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. <https://doi.org/10.1111/1467-8551.00375>
- Trkman, P. (April 2010). The critical success factors of business process management. *International Journal of Information Management*, *30*(2), 125–134.
- Webster, J., & Watson, R. T. (2002). Analyzing the past to prepare for the future: Writing a literature review. *MIS Quarterly*, *26*(2), 18–23.
- Wild, J. (2009). Intangible values collapse-the old 70% to 80% claim is now officially dead and buried. *Intangible Asset Magazine*, *24*.
- Wu, X. B., Yao, M. M., & Chen, S. C. (2012). An analytical framework of business model based on the value network. In *2012 International Symposium on Management of Technology* (pp. 602–607). IEEE. <https://doi.org/10.1109/ISMOT.2012.6679544>
- Yusof, S. R. M., & Aspinwall, E. M. (2000). Critical success factors in small and medium enterprises: survey results. *Total Quality Management*, *11*(4-6), 448–462. <https://doi.org/10.1080/09544120050007760>