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Towards a Catalogue of Strategy Elements for Specifying a Digital Platform Business Strategy

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Abstract. Digital platforms have become essential in modern society. However, despite their appeal and potential, digital platforms have proven to fail often due to diverse strategic reasons including pricing, timing, competition, trust, openness, critical mass, and network effects. Despite the reported risk of failures, there is a lack of guidelines that support organizations in defining business strategies for digital platforms. In this paper, we address part of this problem. In the study we identify strategic considerations from digital business strategy, platform and multi-sided business strategy literature, and the Balanced Scorecard, and integrate them into a catalogue of nineteen strategy elements. This supports the specification of a coherent set of strategic objectives for a digital platform business strategy. A digital platform business strategy transforms an organization into a collaborative networked organization as four out of five strategy perspectives clearly reflect the need and of interaction with the ecosystem of the organization.

Keywords: digital platform, business strategy, strategic objectives

1 Introduction

Digital platforms are essential in the fabric of the modern society [1]. Renowned digital platforms, like Amazon, Uber, AirBnB and many others have shown strong growth and gained significant attention. Their growth can be attributed to increased scale, speed, scope of business, having multiple sources of value creation and capture [2] and their capability to establish network effects between supply and demand sides interacting on the platform [3]. Due to this intriguing development, many organizations, including digital natives, start-ups, as well as incumbents, have been considering engaging in a digital business strategy based on a digital platform. Despite its attractiveness, digital platform business strategies have proven to fail very often. For each aspiring story like Spotify, there are tragic failures like Rdio, Milk, Guvera, Beats Music or Grooveshark. Studies on platform failure indicate that platforms fail often due to strategic reasons related to pricing, timing, competition, trust, openness, sharing, critical mass, and network effects [4]–[7].

Digital platform business requires organizations to shift from linear value chain thinking to collaborative network thinking to establish seamless customer-centric services for both supply and demand sides and thereby leveraging network effects [8], [9]. An effective digital platform business strategy should exploit the specific characteristics of digitalization and platforms, while addressing the common aspects any business strategy should have [2]. Despite the reported risk of failure of platforms [4], [5], the extant literature lacks a structured guidance that supports specifying a business strategy for a digital platform. Digital strategy literature predominantly focusses on the strategy making process [10]–[12], whereas the emergent platform literature focuses predominantly on identifying the numerous business specific platform variables [9], [13], [14]. Both streams show limited overlap with the conventional business strategy frameworks, such as the Balanced Scorecard (BSC) [15]. Hence, our study is driven by the following research question: “*Which aspects should be considered in the specification of strategic objectives that form a digital platform business strategy?*”

Accordingly, we studied the strategic considerations in the fields of digital business strategy [2], [10]–[12], platform and multi-sided business strategy [3], [8], [9], [13], [14], [16], [17] and the Balanced Scorecard [15], and followed a clustering approach [18] to develop a *catalogue* of strategy elements. The resulting catalogue features 19 strategy elements organized along 5 perspectives: finance, value proposition, ecosystem, processes, and learning and growth. The proposed catalogue supports the specification of strategic objectives for a digital platform business strategy.

We observed that several strategy elements, e.g., network effects, and composition of the strategy perspectives explicitly reflect that a digital platform business strategy requires the rearrangement of the focal organization and its ecosystem partners into a collaborative networked organization [19].

With this study, we aim to contribute to research on platform strategy and collaborative networks by integrating the concepts around platform strategy, digital strategy and overarching business strategy to support the specification of digital platform business strategies. Furthermore, our approach aims to contribute to practice by providing a catalogue that supports organizations in deriving strategic objectives for a digital platform business strategy, leveraging specific aspects of digitalization and platforms, while also addressing the common aspects of business strategy, such as skills, internal processes, organizational culture and leadership. Practical support is necessary, as digital platform business strategies are key in modern society to balance efficient, flexible, agile and sustainable systems [1].

In the next section, we introduce the theoretical background and related work. In Section 3, we describe the research approach. In Section 4, we present the developed catalogue and illustrate a selection of its underpinnings. Finally, we conclude this paper by discussing our contributions, limitations and future research directions.

2 Background and Related Work

Hagiu & Wright [20] define a platform as ‘*an organization that creates value primarily by enabling direct interactions between two (or more) distinct types of affiliated*

customers'. Interactions can refer to exchange of goods and services between multiple parties. Enabling interaction between two parties makes this strategy to a large extent different from more conventional models in which transformation of inputs into outputs is central. One of the key characteristics of a platform is the possibility to obtain and leverage network effects [20]. Network effects occur if the presence of a certain type or number of customers attracts new customers. Several synonyms are used for the term platform business model, e.g., two- or multi-sided business model or marketplace. Eisenmann et al. [3] distinguish the following four key elements of a platform strategy: (1) Supply side users ensure supply of goods or services. (2) Demand side users are in demand for the supplied goods and services. (3) The platform provider is the point of contact for the transaction and provides components (hardware, software, and service modules in an architecture) in most user transactions and rules (including standards, protocols, policies, and contracts) to coordinate participants. Finally, (4) the platform sponsor designs the components and rules and determines who may participate in the network as the platform providers and users. Often, this role coincides with the platform provider. A key strategic consideration is the extent to which these four elements are open to participation by other parties [3]. Pagani [21] refers to this as control points. A well-known example to illustrate this is the control that Apple store exerts to the offered apps, versus the relative lack of control in the Android store. Although not always acknowledged explicitly, many platform businesses are relying on digital systems [22].

Consequently, we define a digital platform business strategy as a business strategy enabled by a digital system that enables direct interactions between two (or more) distinct types of affiliated customers [20]. A digital business strategy is generally seen as 'a business strategy, inspired by digital technologies, digital capabilities, and digital resources, to provide revenue and value-producing opportunities' [2], [10].

Business strategy is often viewed in terms of the achievement and maintenance of competitive advantage in specific product-market domains [23]. Key strategic issues, typically identified at the business unit level of an organization, focus on maintaining and achieving competitive advantage, and the integration and coordination of 'arena, advantage, access and activities' [23]. One of the business strategy tools popular in industry and the scientific literature is the Balanced Scorecard (BSC) [24]. These foundations and processes of business strategy making are still in use after decades. The digital aspect has, however, made important complications to the strategy making process, as digitization does not only affect business propositions, but also the rate of proposition renewal by the incorporation of new technologies. This continuously generates new opportunities and threats for organizations. Bharadway et al. [2] contend that digital strategy differs from general business strategy in scope, scale, speed and sources of value creation and capture. They explicitly identify multisided and networked business models as relevant sources of value creation in a digital strategy.

Business strategies are often expressed as a coherent set of strategic objectives [25]. Strategy frameworks, such as the BSC, provide commonly recognized aspects of a business strategy (which we defined as the *strategy elements*), that can be used to define strategic objectives. Various works that aim to build an integral view on platform strategy center on the platform in business strategy and identify a wealth of strategic elements [9], [13], [14], [26]–[28]. For example, Floetgen et al. [28] find no less than 51 recurring constructs. Yet, these works do not include or refer to the conventional

elements of business strategy, e.g., internal processes or human capital, as represented in the BSC. Furthermore, these works hardly address the themes in which *digital* business strategy differs from business strategy [2]. In the field of digital strategy, the focus is predominantly on the strategy making processes [10], [11], rather than the identification of strategy elements. Business models are also seen as concretizations of business strategy [29]. Consequently we see strategy elements as sources for requirements for business models that implement a business strategy.

In response to the growing interest in platforms Rietveld & Schilling [27] identify four key themes in platform competition: (a) network effects and their implications; (b) platform ecosystems and corporate scope; (c) heterogeneity in platforms, complements and users; and (d) platform governance and ecosystem orchestration. Floetgen et al. [28] organize their 51 recurring constructs in ecosystem and market, complements, complementors, owner, platform and user. Ardolino et al. [14] describe a digital multi-sided platform using a framework consisting of 19 variables with multiple options along the dimensions of platform sides, revenue, control, competition and architecture. Yablonsky [30] proposes a multidimensional framework integrating business and technological innovations and management, allowing executives to examine the interrelationships across a platform business model portfolio on a regular basis. Tura et al. [26] present a framework for platform design, involving four elements: 1) platform architecture, 2) value creation logic, 3) governance, and 4) platform competition. Eisape [13] introduces a platform business model canvas, based on literature, to help capture platform business models in a comprehensive way.

In summary, a digital platform business strategy is seen as a special type of business strategy enabled by a digital system that allows for direct interactions between two (or more) distinct types of affiliated customers. Business strategies are specified by strategic objectives. Strategy frameworks like the BSC provide strategy elements for which such objectives can be specified.

Although the studies that aim to build an integral view on platform strategy provide a wealth of platform specific strategic elements, aspects of conventional business strategy, such as human and organizational capital and internal processes, are merely neglected. Furthermore, in digital strategy, the focus is on the strategy making processes rather than on indicating what strategic elements should be addressed. This leads to lack of a strategic framework that incorporates strategy elements related to platform business strategy, digital business strategy and business strategy.

3 Research Design

To identify the aspects that should be considered in the specification of strategic objectives forming a digital platform business strategy, we need to refer to works from the fields of platform, digital and business strategy. This requires the identification and clustering of potential strategy elements. As indicated in the previous section, the literature already provides several, yet dispersed and disconnected, strategy frameworks consisting of strategy elements or clusters of strategy elements. The task at hand thus predominantly consists of locating, mapping and clustering these elements. This task closely resembles the core of the Constant Comparison Method (CCM) [18].

The CCM includes an iterative process of (i) identifying and comparing expressions (e.g., in pieces of text) that are linked to emerging categories; (ii) integrating categories and their properties followed by (iii) delimiting and writing theory. In the iterative process, the categories can be integrated into overarching categories and newly identified expressions can be appended into a category, by constantly comparing incidents with categories and categories with categories. The process ends when new incidents do not lead to creation or revision of categories.

In our case, we base our resulting 5 categories and 19 strategy elements on the categories of the existing strategy frameworks and their underlying strategy elements (e.g., [2], [15], [26]) and the strategy elements identified in the literature that do not refer to an overarching framework (e.g., [3], [9]). We start our CCM variant by mapping and clustering both categories and strategy elements of key frameworks representing platform business strategy, digital business strategy, and business strategy [2], [15], [26]. Next, we iteratively incorporate the literature from the fields of platform strategy and digital business strategy that provides strategy elements and relevant frameworks, also by referring to extensive literature reviews on these topics (e.g., [3], [14], [16], [27]). Given our objective to develop a framework that can be *deployed and used in practice* [31], we aim to incorporate a limited set of strategy elements (instead of developing an framework with an exhaustive list of strategy elements). Hence, we take the representation and the four perspectives of the BSC as a reference basis. We end the application of the constant comparison method when newly identified articles do not alter the existing categories.

4 The Catalogue

We have executed the research design described in the previous section and consequently constructed the catalogue consisting of 19 strategy elements organized along 5 perspectives (i.e., cluster of strategy elements), namely finance, value proposition, ecosystem, processes, and learning and growth. Fig. 1 presents the structure of the final version and below we elaborate these perspectives.

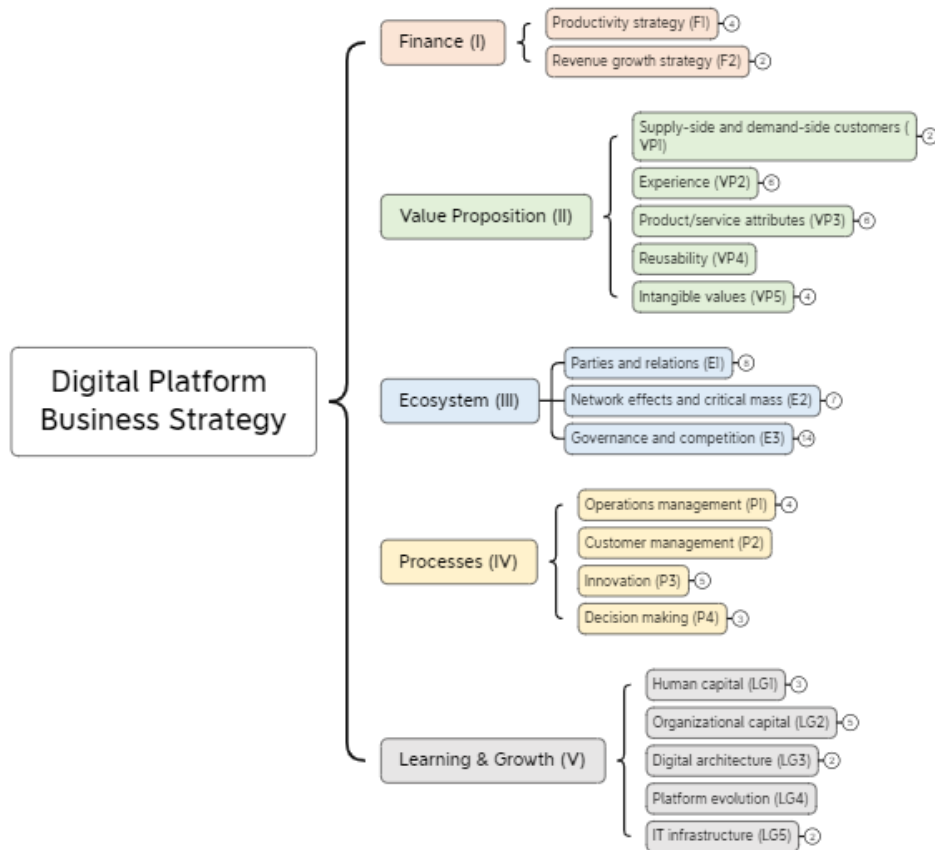


Fig. 1. The catalogue of strategy elements for a digital platform business strategy.

The *Finance* (I) perspective describes how the focal organization should appear to its shareholders to succeed financially [15]. It describes the tangible outcomes of the (digital platform business) strategy in traditional financial terms, such as ROI, shareholder value, profitability, revenue growth, and lower unit costs [15].

The *Value Proposition* (II) perspective describes the strategy how the key value proposition offered to customers will achieve the organization’s vision. It defines the clear, measurable and demonstrable benefits [15], as well as the intangible values [15] and the experience [32] consumers of all sides of the platform get when interacting with the platform, e.g., by buying a particular product or service. The organization intends to use this to generate sales and loyalty from targeted customers. This value proposition forms the context in which tangible and intangible assets create value for the focal firm and society [1], [15].

The *Ecosystem* (III) perspective describes the position and relationships the focal organization should have with other ecosystem members to achieve its vision. It defines how the focal organization builds its position in the ecosystem.

The *Processes* (IV) perspective defines the strategic considerations regarding the cross-organizational business processes the organization must excel at to satisfy its shareholders and customers [33]. This perspective identifies the few critical processes that create and deliver the differentiating customer value proposition.

The *(Digital) Learning and Growth* (V) perspective defines how the organization will sustain its ability to change and improve to achieve its vision. It identifies the intangible assets that are most important to strategy. The objective is to identify the jobs (human capital), systems (the information capital), and climate (the organization capital) that are required to support the value-creating processes. These intangible assets must be integrated and aligned with the critical internal processes.

Table 1 presents the 19 strategy elements that are aligned with the 5 perspectives.

Table 1. Catalogue of Strategy Elements for Digital Platform Business Strategy

Finance (I)

Productivity strategy (F1) describes how the organization will create greater value at the same costs or the same value at lower costs. The cost structure defines how the costs for delivering value are composed. Asset utilization is the degree to which (tangible and intangible) assets are used to their full potential.

Revenue growth strategy (F2) describes how the organization will grow its sources of income. Enhanced customer value defines how an enhanced customer value leads to increased revenues. Expanding revenue sources identifies new or increased sources of income.

Value Proposition (II)

Supply-side and demand-side customers (VP1) define both sides, or segments, of the two-sided value proposition. These segments interact via the platform.

Experience (VP2) illustrates the customer's process and context in which s/he is using the value proposition, i.e., in which value is co-created. It defines the parts of the customer journey that are addressed in the value proposition. It specifies the desired type of relationship the organization will have with the customers of both sides and the processes, interfaces, and interactions the customers of both sides will use when using the value proposition.

Product/service attributes (VP3) specify specific product and service attributes that are necessary for delivering the experience defined in the customer journey. It also specifies how data and digital technology is used in the delivery of the experience.

Reusability (VP4) specifies how the value proposition can be used and reconfigured or extended for other supply and demand combinations.

Intangible values (VP5) define how the value proposition confirms the image and brand of the organization, how it meets the regulatory standards and wider stakeholder expectations.

Ecosystem (III)

Parties and relations (E1) specify the parties that the organization will have relations with. This includes the following roles: the *focal company*; who serves as users' *primary point of contact* with the platform; who exercises *property rights*; who *determines* who may participate in a platform-mediated network and for developing its technology. It also specifies the *partners that are critical* to delivering the value proposition and *those that extend* the value proposition, including complementing parties.

Network effects and critical mass (E2) identifies if and how each of the four potential network effects are applicable. The different types of network effects are same-side (supply) (how existing offerings on the supply side attract additional offerings), same-side (demand), cross-side from supply to demand, cross-side from demand to supply. It also identifies how the organization achieves critical masses for any of these network effects.

Governance and competition (E3) specify how governance is arranged between platform providers, sponsors, core, and enriching partners, as well as if multi-homing is allowed for supply and demand. It also specifies the governance processes that guide the control and decision making. It identifies the components of the platform whose design or availability to other parties has effects on the value proposition and specifies their level of openness. It identifies the (five forces of) competition: competitors, new entrants, alternatives, users and core and enriching partners.

Processes (IV)

Operations management (P1) identifies the key planning, organizing, and supervising processes that manage the operation of the platform. It identifies the key partner (interfacing) services that affect the value proposition.

Customer management (P2) identifies the key processes that guide the monitoring of the level of performance of the value proposition as well as identification of new opportunities.

Innovation (P3) specifies the key innovation processes required to improve the value proposition and their underlying processes and assets. It specifies how increases in the responsiveness of renewal of products and services are achieved.

Decision making (P4) identifies the key processes that constitute the decision making with respect to the value proposition and its underlying processes and assets. It specifies how increases in the responsiveness of decision making can be achieved by utilizing data and digital technologies.

(Digital) Learning and Growth (V)

Human capital (LG1) specifies the necessary improvements of human capital, e.g., new or improved skills, trainings, how-to knowledge for delivering the value proposition.

Organization capital (LG2) specifies the necessary change in organizational capital, e.g., change in culture (digitalization), leadership, alignment, and teamwork.

Digital architecture (LG3) identifies the digital industry architecture (technology) in which the platform is embedded and identifies the elements that constitute the dependencies and those that are depending on the platform.

Platform evolution (LG4) identifies the potential future evolutions of the platform in terms of value propositions, markets, segments, and functionalities.

IT infrastructure (LG5) identifies the requirements with respect to the information systems that constitute the platform technology, with respect to speed, scope, and scalability (up/down).

Due to the space limitations, we only illustrate the underpinnings of the three strategy elements of the ecosystem perspective of the catalogue. A full account of all strategy elements with their underpinnings can be found at <https://bit.ly/cdpbsse2>.

Parties and relations (E1). This strategy element identifies the parties the platform needs to interact with directly and the relations necessary to achieve the envisioned position in the ecosystem. Scholars indicate that for digital business, platform business and service-dominant business interaction with ecosystem partners is critical (*value creation network, value chain, service eco-system*, or simply *key actors and actor roles*) [11], [26], [32], [34]. Bharadway et al. [2] contend that digital business strategy solicits for exploitation of the extended business ecosystem; that effectiveness of scaling can be achieved through alliances and partnerships; and that speed or agility can be obtained through formation of new business networks that provide complementary capabilities. More specific roles that need to be identified are *focal company* [3], [32] *platform provider* (users' primary point of contact) [30], *owners* (exercise property rights, determine who may participate in a platform-mediated network and for developing its technology) [13], [28], [30]. The partners critical to delivering the value proposition are referred to as *core partners* [32], *complementors* [27], *key partnerships, partner, contributor* [13] *sponsors* [3], [30] and the partners that extend the value proposition, including *complementing or enriching parties* ([27], [28], [32]) and *collaboration management: core relationships, enriching relationships* [32], [35].

Network effects and critical mass (E2). This strategy element specifies which network effects should be established and how critical mass can be achieved. Network effects, or externalities, are an essential part of the attraction and thus the value proposition to users, as e.g., a platform with a wider and more qualitative range of offerings will attract more demand side users and vice versa. Although Tura et al. [26] and Ardolino et al. [14] see network effects and network externalities as part of the value creation logic, it is positioned as a separate element under the perspective of Ecosystems (III), as establishing network effects requires interplay between the different sides and the different parties and relations with the platform. Bharadway et al. [2] contend that leveraging network effects of multisided platforms is critical for scaling. Four types of network effects can be distinguished: *same-side* (supply), *same-side* (demand), *cross-side* (supply to demand), *cross-side* (demand to supply) [16]. Underlying elements that may contribute to network externalities and their implications are, among others, *installed base and number; heterogeneity and quality of complementary goods and its providers; and heterogeneity and quality of demand users* [27].

Strategies to consider to establish the *critical masses* that are needed for network effects to take place, are *platform launch* [26]; *subsidies; seeding; marquee users;*

micro-market launch; and *piggybacking* [16], *presence of "blockbuster" complements*; and *complement exclusivity* [27], *bundling: exploit irregular topologies*; *attracting users en masse*; *harnessing virality*; *balancing consumers and producers*; and *platform disintermediation* [30].

Governance and competition (E3). This strategy element defines the key parameters of the platform and the party that controls these. Eisenmann et al [3], Floetgen et al. [28] and Tura et al. [26] explain which decisions related to openness and ‘conditions to access’ can be made, and how these affect the attraction to both sides of users, their platform service providers and sponsors, and digital platform ecosystem performance in general. Digital platforms and architectures have many of such control points [2], [14], [20], [26], [36]. Strategies like business models on platforms (*envelopment*) [17], [34] and *multi-homing* [8], [14] also affect the competitive position of a platform. Due to the digital nature, many of these control points (e.g., access or pricing) could theoretically be changed overnight. Governance defines the *control, decision making and ‘creation and enforcement of rules’* [27], and *rules and standards, protocols, policies and contracts* [34]. It specifies how governance is arranged between platform providers, sponsors, core, and enriching partners, as well as if multi-homing is allowed for supply and demand. It is relevant for participation in the strategy as it identifies the components of the platform whose design or availability to other parties has effects on the value proposition and specifies their level of *openness*. The determination of these should be considered in light of the competition. Parker et al. [9] distinguish *platform-platform*, *platform-partner* and *partner-partner* types of competition that may come from new entrants, alternatives, users, and core and enriching partners [8], [13], [14], [26].

The catalogue reflects the observations that a digital platform business strategy requires collaboration and positioning of the focal organization in an ecosystem. For example, the strategy element ‘*network effects*’ requires the platform to establish a seamless experience of transaction execution from both supply and demand sides. This implies, among other things, that the complementors on the supply side are identified, well-balanced in their offerings, and engaged with the platform. Vice versa, a large and accessible set of customers is valuable and extremely costly to build up and maintain for individual supply side actors. As another example, the *governance strategy* element specifies how and by whom decisions are made with respect to rules, access, etc. Clearly, for the decision to participate in a platform by supply-side and demand-side customers, it makes a difference if conditions for access are changed overnight or if they can have influence on that, e.g., via standardization bodies. For many of the other strategy elements collaborative and ecosystem influences are much more emphasized as compared to the original BSC. Three other differences can be observed. Firstly, the ecosystem perspective and its underlying strategy elements thus explicitly draw attention of the focal firm on how to participate in and serve collaborative networks. Secondly, the perspective value proposition replaces the customer perspective, which emphasizes the focus on the experience for customers on supply and demand sides. Thirdly, the process perspective is not internal anymore, as processes are necessarily cross organizational boundaries. Consequently, this perspective and the underlying strategy element ‘Operations Management (P1)’, force the focal firm to specify its

integration and interoperability policies through which it will interact with the partners in its collaborative network.

We argue that, in order avoid strategic failures, as mentioned in [4], [5], a framework that integrates the strategy elements from the domains of platform strategy, digital business strategy, and business strategy, and thereby addressing known risks, is indispensable. Even more so in an Society 5.0 context [1], where cyberspace and physical space are highly integrated to balance economic advancement and resolution of societal challenges, e.g., environmental sustainability, multi-sided digital platform approaches are expected to gain increased attention. Platforms can help to reduce emissions from mobility [37], and optimize material usage in the circular economy [38].

5 Conclusions

In this paper, we present a catalogue of strategy elements along 5 strategic perspectives as an answer to our inquiry of the aspects that should be considered in the specification of strategic objectives forming a digital platform business strategy. A digital platform business strategy is considered a special type of digital and business strategy enabled by a digital system. Although it is widely acknowledged that platform strategy and digital business strategy are subtypes of business strategy, thus far, no strategic framework has incorporated strategy elements related to platform business strategy, digital business strategy, and business strategy. Following an approach inspired by the constant comparison method, we developed a catalogue of strategy elements that aims to bridge the fields of platform strategy, digital business strategy, and business strategy.

With this work, we contribute to research on platform strategy and collaborative networks by integrating the concepts of platform strategy and digital strategy into the overarching concept of business strategy. Given the frequent platform failures and expected increasing demand for platforms in context of modern society, and given the increasing need for balancing productivity, sustainability, and resilience [1], the importance of guiding organizations in addressing known risks related to platforms, digitization and business in general, is evident.

The aspired practical relevance of this contribution is that it supports business organizations in detailing a digital platform business strategy by identifying and specifying coherent and complete set of strategic objectives that together form a complete business strategy. The presented catalogue is developed as an integral artifact of a method [31]. This method supports first the derivation of strategic objectives by answering for the strategy elements in the catalogue “*What must be achieved in light of this strategy element and its underlying concepts, to reach the digital platform business strategy?*”. In practice, the focal firm should start with deriving strategic objectives for the prioritized strategy elements of each of the perspectives. Secondly, these specified objectives are transformed into business model design requirements, to support the organization in designing business models in line with strategy. The proposed method, including the catalogue, has been applied in the two real-life business cases in the

mobility and manufacturing domains for evaluation with practitioners. However, these applications are kept outside the scope of this paper due to space limitations.

This study has several limitations which have to be considered when interpreting its results. For practical reasons the number of strategy elements to consider in a strategy specification process should be limited to arrive at a structured, concise design. We targeted on defining a limited set of elements as demonstrated in the BSC. This restriction may, however, conceal the richness of elements identified in the original frameworks, as exemplified by the 51 recurring constructs for platform strategy reported in [28]. Thus, in using this catalogue, it would be helpful for practitioners guiding the process to be familiar with the underlying models. For this purpose, readers are referred to <https://bit.ly/cdpbsse2>.

Although application in a real-life business case in the manufacturing industry has positively confirmed the practicality and value of our approach, further research should further operationalize the catalogue and propose a process that guides users in how to deal with the resulting strategic objectives, e.g., by turning them into investment plans or business model designs. Following this, further research includes formal evaluation and application of the approach in different practical contexts, and following design science guidelines [39].

Furthermore, this work targets at generic digital platform business strategies, building on platform literature that is developed and applied in different settings. However, in more specific application contexts of digital platforms (such as finance, or health), the development process used for the proposed catalogue could be further carefully specialized accordingly, leading to domain-specific catalogues.

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