

Research on the Evolution of Value Transfer Pathways in China's Mobile Internet Industry

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Abstract: *This article systematically reviews the progress of industrial value transfer from perspectives such as mobile internet, digital economy, value creation, and value recognition. Findings reveal that the development of the digital economy has introduced novel methods and platforms for enterprise creation and value transfer, with value recognition serving as the ultimate objective of industrial value transfer. China's modern economic evolution spans the stages of industrial economy, and internet economy (comprising the digital and intelligence economies). However, the consistent driving factors behind industrial value transfer have remained customer demand, business models, and technological innovation. In the era of the digital economy, new drivers such as data resources, open platforms, value co-creation, network capabilities, and innovation performance continue to propel the development of the internet economy. Finally, this paper outlines prospects for future research perspectives and focal points of value transfer in the mobile internet industry.*

Keywords: *Industrial value; value transfer; value recognition; mobile internet economy; evolution*

1. Research Background

Since Don Tapscott first introduced the concept of the digital economy in 1996, governments worldwide have started to emphasize the transformation of economic growth brought about by the digital economy.^[1] In 1998, the United States government released the "Emerging Digital Economy" report. A British research institution perceives the digital economy as creating socio-economic benefits and value through intricate relationships among people, processes, and technology. The Australian government defines the digital economy as the global networking of economies and societies achieved through information and communication technologies such as the internet, mobile phones, and sensor networks. In 2016, the Chinese government, in its "G20 Digital Economy Development and Cooperation Initiative", also proposed that digitized knowledge and information constitute new pivotal production factors. Activities that employ the internet as a carrier and communication technology as a significant driving force for efficiency enhancement and economic structural optimization. In the late 1980s and early 1990s, as international internet technology gradually matured, there occurred a shift in a nation's economic growth patterns and corporate growth models. Data emerged as a new crucial production factor following land, labor, and technology. The rapid penetration and development of smartphones and mobile internet facilitated the rapid advancement of the digital economy. The swift proliferation of mobile terminals led to a vast amount of global network user connections, giving rise to significant volumes of data. This spurred the development of data analysis technologies and processing platforms such as big data and cloud computing. These technologies analyze and distill valuable insights from the data generated in economic development. Subsequently, these information resources are deployed into economic and social development, fostering novel business formats and models.

Although the scholarly perspectives on value transfer continue to evolve, there remains a lack of research on industrial value transfer from the standpoint of the Internet economy, particularly the digital economy. This article conducts a comprehensive analysis of the perspectives regarding value transfer research, delineates the evolutionary path of value transfer, and proposes future research perspectives on industrial value transfer, exploring the pathways and methodologies of value transfer within the mobile internet industry driven by the internet economy, especially the digital economy.

2. Pathways of Value Transfer in the Mobile Internet Industry

2.1 Definition and Characteristics

There is no definitive academic consensus regarding the definition of the mobile internet industry. Considering the developmental cycle of the internet, the mobile internet has entered a phase of stable growth. This article systematically investigates the current status of the mobile internet industry. It presents a conceptualization of the mobile internet industry—based on internet and mobile communication technologies—primarily engaging in the integrated chain of production or services across terminals, networks, and platforms.^[2] Presently, the structure of China's mobile internet industry primarily comprises three major segments: the upstream industry chain, the midstream industry chain, and the downstream industry chain. The upstream industry chain, also known as the upstream supplier layer, mainly includes manufacturers, producers, and research and development companies. For instance, in the production of mobile devices, various components are sourced from multiple manufacturers, involving several production facilities. Government policies wield significant influence on this layer. The midstream industry chain represents the most crucial segment of the mobile industry chain, also termed the core layer of the industry chain, involving numerous entities. Notably, it includes network operators such as China Mobile, China Telecom, and others. Additionally, it comprises application content providers like app suppliers and finally, mobile terminal providers like Apple, Samsung, Huawei, and Xiaomi, among others. Within this core layer, there often exists a symbiotic relationship among various entities. Due to the involvement of multiple entities in the core layer, it exhibits sensitivity to the macroeconomic environment. When the macroeconomic situation is favorable, terminal device providers tend to be more proactive in developing new products and intensifying their efforts in terminal device research and development. The downstream industry chain constitutes the terminal layer of the internet industry chain, where the entities involved are the user base—comprising all mobile internet users, including individual users and corporate users. According to data released by the Ministry of Industry and Information Technology of China, as of the end of November 2023, the number of mobile internet users in China had reached 1.51 billion, indicating an extensive scope of the Chinese internet terminal industry chain. In the user base of the terminal industry chain, these entities are the direct beneficiaries of technological advancements. As network operators' technologies become more sophisticated, users can experience faster and more stable internet speeds, leading to an enhanced mobile internet experience.

The analysis of the composition of China's mobile internet industry structure reveals several key features. Firstly, the core layer of the mobile internet industry chain comprises three components: networks, terminals, and content, with enterprises within these sections engaging in cooperation and competition. However, their manifestations vary across different periods and markets. Secondly, enterprises serve as nodes within the mobile internet industry chain, managing information flow, logistics, and capital flow, forming a complex and dynamic system through the combination of various elements. Lastly, an important characteristic of the mobile internet industry chain lies in the intricate competitive cooperation among enterprises.^[3]

2.2 Status of Value Transfer Research

Slywotzky initially introduced the concept of value migration, suggesting that technological advancements and changes in consumer demand structures shift the focal point of the industry value chain. In times of evolving business environments, a company's primary concern should not solely be about developing new products or technologies but focusing on business segments that generate higher value and designing superior business models. The author constructed a fundamental model of value migration by observing and analyzing numerous company cases, categorizing value migration into three types: inter-industry value migration, intra-industry value migration among different enterprises, and the transfer of value from one business model to another within a company.^[4] Nolan et al. investigated value creation and migration in the telecommunications industry using the telecommunications industry value chain as a case study. The article posits that value is not a static entity but an ongoing process involving the continuous engagement of each customer's perspective. It elucidates how value creation and migration within the telecommunications industry continually present possibilities for new services or alterations in existing service models to maintain a competitive edge.^[5] Siudak, based on Slywotzky's three-stage model of value migration and value transfer analysis, classified 270 companies listed on the Warsaw Stock Exchange in 2007 into industries. Employing a multi-dimensional comparative analysis, particularly linear ranking, for value migration measurement,

a comprehensive developmental variable was constructed. The findings indicated that industrial capital allocation serves as a driving factor for value migration.^[6] Li X. J., et al. (2010) examining value migration and path innovation, employed quantitative analysis methods such as structural equation modeling to analyze extensive sample data from Chinese automotive companies. The findings confirmed a positive correlation between value migration, path innovation, and a company's competitive advantage.^[7] Deng L. A. (2016) expounded on how when technological paradigm trajectories shift, it inevitably brings forth new valuable products, forming new value chain relationships, and altering value supply and demand.^[8]

2.3 Characteristics of Value Transfer in the Mobile Internet Industry

Terminal access diversifies. The mobile internet constitutes a vital component of the lives and work of Chinese citizens. People utilize the internet for activities such as watching TV, reading news, gaming, chatting, searching for information, seeking customers, and sending files. As the mobile internet technology develops rapidly, its modes of access become increasingly diverse. Presently, the methods of mobile internet access include smartphones, mobile TVs, and tablets. The mobile internet has permeated various sectors of society, presenting vast prospects for development.

Industrial integration deepens. For the development of mobile internet technology, industrial integration serves as a crucial driving force, leading various industries towards continuous progress in the direction of informatization. During the 2G era, the mobile internet industry encompassed activities like messaging and multimedia messaging service (MMS) entertainment. With the advent of the 3G era, the mobile internet industry saw significant improvements, such as mobile electronic wallets, home monitoring, and precise positioning. In the 4G era, numerous mobile internet applications emerged and found applications across various industries, including retail, finance, and healthcare. China's current mobile internet has stepped into the 5G era, where industry integration is inevitably deepening, leading to transformations in business models and new ways of conducting business.

Acceleration in the convergence of mobile and desktop internet. A holistic analysis of China's mobile internet development across several stages has significantly propelled the advancement of IT technologies. In this context, the integration between mobile and desktop internet has become increasingly close, manifesting in three aspects: firstly, the rapid development of the mobile internet has provided significant impetus for the progress of desktop mobile internet, steering it towards the developmental trajectory of the mobile internet. Secondly, the mobile internet exhibits remarkable openness, which plays a constructive role in the industry chain, fostering deeper cooperation among enterprises within the chain. Thirdly, the collaboration between mobile and desktop internet is becoming increasingly intimate. For instance, applications such as WeChat on mobile phones can directly scan QR codes to log in to the desktop version of WeChat, ensuring information synchronization between the two platforms.^[9]

2.4 Development and Evolution of the Mobile Internet Industry

The developmental evolution of the mobile internet industry results from the interaction of various factors and mechanisms, primarily categorized into two types: inevitability and universality, influencing the transformation of the mobile internet industry in different countries, and contingency and particularity, causing differences in the practical evolution and value transfer within the mobile industry chains of different nations.

In summary, the development and evolution of China's mobile internet industry can be delineated into four stages: the budding stage, inception stage, development stage, and maturation stage. During the budding stage, the convergence of the mobile information and internet industries initiates, culminating in the formation of the mobile industry chain following the maturation of multifaceted driving factors, propelling the industry chain into its inception phase. In this phase, network operators reside at the central position of the industry chain system, controlling the mainstream of the mobile industry chain and serving as the primary providers of mobile internet services. As the industry progresses into the development stage, network operators no longer maintain a monopolistic position. Terminal providers and application providers collaboratively provide services to consumers. With intensified competition and collaboration among network operators, terminal providers, and application providers, the value of the industry chain gradually shifts away from a product-centric focus toward consumer-oriented value. Enterprises that achieve consumer value alignment can succeed in the market competition. In the maturation stage, the mobile internet economy transitions into the era of digital

economy development, witnessing the fusion of mobile internet platforms with desktop internet platforms, leading to a blurring of boundaries between the two. Presently and in the foreseeable future, China's internet economy will enter the stage of intelligent economy development, characterized by a substantial amalgamation of the internet economy and artificial intelligence technologies, facilitating higher-level and more efficient value transfer.^[10]

2.5 Research on Industrial Value Transfer from the Perspective of the Digital Economy

Johnson posits that data constitutes a novel economic asset and is presently the most indispensable economic asset in society. Viewing the impact of big data on financial management within enterprises and organizations, he employs a case analysis approach. He concludes that the rapid generation and dissemination of vast amounts of data in Internet form, along with consumers using social media, compel significant alterations in decisions made by large corporations, showcasing the notable effects of data. Data has become the most crucial fourth production factor following "land, labor, and capital." With data experiencing exponential growth, enterprises must take action to fully utilize extensive data resources for strategic decision-making. They propose the flow of the data value chain, a framework encompassing comprehensive management from capturing to decision-making with data, examining how different data can be systematically combined to create valuable information, thereby providing insights for enterprise-level decisions.^[11] Nikou, et al. argue that the value creation and realization model within the mobile internet industry differs from traditional industries. No single entity can monopolize all resources required to provide services, necessitating effective cooperation among entities to offer value-added services created through collaborative knowledge and complementary functional modules within the network system.^[12] Kim, et al. propose that the mobile internet technology revolution has birthed information-based platforms, where multilateral market platforms represent a significant business phenomenon rising alongside the emergence of information technology and the internet, combining two different yet interdependent customer groups through intermediary institutions to create value.^[13]

Li W. L. and Xia J. M. elaborate that big data primarily drives business model innovation and prompts cross-industry integration, value creation, and the reconstruction of value networks.^[14] Ma Q., et al. based on platform theory, through case studies and comparative analysis, conclude that data resources serve as critical elements in the competition and strategies of platform enterprises, significantly influencing the value creation of platform-based enterprises. Data resources have become unique resources for mobile internet enterprises, and thorough exploration and analysis of various types of data resources enable the acquisition and prediction of consumer behavior traits and preferences. Extracting significant commercial value from data resources alters traditional economic activities and modes of value creation.^[15] Sun Y. W., et al. employ the principles of system dynamics to reveal that platform enterprises are the leading force driving innovative network development. They propose that the joint value creation within the mobile internet stems not only from the advantageous resource integration of participating entities but also from the synchronization and coordination of innovative capabilities among the core modules within the platform, directly promoting product iteration and value innovation.^[16] Zhou W. H., et al. conducted normative case studies on value co-creation between the Taobao e-commerce platform and buyers and sellers, analyzing that the value creation of bilateral platforms primarily involves providing third-party payments, AI consultations, and credit mutual evaluations, simultaneously establishing platform rules to meet the security needs of both users and merchants. Platforms satisfy the differentiated needs of merchants and consumers by providing purchasing data to users and open innovation, creating platform ecosystem value and expanding network incremental effects.^[17]

2.6 Assessment of Value Transfer Research in the Digital Economy

The development of the digital economy and information technology provides numerous possibilities for enterprises to explore novel mechanisms for value creation. The evolution of the digital economy offers a better medium and tools for enterprises to adopt new methods for value creation and delivery. In the era of mobile internet, business models necessitate consumer participation in production and value creation, predominantly focusing on community-centric platform models where the core emphasis lies in value creation. The objective is to align consumer perception of the value of goods or service content. The disparity between value creation and value perception in the mobile internet era primarily arises from the accelerated flow of information, breaking down barriers of information asymmetry, directly impacting consumer behavior (as acceptance or rejection of value

influences purchase decisions).

In the digital economy era, consumers' pursuit of value is gradually changing. The outward manifestation of value perception encompasses economic, social, psychological, and security aspects, forming a resonance with consumers' perceived value. Mobile internet platform enterprises facilitate consumers in experiencing value at different stages of information acquisition by sharing and transmitting resources such as information, knowledge, relationships, and emotions. These platforms engage consumers interactively and collaboratively, aiming for effective communication, exchange, and a sense of belonging. There is a high degree of interactive information flow, and consumers' involvement and interaction levels are significantly elevated. The driving factors for value transfer have undergone substantial changes compared to agricultural and industrial economies in the backdrop of the digital economy. Data resources and network technology have emerged as unique drivers for value transfer. The platform business model embodies the creation of enterprise value and consumer value alignment, hence value co-creation serves as a driving factor. An open platform can induce industry cross-border collaboration and integration, efficiently promoting the development of the mobile internet economy. This stands as the fourth driving factor for value transfer. Subsequently, the fifth driving factor, innovation performance, becomes prominent.^[18]

3. Outlook for Value Transfer in the Mobile Internet Industry

Based on a review of the literature, a critical future direction for theoretical research is to examine the process of value transfer within the mobile internet industry from the perspective of the digital economy and digital/numerical transformation. Exploring the mechanism of transition in the mobile internet industry from value creation to value perception and constructing an associated research framework is essential. Additionally, the empirical analysis should delve into exploring the realization mechanism and application of value transfer within the mobile internet industry.

3.1 Comparative Research on Industrial Value Transfer from Different Perspectives

The academic focus, based on existing literature and its outcomes, primarily dwells upon the value chain and its transfer issues within traditional industries amid an industrial economic background. However, the research findings are limited, resulting in a narrowing scope of application. Given the shift from conventional agricultural and industrial economic views to the realm of digital economics, a comparative investigation into industrial value transfer within different contexts becomes increasingly imperative and significant.

In contrast to agricultural and industrial economies, the digital economic era encapsulates numerous elements within its business models, such as communities, platforms, cross-border interactions, resource aggregation, and product designs based on value co-creation. These alterations have fundamentally reshaped the value chain of traditional industries. The demand-oriented business model of the mobile internet, alongside value creation, is inevitably supplanting traditional business models. Consequently, both the motives and methodologies behind value creation and transfer in the mobile internet industry and traditional sectors have undergone substantial alterations. Within the era of digital economics, the transfer of industrial value is propelled by shared driving factors, such as customer demands, business models, technological innovations, and differentiated competition. Yet, it also incorporates new factors like data resources, open platforms, value co-creation, network capabilities, and innovation performance. These factors have resulted in distinct characteristics and manifestations concerning the transfer of industrial value to consumer behavior.

3.2 Logic of Shared Platform Value

Academic inquiry into enterprise platforms is predominantly bifurcated into two perspectives: one emphasizing two-sided markets and network effects, and the other focusing on the impact of platform innovation on enterprise performance from an innovative standpoint. Mobile internet enterprises are more inclined to adopt platform-based models. Moreover, the continued advancement of the mobile internet has further accelerated the prevalence and application of platform-based business models. Essentially, a business model functions as a value system, and enterprises can instigate innovation by modifying critical elements within this system. These elements chiefly encompass value propositions, value structures, revenue-cost structures, customer segments, and distribution channels.^[19] Within the research outcomes of business models, the value perspective stands out as the predominant viewpoint.

When considering the transfer of value, the inherent logical structure of a business model fundamentally revolves around core elements such as value creation, recognition, transmission, and acquisition. Within the digital economic landscape, the logic of shared platform value operates by aligning the supply and demand of idle resources within society through these platforms, thus achieving effective resource utilization.

3.3 Development of E-commerce Platforms under the Value Transfer of the Mobile Internet Industry

In the era of digital economics, data resources have become the new drivers for enterprise decision-making and strategic planning. They represent new content for product-service trade and serve as novel tools for comprehensive corporate governance. These resources bring forth enhanced value and a reconfiguration of value networks for enterprises. The rapid inter-connectivity of the mobile internet has generated vast volumes of data, leading to the emergence of platforms that process this data, such as cloud computing and big data technologies. These platforms cleanse and distill the extensive data generated in economic and societal development, creating new and valuable information resources. Consequently, they consistently supply fresh value networks for participants in the internet industry. The diverse business models of various e-commerce platforms in China have instigated disruptive changes within the industry. Dominated by open platforms, e-commerce enterprises, based on their core resources and capabilities, assert their value propositions. These open platforms highly cater to the personalized and open-ended demands of users, fostering an interactive innovation model between "vendors and customers." This not only achieves innovative performance within e-commerce platforms but also establishes the core of value co-creation between the platform and consumers. The process of value creation and recognition for enterprises no longer relies on traditional value chains from an economic standpoint. Instead, it involves constructing a value web and ecosystem composed collectively of all members on the platform.

Therefore, the academic realm can employ a combined approach of standardized research and empirical analysis to systematically explore cases or applications concerning value transfer within the mobile internet industry. For instance, investigating the impact of value transfer in the mobile internet industry on the innovative development of e-commerce in China. Chinese e-commerce platforms, built upon big data and cloud computing, must contemplate how they bring value to consumers, what issues they solve for consumers, and how they predict the direction and trends of industrial value transfer. By studying consumer behavior, how can they facilitate the healthy and sustained development of Chinese e-commerce platforms?

3.4 The Future of the Digital Intelligence Economy

In recent years, with the emergence and gradual application of next-generation internet technologies like Artificial Intelligence, Machine Learning, Metaverse, Internet of Things, and 6G communication, the world economy is poised to enter the era of digital intelligence. However, amidst the incomplete and emerging features of this nascent digital intelligence economy, identifying its intrinsic connections and developmental principles poses certain difficulties. Based on preliminary analyses of the practice of the digital intelligence economy, its essence lies in computation. It involves rational resource allocation through data computation, precise distribution of production and demand, and a series of calculations aimed at reducing costs and enhancing efficiency. The scope of the digital intelligence economy is extensive, known as the intelligent economy in manufacturing sectors. Concerning future economic and social development, will the digital intelligence economy alter the flow of value? Can the application of digital intelligence technologies provide real-time resource calculation and matching for consumer supply and demand? Will the digital intelligence economy offer cost-effective shared channels for effectively allocating resources to the mobile internet industry? These propositions offer vast research opportunities for scholars in the field.

4. Conclusion

The rise of the mobile Internet has precipitated a transformative shift in the industrial value chain, where the driving forces of value transfer have evolved significantly. This paper provides a comprehensive overview of the research progression on the subject, delving into perspectives such as the mobile internet, the digital economy, value creation, and value recognition. It has been found that the advancement of the digital economy has offered new methodologies and vehicles for corporate value creation and transfer, positioning value recognition as the ultimate goal of the industrial value

transfer process. The modern economic odyssey of China encompasses an industrial economy, an internet economy-at times referred to as the digital economy or the data-driven and intelligent economy. Despite their distinct attributes, these economic phases share core stimulating factors: consumer demand, business models, and technological innovation.

In the era of the digital economy, however, a set of novel driving forces comes into play. Data resources function as a converging point for tech-driven strategies, offering untapped potential for businesses. Open platforms enable collaborative endeavors that bypass traditional industrial borders, creating an ecosystem where value co-creation is the norm. Network capabilities are transformed into vital tools that facilitate innovative interactions, thus expanding the scope for value transfer. Innovation performance stands as a benchmark, providing direction for the continuous development of the internet economy. Concluding with a forward-looking stance, this paper projects future research trajectories and focus areas concerning the transfer of industrial value within the mobile internet industry. It needs that an in-depth examination of these newer factors is imperative to understand their role in shaping the landscape of industrial evolution. Thus, navigating the intricacies of value transfer in China's mobile internet industry not only requires a historical understanding but also an acute sense of the emerging trends that will chart its future course.

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