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Ecosystem Legitimacy Challenges in the Platform, Data, and Artificial Intelligence Business Models

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Abstract

Digitalisation lays the groundwork for the emergence of novel business models taking advantage of modern technologies. Simultaneously, the new business models face an array of legitimacy challenges. This paper proposes an integrated framework for studying legitimacy challenges through the lens of managerial choices and consequences of the business model at the ecosystemic level. It combines and elaborates on essential legitimacy aspects connected to digitalisation, reflecting on stakeholders at the business, individual and ecosystemic level. The value of the paper is based on providing a comprehensive and ecosystemic view of studying the legitimacy challenges connected to the platform, data, and Artificial Intelligence (AI).

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Introduction

Digitalisation building on the use of platforms, data and artificial intelligence provides an impetus for the emergence of novel business models that enable increased efficiency, greater flexibility, and the individualisation of services (Mishra & Tripathi, 2020). However, cutting-edge technology alone is insufficient to ensure effective value capture (Fountaine et al., 2019) and legitimacy (Dehler-Holland et al., 2021). Digitalisation exposes an array of diverse legitimacy challenges related to rapid technological change, increased complexity, changing customer preferences, and legal requirements (Rachinger et al., 2018). Legitimacy is often defined as a "generalised perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, beliefs, and definitions" (Suchman, 1995, p. 574). Entrepreneurs, innovators, users, and policymakers are among the actors with different decision-making and behavioural principles, and whose perception contributes to the formation of legitimacy. As legitimacy can be considered a "proxy-indicator" for assessing the complex institutional dynamics that influence the embedding of a new industry in relevant structures (Bergek et al., 2008), it can be seen as a prerequisite for the effective adaptation of business models built on new technologies. While the extant literature explores the concept of legitimacy from the stakeholder/actor perspective, recent studies have started to consider legitimacy from the ecosystem perspective (Thomas and Ritala, 2022).

The ecosystem can be viewed as a dynamic, multi-layer social network that consists of actors with different attributes, decision principles and beliefs (Tsujimoto et al., 2017) characterized by high complexity, interdependence, and cooperation (Ilvari et al., 2016). The ecosystem participants interact with each other and the external environment, together driving ecosystem legitimacy (Thomas and Ritala, 2022). Applying an ecosystemic view to the study of the legitimacy challenges of digitalisation-enabled business models therefore appears relevant, given the high degree of newness and disparate change that affect the various actors who commonly contribute to legitimacy attainment.

The business model enables companies to understand the sources of value, and how a company operates in general (Zott et al., 2011). It connects the firm and its external business environment, customers, competitors, and society in exploiting business opportunities (Zott and Amit, 2010). In the context of digitalisation, the business model literature elaborates on platform business models, data business models, and AI business models. Although the relationship between the platform, data, and AI is multifaceted, most of the existing literature approaches the business models built on AI, data, and platforms in isolation, meaning that platform-, data-, and AI-driven business models are often researched without highlighting their interconnectedness.

In considering the above, this paper's contributions are as follows. The study contributes to the existing body of knowledge by presenting an exploratory framework for identifying ecosystem legitimacy challenges in the context of digitalisation. It takes a holistic approach in referring to the digitalisation layers of data, platform, and AI and their respective legitimacy challenges. The provided framework depicts managerial choices and consequences (Casadesus-Masanell and Ricart, 2010) of the business model regarding legitimacy challenges under a single integrated framework. The results of this study increase the understanding of the complex issues revolving around business model legitimacy, with the illustrated framework providing high empirical value to the managers.

Approach

This paper aims to propose a holistic framework for researching the ecosystem legitimacy challenges of digital business models that comprise platforms, data, and AI. Business model thinking is mirrored as managerial choices in Opportunity (O), Value (V), and Advantage (A), and consequences in Scalability (S), Replicability (R), and Sustainability (S) (Casadesus-Masanell and Ricart, 2010; Ritter and Lettl, 2018). The choices aim to depict on *what basis* and *how* a business operates, while the consequences answer *why*, *where*, and *when* the business is done. The business model choices thus refer to the concrete

choices made by management, while consequences address the implications of such choices (Casadesus-Masanell and Ricart, 2010). Adopting business model thinking helps integrate the digitalisation layers of platform, data, and AI into a single ecosystemic framework to assess the legitimacy challenges.

The success of any business model is determined not only by whether value creation/capture can provide a competitive advantage but also by the legitimacy received from the institutional environment and social acceptance (Dehler-Holland et al., 2021). A consideration of stakeholders' perspectives, particularly those of individuals, businesses, and the ecosystem, therefore appeared essential to underline the most prominent legitimacy challenges connected to the digitalisation layers.

Digitalisation allows the emergence of novel ecosystemic business models by combining an increasing number of IoT sensors, vast amounts of data, and more efficient, effective, and comprehensive AI or machine learning (Ricart, 2020). AI applications should not be considered in isolation as a mere technological infrastructure (Zamora, 2020) but coupled with data and the platform (Figure 1), because connected data constitute both the input and output for the AI algorithms. In such a configuration, the platform functions as a tool to "extract and harness immense amounts of data that allow them to operate as critical intermediaries and market makers" (Rahman and Thelen, 2019, p. 178). The data collected

Figure 1: The approach to researching legitimacy challenges in the digitalization context.

from multiple points are incorporated into a large-scale information infrastructure that fuels the AI algorithms and is further deployed in various settings for various purposes across multiple actors that allow the application of novel AI solutions. AI, data, and connectivity platforms therefore play a vital role in new opportunities for digitalisation (Ahokangas et al., 2021) and the transformation of business models (Ricart, 2020).

Platform: Converging platforms play an essential role in digitalising different sectors of society (Ahokangas et al., 2021). They provide value to all actors within the ecosystem while turning a profit for the organisation that created and maintains it through different business models. The digital platforms handle an end-to-end business process necessary to achieve an improved experience for customers, employees, and partners.

Data: During the last decade, the world has witnessed an immense growth of data volumes and the advent of new data streams, leading to ubiquitous quantification (Sareen et al., 2020). That growth is expected to continue, driven by the ongoing business needs to capture and utilise the unstructured data across all the dimensions of the business operations, such as customer data, supply chains, or social media interactions (Gil-Gomez et al., 2020). Furthermore, the unprecedented speed of data generation and data availability from numerous touchpoints parallels unprecedented computing power, AI and data processing capabilities (Sareen et al., 2020). Such data integration and exploitation may turn into valuable information and knowledge, becoming a source of value for novel business models (Luoma et al., 2021).

AI: AI changes the rules of competition between industries worldwide. It can be seen as intelligent systems created to use data, analysis, and observations to perform certain tasks without being programmed to do so (Antonescu, 2018). As a result, AI redefines the decision-making principles in organisations, making business practices simpler and leaner, and thus becoming one of the essential modern technologies, with implications for businesses worldwide (Canals and Heukamp, 2020).
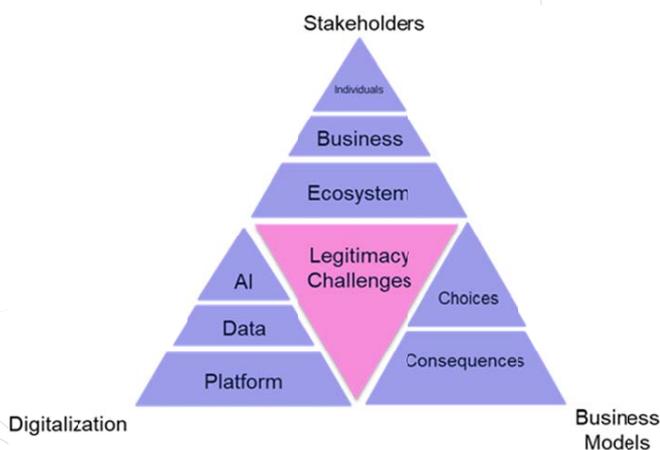
Key Insights

To achieve this study's objectives, the ecosystem legitimacy challenges are presented in Table 1. The digitalisation layers – platform, data, and AI, with the business model choices (OVA) and consequences (SRS) – allow us to present the legitimacy challenges of the emerging business models. The identified challenges presented in Table 1 have been derived based on the authors' understanding of legitimacy in the context of emerging technologies and trends, issues related to personal data management, smart energy, and societal changes. The provided theoretical framework emphasises a new way of studying legitimacy challenges. Platforms, data, and AI are intertwined concepts at the ecosystem level as firms' business models in the ecosystem can be built on any combination of platforms, data and AI.

The ecosystem legitimacy challenges illustrated in the framework above are discussed in two blocks (Choices and Consequences) related to three digitalisation layers (AI, Data, Platform) to provide a comprehensive yet clear overview. As legitimacy challenges connected to digitalisation concern multiple stakeholders, certain considerations at the individual, business, and ecosystem levels are reflected in each block. This is because legitimacy is a social evaluation made by multiple actors such as individuals, organisations, the media, or regulators that constitute a collective legitimacy judgement (Bitektine and Haack, 2015).

The managerial choices regarding the ecosystem participants' limited understanding of the previously unconsidered behaviours and reservations concerning the unknown must be addressed to pursue the market opportunity. In particular, educating, facilitating, and accommodating the real needs of the end user appears essential for legitimacy attainment. Raising awareness of the value arising from technical innovation and facilitating human–machine interaction is vital for value recognition. The advantages derived from digitalisation must be diligently managed by establishing optimal ratios of human intervention.
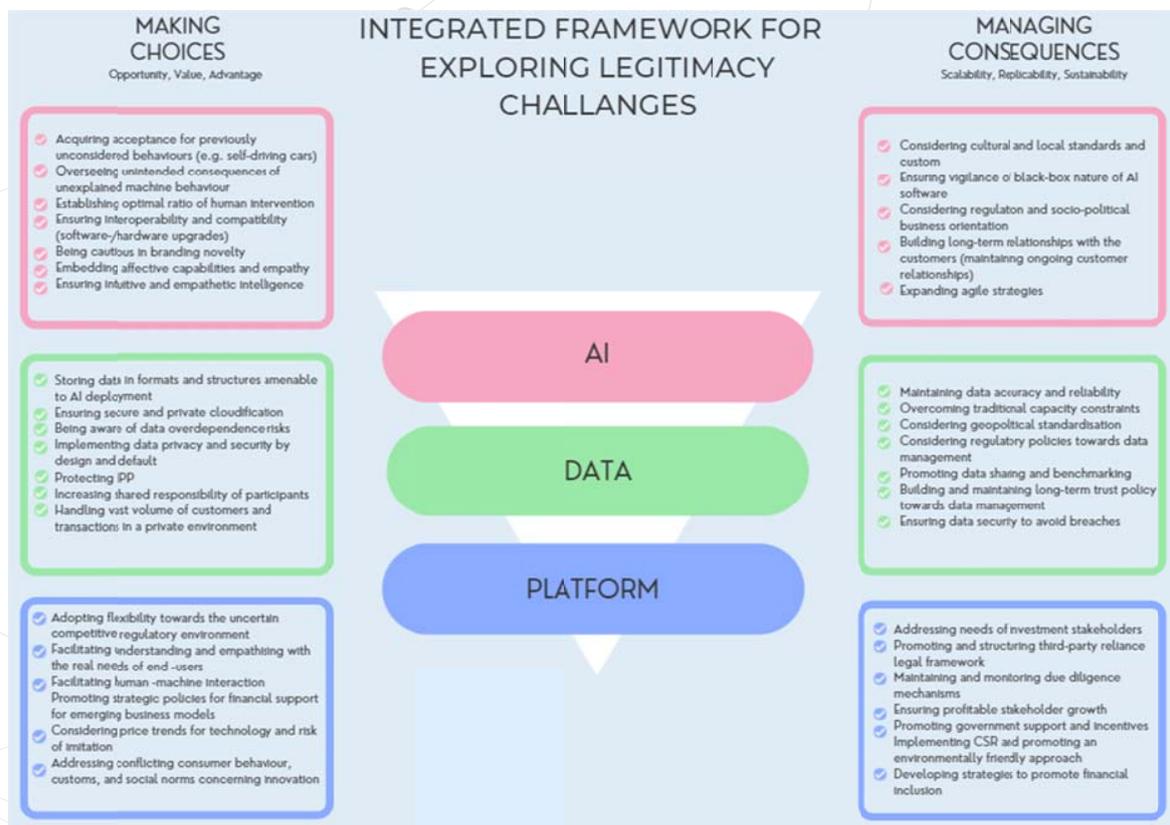

Figure 2: Integrated framework for exploring legitimacy challenges.

The interdependent risks of multi-agent environments and effective collaboration between ecosystem participants are essential from the legitimacy perspective. Clear data ownership rules, and robust and secure data structures must be established and communicated internally and externally to cope with data-related legitimacy vulnerabilities. As the digital environment is characterised by the dominant role of the data operator, the platform provider as the ecosystem orchestrator must ensure data management practices are not only built on existing rules and regulations, but also sufficiently communicated to the users to avoid raising legitimacy concerns. The potential data management structure fragilities must be continuously monitored to avoid data breaches, and the promotion of participant responsibility and the interoperability of actors in the ecosystem because of its diverse audiences must be ensured.

The legitimacy challenges assessed in the context of digitalisation indicated specific concerns at each layer. At the platform level, the essential aspect refers to obtaining high-quality data necessary for accurate and credible AI predictions and outputs. This can be obtained by providing the users with a trusted and secure environment that does not raise legitimacy concerns. It can be addressed through UX (user experience) design elements that increase the credibility and proper communication of a company's data management practices. Data quality assurance must be prioritised. In addition, novel features that are not essential from the users' perspective (for example, when operating in the backend) must be hidden to avoid raising unnecessary concerns. The building of AI literacy in the organisation and the public due to AI software's black box nature is depicted as another legitimacy challenge.

From the consequences' perspectives, we can underline particularities tailored to each layer related to legitimacy challenges. To foster sustainability, the focus should be directed at geopolitical standardisation and the implementation of regulatory policies with the aim of secure data management practices. Equally, agile strategies that allow changes in market conditions and the implementation of new strategies quickly and decisively when necessary must be followed. Because of the limiting of human involvement, the effectiveness of AI in interactions with the users must be monitored. Cultural and country-specific standards and customs and the accommodation of the different needs and expectations of various stakeholders are vital for addressing the legitimacy challenges connected with business model replicability.

As the above discussion indicates, platforms, data and AI are interdependent. The identified ecosystem legitimacy challenges influence not only the key stakeholders' business models but the whole ecosystem in which the firms are active. Therefore, making choices and managing their consequences need to be considered both at business model and ecosystem levels of analysis.

Discussion and Conclusion

The theoretical framework developed in this paper provides a holistic view of the study of the legitimacy challenges for emerging business models. The findings highlight the necessity of applying the ecosystemic perspective in discussing the legitimacy of digitalisation-driven business models. This has been claimed, because legitimacy challenges involve multiple ecosystem participants that ensure ecosystem viability (Thomas and Ritala, 2021). A multi-participant environment requires considerations of different collaborative methods, including the unambiguous determination of data ownership, assurance of interoperability, common growth, and profitability that are directly related to the attainment of legitimacy. Although the proposed framework showcases the significant legitimacy challenges of emerging business models, it is essential to note that the ecosystem cannot strive for the status quo, because continuous innovation requires constant evolution over time (Lehto et al., 2013). Assessing and mitigating the legitimacy challenges must therefore be an ongoing process rather than a one-time task.

This paper's academic contribution lies in combining the business model and ecosystem legitimacy literature, first, by apprehending the layers of digitalisation – AI, data, and platforms – and second, by examining them through the lens of managerial choices and consequences as a business model

thinking framework for analysing legitimacy challenges. This study underlines the necessity of understanding the nature of legitimacy challenges through the co-dependent lens of business model thinking that helps us integrate the context of the digitalisation layers. The originality of this research is thus related to expanding the business model and legitimacy literature from an ecosystemic perspective. It further highlights the emphasis on business ecosystems and stakeholder interaction identified in the recent stream of business models literature (Golzarjannat et al., 2021). Furthermore, the approach applied in this paper constitutes a key conceptual contribution, because it combines the digitalisation elements of the platform, data, and AI within a single integrated framework.

Regarding the practical implications, this study was conducted to present the legitimacy challenges in digital application and pave the way for managers in their considerations and decision making concerning the legitimacy attainment of emerging business models. The issues around data management, AI, the expansion of agile strategies, and the promotion of financial inclusion must be considered and addressed to overcome the liability of the newness of the emerging business models. Cultural and local standards and customs must be understood and adequately addressed, as well as the laws and regulations when considering the business models' broader adaptation, scalability, and replicability. Managerial intervention also relies on educating and facilitating the adoption of newness across various audiences. It is noteworthy that the interconnected nature of digitalisation means the inadequate addressing of legitimacy challenges determined at one layer may negatively affect the overall business model. A holistic approach that combines multiple aspects of the digital business model thus mimics the reality and facilitates reflections on fragile points in legitimacy attainment.

Despite the intriguing framework provided in this paper, the study has certain limitations, laying the groundwork for future research. Although the proposed framework has reflected on the legitimacy challenges in the overall context of digitalisation, some business models may require extra context-specific variables when determining the particularities of the legitimacy challenges. As legitimacy is an audience-dependent construct, certain stakeholders and audiences may have specific needs that may have been overlooked within the proposed framework, and which must be addressed in some scenarios. Future studies could test the empirical relevance and improve the provided framework. Additional research into how to facilitate the process of legitimation in business models is required.

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