Journal of Infrastructure, Policy and Development 2024, 8(12), 8301.
https://doi.org/10.24294/jipd.v8i12.8301

Article

Bio-mimetic deconstruction of the digital business ecosystem

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CITATION

Wang J, Yang M, Lv L, Lin J. (2024). Bio-mimetic deconstruction of the digital business ecosystem. Journal of Infrastructure, Policy and Development. 8(12): 8301. https://doi.org/10.24294/jipd.v8i12.8301

ARTICLE INFO

Received: 31 July 2024
Accepted: 27 August 2024
Available online: 29 October 2024

Abstract: The advent of the Internet Plus era, digital technologies, and the digital economy has instigated profound transformations in the commercial landscape, particularly evident in the systematic reshaping of the Digital Business Ecosystem (DBE), encompassing innovations in business models, norms of commercial conduct, and the exploration of business value. This paper delves into the panoramic view of digital business operations of typical companies to uncover the fundamental structural framework of digital commerce. Through deductive reasoning and drawing upon the theoretical framework of natural niche, we construct a niche model for the digital business ecosystem, thereby achieving a bionic deconstruction of the digital business ecosystem. The significance of this research lies in offering a novel research perspective for enterprises, economic regulatory bodies, and scholars in the field of business management, proposing a systemic approach rooted in niche theory models to competition. This approach provides a fresh theoretical framework for enterprises to devise their own ecological and sustainable development strategies. The key findings are as follows: (1) Most business firms establish competitive advantages by constructing commercial cloud platforms that facilitate internal digital transformation and enable digital synergy with external economic entities; (2) Within the digital business ecosystem, enterprises extend their digital capabilities externally through four modalities: data development, data application, data services, and data manufacturing. Externally, six primary forces and roles shape the ecosystem: suppliers, governments, social institutions, consumers, as well as external and internal industry players; (3) The digital business niche is a multidimensional and hyper volumetric relationship positioning between enterprises and the digital business environment. The niche factors include six dimensions: market, personnel, resources, social relationships, technology, and institutions; (4) Given limited ecological factors, the non-exclusivity between static resource allocation and dynamic technological investments in digital enablement leads to the generalization of property rights boundaries and industrial values within the digital business ecosystem. Consequently, this fosters extensive business applications and diversified business models, thereby resulting in less competition and more cooperation, symbiosis, and complementarity within the digital business niche.

Keywords: digital business ecosystem; ecological niche; bio-mimetic deconstruction

1. Introduction

The emergence of Internet Plus, digital technologies, and the digital economy has triggered significant transformations in the commercial landscape, particularly in business model innovation, commercial conduct norms, and the exploration of business value, culminating in the systematic reshaping of the Digital Business Ecosystem (DBE). The DBE, which relies on digital technologies to facilitate value exchange among entities, represents a transformation of modern production relations by digitization. It constitutes a novel organizational collaboration network rooted in

digital technologies, emphasizing digital business coupling and self-organizing characteristics (Xie et al., 2022). In practice, numerous commercial enterprises leverage shared business platforms to achieve the sharing of technologies, resources, information, and customers, fostering value co-creation as a core component of their competitive strategies in pursuit of sustainable development. At the theoretical level, however, most research continues to adopt "competition" and "confrontation" as fundamental strategic frameworks, overlooking the heterogeneous characteristics of digital resources such as their high permeability, non-dissipative nature, and the blurred boundaries of property rights. While Porter's Five Forces Model provides valuable guidance for corporate competition, its relevance and practicality in the digital business era warrant further optimization and enhancement. Specifically, novel concepts like sharing and co-creation deserve greater attention and should be harnessed to support the sustainable development of enterprises.

This paper delves into the panoramic view of digital business operations of typical companies to uncover the fundamental structural framework of digital commerce. Through deductive reasoning and drawing upon the theoretical framework of natural niche, we construct a niche model for the digital business ecosystem, thereby achieving a bionic deconstruction of the digital business ecosystem. The significance of this research lies in offering a novel research perspective for enterprises, economic regulatory bodies, and scholars in the field of business management, proposing a systemic approach rooted in niche theory models to competition. This approach provides a fresh theoretical framework for enterprises to devise their own ecological and sustainable development strategies.

Several critical questions remain unaddressed regarding the DBE: What are its manifestations of alienation? How can the DBE be deconstructed? What is the nature of competition and cooperation within it? How is value transmitted in the DBE? And how should it be governed? These issues necessitate in-depth exploration and discussion. Since Moore (1993) proposed the concept of commercial ecosystem, many scholars have studied the basic concepts and characteristics of commercial ecosystem from the perspectives of ecology, networks, and complex systems (Han et al., 2021). They have elaborated on the classification of components and enterprise types in commercial ecosystem from the perspectives of key populations, value chains, and knowledge chains (Yang et al., 2020), distinguishing them from concepts such as natural ecosystem, enterprise network, value network, and strategic alliance. A literature review found that as a complex adaptive system, the latest research findings explore the composition of commercial ecosystems (Li et al., 2024) and the internal health performance characteristics of the system (Zhu et al., 2022). Among them, the robustness, self-organization, emergence, and co evolution of commercial ecosystems are the core of common concern.

But with the widespread application of digital technology, there have been significant changes in business model innovation, business behavior norms, and business value mining, but related research is relatively scarce. The research on the digital business ecosystem should pay more attention to the operational mode and composition of digital commerce under the conditions of the digital economy, pay attention to the interaction and cooperation between the business ecosystem and its internal enterprises, and focus more on the collaborative evolution of the business

ecosystem and its internal enterprises. The research on the digital business ecosystem has a clear span of disciplines, involving disciplines such as information systems, integrated management, information technology, and economics (Senyo et al., 2019). Most studies mainly focus on specific issues such as digital technology and digital business models in a particular branch (Yin and Zhao, 2024), lacking a summary of the external characteristics of the research, as well as a summary of the existing thematic evolution routes and possible impact mechanisms. Although Han and Chen (2021) analyzed the essential composition of DBE and its value creation path, there is a lack of systematic review of dispersed research frameworks.

The research on data-driven business models has a strong imprint of "information technology" (Zygiaris, 2021), which refers to business models that commercialize data, such as data leasing, information leasing, and knowledge leasing. However, research on commercial applications of data should not only be understood at the "technological" level, but also explore the role and impact of business model innovation from the "ecological" level (Solomon and van Klyton, 2020). Overemphasizing the "technological" level will weaken the thinking and understanding of cross-border integration of business model innovation between industries triggered by data (Pop, 2020). Hannan and Freeman (1977) first combined the concept of niche with business, measuring the multidimensional resource spatial characteristics occupied by enterprises in the commercial ecosystem, and describing the ability of enterprises to acquire and utilize resources in the commercial ecosystem. DBE, with its loose coupling and self-organizing characteristics, helps small and medium-sized enterprises create a fully distributed network, supporting their knowledge creation, development, and dissemination (Bouncken and Barwinski, 2021). DBE can be divided into three levels, namely the core business layer, the extended digital layer, and the peripheral environment (Yuana et al., 2021). The digital business ecosystem is an economic consortium composed of suppliers, producers, consumers, governments, and other stakeholders in the digital environment. There is a possibility of analogy with the ecosystem from the perspectives of collaboration, sharing, co creation, and symbiosis (Winkelhaus et al., 2022).

2. The alienation manifestation of digital commerce: A case study of Guizhou e-commerce cloud

Guizhou E-commerce Cloud Operations Co., Ltd. was established in 2014 and is a new type of digital driven commercial company in the digital era. Its business composition and innovative performance in the field of digital commerce (see **Figure 1**) can better demonstrate the process of reshaping the digital business ecosystem. The company fully leverages its advantages in e-commerce, logistics, supply chain, and local life services, relying on its big data capabilities and independent research and development capabilities of core technologies, to provide customized data services, e-commerce solutions, enterprise applications, and other technical services for small and medium-sized enterprises, government agencies, and others. Give full play to the value of the deep integration and development of Internet technology and the real economy, expand the coverage of core technologies, cultivate consumer markets such as big data and technology products, create open and high user experience cloud services, and

provide users with stable, advanced and efficient information integrated service systems and solutions. Assist small and medium-sized enterprises and governments in digital transformation, and enhance enterprise value.

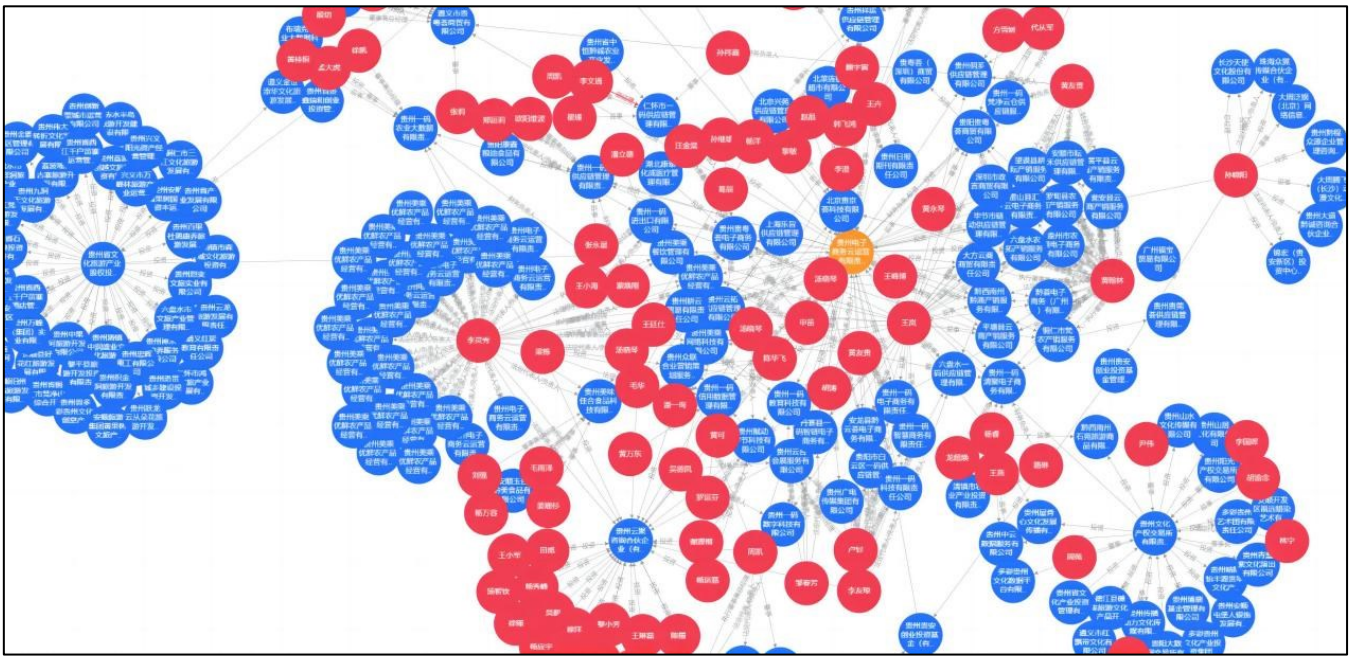

Figure 1. Guizhou e-commerce cloud enterprise related business graph.

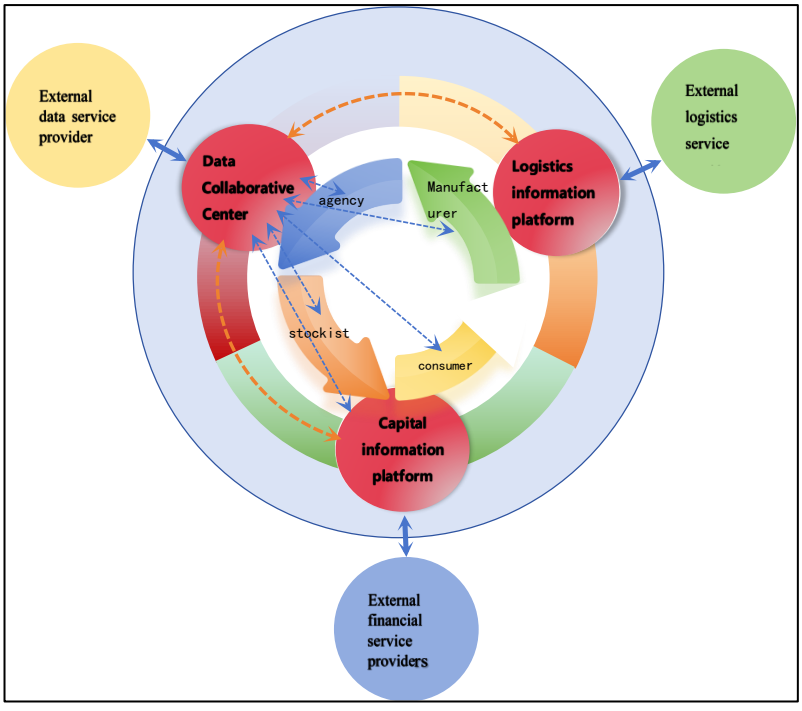

Figure 2. Panoramic analysis of digital business operations.

By analyzing the business attributes of the company, the basic framework of digital commerce can be discovered, as shown in **Figure 2**. The company builds an e-commerce cloud platform through digital technology, which consists of three sub platforms: a data collaboration center, a fund information platform, and a logistics

information platform. The above platform is embedded in the entire process of specific commercial operations. Among them, the data collaboration center is the central core, and all entities in the supply chain (manufacturers, distributors, retailers, consumers, etc.) need to achieve two-way feedback on business information with the data collaboration center. The data collaboration center achieves information collaboration with the funding platform and logistics platform based on feedback from supply chain entities and business needs. At the same time, the data collaboration center, logistics information platform, and fund information platform also need to conduct two-way information collaboration with external data service providers, external logistics service providers, and external fund service providers, respectively.

Through a panoramic analysis of digital business operations, it can be found that the digital business activities of enterprises are not only internal digital transformation, but also digital collaboration with external economic entities. The digital business operation of enterprises is an open business system.

3. Biomimetic analysis of digital business ecosystem structure

3.1. Composition of digital business ecosystem

Digital platforms have changed the form of competition between organizations, generating new models such as dynamic competition, cross-border competition, multilateral competition, and platform competition. To highlight the transformative function of digital platforms in organizational relationships, the European Union's Information Society and Media Agency proposed a digital business ecosystem based on the concept of the business ecosystem (Moore, 1993). Selander et al. (2013) defined it as "a collection of organizations connected together with the common goal of achieving product or service innovation in the context of digital technology prosperity".

The identification, optimization, and utilization of the digital business ecosystem are important levers for the deep integration of digital and real economy, as well as the main channel and practical carrier for co creation of commercial value. Digital has a significant leap between static factor resources and dynamic technology investment, with a clear generalization of its property rights margin and an obvious implicit industrial value, leading to its widespread commercial application and diversification of business models. These characteristics are all reflected in complex coupling in its commercial ecosystem. Therefore, promoting the deep integration of digital and real economies and strengthening the co creation of commercial value should focus on optimizing the digital business ecosystem.

This article believes that from the perspective of digital ecological civilization, the clear digital ecological positioning of commercial entities and the resulting functional ecological relationships establish the commercial digital ecology. The understanding of an enterprise's own digital ecosystem, exploration of commercial endowments, acquisition, restructuring, development, and application of commercial resources are the self-organizing processes of the enterprise's digital business ecosystem, as well as the prerequisite for obtaining "incremental" competitive advantages and achieving growth.

From a static perspective, the focus of optimizing the digital business ecosystem lies in the integrity of the main components of value input, creation, and distribution systems; From a dynamic perspective, the focus of optimizing the digital business ecosystem lies in the rationality of the behavior of the main components of value input, creation, and distribution systems; From the perspective of sustainable development, the focus of optimizing the digital business ecosystem lies in the coordination between value input, creation, and distribution systems. Therefore, the optimization of the digital business ecosystem should be considered from the aspects of functional positioning based structure, behavior based on digital business processes, and coordinated driving mechanisms. Each department should strengthen contact and communication with the market, analyze the current commercial operation status of the enterprise, and systematically design the top-level from multiple perspectives such as fund flow, talent flow, business flow, information flow, and data flow. The only standard and criterion is that the enterprise has fewer market and policy obstacles in the commercial operation process.

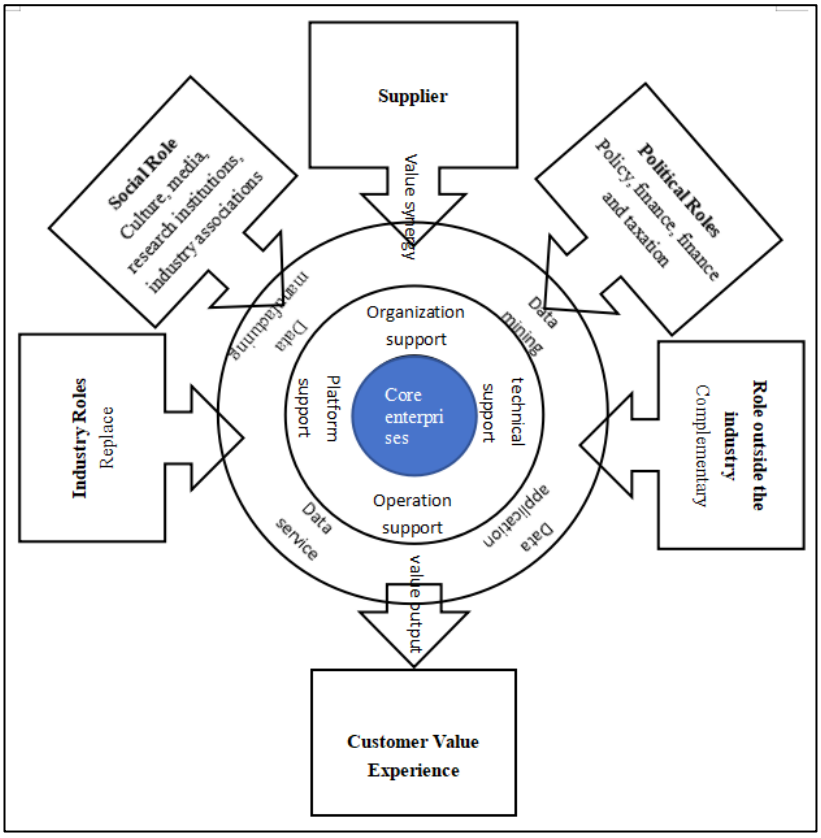

Figure 3. Digital business ecosystem.

Figure 3 shows the digital business ecosystem. In this digital business ecosystem, the enterprise itself is the core of the entire business ecosystem, and its internal ecosystem consists of organizational support, technical support, operational support, and platform support. There are four ways for enterprises to enable external digital capabilities, namely data development, data applications, data services, and data manufacturing. There are six forces and roles outside the enterprise, namely suppliers, government, social institutions, consumers, as well as roles outside the industry and

within the industry. Suppliers are the prerequisite for the survival of digital manufacturing enterprises, and enterprises build the core value chain of the digital business ecosystem through the value synergy of the entire industry chain. As customers of enterprises, the consumer group provides sustainable development momentum for the big data supply chain through value realization. At the same time, it is also the value midpoint of the entire ecosystem (why is it the midpoint rather than the endpoint? Because consumers are likely also an enterprise in the supply chain, and their consumption is intermediate consumption rather than final consumption). The government provides necessary policy and financial support for enterprises throughout the entire ecosystem, which is the key environment for the ecosystem to exist. Social institutions provide external support for cultural security and technological research and development for enterprises. The role within the industry is mainly composed of competitors and potential competitors, providing competitive pressure and development momentum for the survival of big data enterprises in this process. Non industry roles provide necessary complementarity for enterprises.

The above analysis only analyzes the composition and structure of the digital business ecosystem from a static perspective. From a dynamic perspective, the flow of value is a prerequisite for the existence of a digital business ecosystem. In the process of value flow, the seven major roles in the ecosystem have all made value investments based on their own role positioning, while the core enterprises play a crucial role in value creation. Similarly, in the value allocation process, the seven major roles also allocate value based on their own investment. The sustainability, further expansion, and prosperity of a digital business ecosystem ultimately depend on the competitiveness of the core enterprise in the digital ecosystem. Enhancing the digital business competitiveness of enterprises must be considered within the boundaries of the digital ecosystem.

3.2. Biomimetic deconstruction of digital business ecosystem

A mature digital business ecosystem is inevitably a dynamic and stable open system, which also conforms to the discourse of dissipative structure theory on dynamic non-equilibrium structures. This dynamic and unbalanced business structure is maintained through digital business competition and cooperation. The competition and cooperation in digital commerce can be deconstructed through an “ecosystem”. Hutchinson (1957) proposed a “multidimensional hyper volume niche”, which refers to the position occupied by a population in a multidimensional space established by environmental resources or environmental condition gradients as coordinates. Among them, Hutchinson’s “multidimensional hyper volume niche” emphasizes the quantification of ecological niche from factors and space, combining economic factors of ecological niche with social environmental factors, and making ecological niche measurement more specific.

(1) The width of the digital business ecosystem.

The digital business ecosystem is composed of many loosely connected participants who rely on each other for common efficiency and survival. The healthy operation of the digital business ecosystem will affect every participant in the system. According to the digital business ecosystem (**Figure 3**), the roles in the digital business

ecosystem can be divided into seven categories: core enterprises (R1), suppliers (R2), government (R3), social institutions (R4), consumers (R5), as well as outside industry roles (R6) and within industry roles (R7).

Using Hutchinson's (1957) multi-dimensional hyper volume niche model to define the digital business ecosystem, i.e., in the digital business ecosystem, the niche of a company is a multi-dimensional hyper volume relationship positioning between the company and the digital business environment, which is influenced by both internal and external factors of the enterprise system. The ecological niche order parameters (market (F1), personnel (F2), resources (F3), social relationships (F4), technology (F5), and institutions (F6)) occupy a certain range in each factor dimension. The collection of all dimensions and the participating roles of the ecosystem constitute the digital business ecosystem, which can be expressed mathematically as:

$$E_R = g(R_n),\ n = 1,2,,,7 \tag{1}$$

$$R_n = r(F_m),\ n = 1,2,,,7; m = 1,2,,,6 \tag{2}$$

Among them, E_R represents the digital business ecosystem with R_n as the business role, and $F_m$represents the use of market, personnel, resources, relationships, technology, and institutional ecological factors by business roles. $g(R_n)$ represents the digital business ecosystem as a function of the competitive relationships among various roles within the system. $r(F_m)$ represents the configuration of ecological factors by a certain role within the system.The E_R ecosystem can be represented by the state matrix in **Table 1**.

Table 1. E_R ecosystem state matrix.

System Role	Ecological Factors				Total
	F_1	F_2	...	F_6	
R_1	P_{11}	P_{12}	...	P_{16}	X_1
R_2	P_{21}	P_{22}	...	P_{26}	X_2
...	...	...	...	...	...
R_7	P_{71}	P_{72}	...	P_{nm}	X_n
total	Y_1	Y_2	...	Y_m	

In the table, *R* represents ecosystem role and *F* represents niche factor. hnm is the utilization of ecological factor m by the nth role under quantifiable conditions. Pnm represents the proportion of the nth role to the mth ecological factor under quantifiable conditions, and the calculation method is shown in Equation (3). Xn is the total utilization of all ecological factors by the nth character. Ym is the total utilization of ecological factor m by all roles. P'nm represents the proportion of the nth ecological factor occupied by the nth role among all ecological factors occupied by that role. The calculation method is shown in Equation (5), and the niche width can be obtained from Equation (6).

$$p_{nm} = {h_{nm}}\Big/{\sum_{i=1}^{n} h_{nm}},\ n = 1,2,,,7 \tag{3}$$

$$X_n = \sum_{i=1}^{n} p_{nm}\ ,\ \ n = 1,2,,,7\ Y_m = \sum_{i=1}^{m} p_{nm}\ ,\ \ m = 1,2,,,6 \tag{4}$$

$$p'_{nm} = {p_{nm}}/{X_n} \tag{5}$$

$$B_n = -\sum_{j=1}^{m} p'_{nm} \times ln(p'_{nm})\ ,\ \ m = 1,2,,,6 \tag{6}$$

(2) The overlap of digital business niches.

The overlap degree of digital business niche is used to reflect the commonality or similarity of ecological factors occupied and utilized by each role pairwise (see **Figure 4**). In the case of limited ecological factors, the higher the degree of niche overlap, the stronger the similarity between the two roles in occupying and utilizing ecological factors, and the easier it is to trigger competition. But if the types of factors used are not consistent, it may not necessarily exacerbate competition. In the traditional business ecosystem, in the first scenario, roles 1 and 2 have completely overlapping ecological factors. In this case, competition between the two will be very fierce, and over time, roles with richer ecological niche structures will gradually gain competitive advantages without changing external conditions. In the second scenario, there is a partial overlap between role 1 and role 2 in the occupation of ecological factors, indicating a competitive relationship. In the third scenario, if there is no overlap between the two, there is no competition, and more of a complementary and cooperative approach. The traditional business ecosystem may have a more obvious competitive state, but in the digital business ecosystem, due to the obvious non exclusivity of digital empowerment between static factor resources and dynamic technology investment, its property rights margin and industrial value have obvious generalization, which leads to the wide range of business applications and diversification of business models. Therefore, generally speaking, the competition in the digital business ecosystem is relatively less, and more of a cooperative, symbiotic, and complementary relationship.

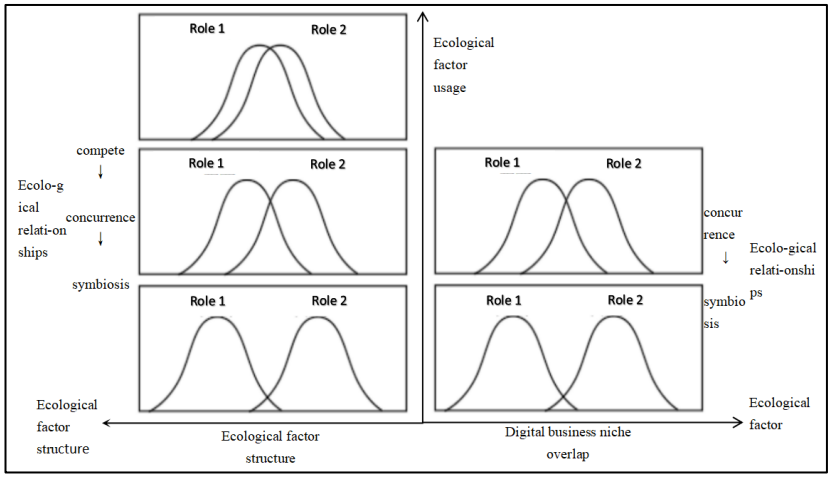

Figure 4. Ecological niche overlap in digital business ecosystem.

The calculation methods for ecological niche overlap include curve averaging, symmetry method, mapping function method, Pianka index, etc. This article uses the

widely used Pianka index to calculate the overlap of digital business niches, as shown in Equation (7). Among them, Pim represents the degree to which character *i* occupies the m-th ecological factor, Pnm represents the degree to which character *n* occupies the m-th ecological factor, and αin represents the overlap of digital commercial niches between role *i* and role *n*, as shown in Equation (7).

$$\alpha_{in} = \sum_{j=1}^{m} (p_{im} \times p_{nm}) / (\sum_{j=1}^{m} p_{im}^2 \sum_{j}^{m} p_{nm}^2)^{1/2} \tag{7}$$

4. Governance of digital business ecosystem

The digital business ecosystem is a complex giant system, and with the support of digital resources and technology, it exhibits extreme openness, non dissipation, and value added capabilities. At the practical level, achieving digital business ecosystem governance requires improving the data transaction service system, stimulating the vitality of data element circulation, promoting the realization of data resource value, and guiding enterprises to improve the value co creation mechanism of the data supply chain.

4.1. Establish a sound data trading service system

At present, there is a strong demand for data in the market, but the requirement for raw data not to be traded has led to information asymmetry among market entities. The supply and demand of data elements are not transparent, and it is difficult to spontaneously form large-scale transactions in the data element market. In addition, data providers lack a comprehensive understanding and understanding of data demand scenarios, and their processing of data demand is not precise enough, resulting in insufficient exploration of the potential value of data and weakening the effectiveness of supply. Therefore, it is recommended to comprehensively optimize the construction of a multi-level and diversified data circulation and trading ecosystem, focusing on data merchants and data buyers as the internal environment, data intermediaries as the central environment, and scenario landing as the external environment. Cultivate and introduce a group of data merchants and data intermediaries, establish a full process data service system for data collection, storage, processing, transmission, and data brokerage, legal consulting, compliance certification, security review, asset evaluation, dispute arbitration, and other full process transaction service systems, and promote the formation of a data circulation and trading industry ecosystem.

4.2. Stimulate the vitality of data element circulation

Accelerate the development and utilization of public data resources, vigorously promote the aggregation, sharing, openness, and circulation of data elements, build a batch of data element aggregation and circulation platforms, and create safe and reliable development and utilization models. Build applications through scenarios, promote industries through applications, explore mechanisms and paths for orderly development and utilization of data, and create a first-class data element aggregation development base and data circulation market. Establish and improve data resource standards and specifications, improve the data resource directory system, and improve

the basic information database of population, legal person, spatial geography, and macroeconomics. Accelerate the construction of government service databases, including government service items, electronic certificates, public credit, electronic documents, and policy regulations. Build a thematic database for key areas such as public services, macro decision-making, economic development, industrial operation, and ecological protection, and form a data resource pool with one source, multiple sources for verification, dynamic updates, vertical connectivity, and horizontal connectivity. Expand data resource collection channels, promote the orderly convergence of data in all fields, promote the expansion of data convergence scope from government data to public data, social data and other fields, and accelerate the safe interconnection of government data, social data, economic data and Internet data.

4.3. Drive the realization of data resource value

Strengthen the development and utilization of data resources. Improve the data classification and classification protection system, clarify the boundary conditions and regulatory measures for the development and utilization of data resources. Create a safe and reliable development and utilization model to promote the orderly development and utilization of public data resources. In the fields of decision support, safety production, legal services, finance, employment, smart transportation, smart tourism, etc., pilot demonstrations of data development and utilization will be carried out to create a batch of high-quality data value-added products and services. Expand the scope of data resource development and utilization, and promote the expansion of data resources from the public data field to industry data, social data, and other comprehensive fields. Build a data element scenario application innovation center, strengthen the aggregation, integration, correlation analysis, and fusion application of government data, industry data, and social data, and continuously improve the social and economic value of data resources through scenario based data development, utilization, promotion, and innovation.

4.4. Guide enterprises to improve the value co creation mechanism of the data supply chain

The sustained impact of non competitive, non exclusive, high permeability, and heterogeneous “data elements” on the strict boundaries of enterprises emphasized by modern enterprise theory determines that supply chain value creation is not an exclusive internal behavior of enterprises, but an evolutionary, nonlinear, and interactive process of supply chain data. How to connect the intangible supply chain network space together through the evolution, fractal, diffusion, and flow of digital elements is the core issue of sustainable development of the digital business ecosystem. Under the influence of the Internet economic thinking represented by “sharing economy” and “flow economy”, a series of new enterprise development strategic thinking, such as “sharing”, “cross-border” and “opening up”, urgently needs enterprises to expand the focus of core competitiveness from talent, technology, and mode to digital knowledge sharing, supply chain collaboration, and value symbiosis. Its ultimate goal should not only be an efficient and orderly management process, but

should also rise to the value co creation results of the supply chain system under open conditions.

Key research focuses on the connotation, extension, and structural characteristics of information dissipation structure, knowledge dissipation structure, and goodwill dissipation structure in the digital business ecosystem, exploring the behavior paths and models of digital manufacturing information flow process collaboration value co creation, digital manufacturing knowledge flow knowledge sharing value co creation, digital manufacturing goodwill flow social capital accumulation value co creation, and improving the value co creation mechanism of the big data supply chain.

5. Conclusion

This article explores the basic framework of digital business through a panoramic analysis of typical companies' digital business operations. Generally speaking, commercial companies form a commercial cloud platform through data collaboration centers, funding information platforms, and logistics information platforms. The above platform is embedded in the entire process of specific commercial operations. The digital business activities of enterprises are not only internal digital transformation, but also digital collaboration with external economic entities.

In the digital business ecosystem, enterprises themselves are the core of the entire business ecosystem, and their internal ecosystem consists of organizational support, technical support, operational support, and platform support. There are four ways for enterprises to enable external digital capabilities, namely data development, data applications, data services, and data manufacturing. There are six forces and roles outside the enterprise, namely suppliers, government, social institutions, consumers, as well as roles outside the industry and within the industry. A mature digital business ecosystem is inevitably a dynamic and stable open system, which also conforms to the discourse of dissipative structure theory on dynamic non-equilibrium structures. This dynamic and unbalanced business structure is maintained through digital business competition and cooperation. The competition and cooperation in digital commerce can be deconstructed through an "ecosystem".

In the digital business ecosystem, the enterprise niche is a multidimensional hyper volume relationship positioning between enterprises and the digital business environment. It is influenced by both internal and external factors within the enterprise system, occupying a certain range in each factor dimension through ecological niche order parameters (market (F1), personnel (F2), resources (F3), social relationships (F4), technology (F5), and institutions (F6). The collection of all dimensions and the participating roles of the ecosystem constitute the digital business ecosystem.

The overlap degree of digital business niche is used to reflect the commonality or similarity of ecological factors occupied and utilized by each role pairwise. In the case of limited ecological factors, the higher the degree of niche overlap, the stronger the similarity between the two roles in occupying and utilizing ecological factors, and the easier it is to trigger competition. The traditional business ecosystem may have a more obvious state of competition. However, in the digital business ecosystem, due to the obvious non exclusivity of digital empowerment between static factor resources and dynamic technology investment, its property rights margin and industrial value

have obvious generalization, which leads to the widespread commercial application and diversification of business models. Therefore, generally speaking, the competition in the digital business ecosystem is relatively less, and more of a cooperative, symbiotic, and complementary relationship.

The digital business ecosystem is a complex giant system. And with the support of digital resources and technology, the system exhibits extreme openness, non dissipation, and value added capabilities. At the practical level, achieving digital business ecosystem governance requires improving the data transaction service system, stimulating the vitality of data element circulation, promoting the realization of data resource value, and guiding enterprises to improve the value co creation mechanism of the data supply chain.

Author contributions: Conceptualization, JW; methodology, MY; software, MY; validation, LL and JL; formal analysis, JW; investigation, JW; resources, MY; data curation, LL; writing—original draft preparation, JW; writing—review and editing, MY; visualization, LL; supervision, JL; project administration, JW; funding acquisition, JW and MY. All authors have read and agreed to the published version of the manuscript.

Funding: College-level scientific research project of Guizhou University of Commerce: The underlying logic and the bionic deconstruction of the digital business ecosystem value co-creation (Topic NO: 2023ZKZD003); Theoretical innovation topic of Guizhou Province (Joint Project): Value co-creation mechanism and collaborative governance Model of digital business ecosystem in Guizhou (GZLCLH-2024-79); Guizhou Province education science planning subject: Research on Two-way drive of new business digital intelligence education and new quality productivity (2024B042).

Conflict of interest: The authors declare no conflict of interest.

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