The Current Situation, Characteristics and Problems of China's Digital Economy Professional Construction——Based on the Data Analysis of 68 Universities in China

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Abstract: In the wake of the authorization by the Chinese Ministry of Education in 2018 enabling the establishment of academic programs centered around the digital economy, a discernible proliferation of such curricula is observed, with 68 prominent institutions of higher learning in China subsequently embracing this educational avenue. Employing comprehensive institutional data, this scholarly exposition undertakes a comprehensive scrutiny and examination of the structural framework underpinning China's digital economy-focused academic disciplines. Through a multifaceted analysis encompassing architectural configuration, curricular delineation, and vocational orientation, this inquiry unveils that the landscape of digital economy programs in China's academic sphere encompasses a heterogeneous assemblage of diverse collegiate typologies. A prevailing propensity is identified wherein the majority of these institutions proffer these specialized academic tracks across both the undergraduate and postgraduate strata, thus precipitating an inclination towards a consolidated trajectory in terms of career prospects. Concurrently, it emerges that the intrinsic propensities of digital economy disciplines within Chinese academia are yet to manifest in a manner conducive to the bespoke exigencies of distinct industrial domains. Notable lacunae persist in endeavors aimed at galvanizing digital proficiencies across disparate sectors, invigorating the domain of digital agriculture, and nurturing cohorts of avant-garde innovators.

Keywords: digital economy; professional construction; data analysis; construction status; construction characteristics

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1. Introduction

With the rapid evolution of the digital economy, a multitude of nascent vocations and designations have surfaced, endowing the digital realm with expansive vistas for occupational engagement. The "People's Republic of China Occupational Classification Code (2022 Edition)" underwent meticulous review and sanction in September 2022, ushering in an unprecedented inclusion of the distinctive "digital occupation" insignia. This compilation comprises an aggregate of 97 discrete digital occupations. Evidently, the exigency for digital occupations and adept digital acumen has crystallized as a palpable societal requirement, wherein proficiencies of digital savants, enriched with elevated competencies and interdisciplinary acumen, assume an increasingly salient function in propelling the trajectory of high-caliber advancement within the digital economy landscape and securing triumph on the global competitive stage.

In its capacity as a pivotal bastion for the establishment of national disciplinary edifices, institutions of higher education shoulder the mantle of nurturing a substantial cohort of adept practitioners primed for the exigencies of impending developmental paradigms. The discernible societal appetite for adepts proficient in digital technologies imparts a compelling impetus upon academic entities to redouble their efforts in the cultivation of talent pools geared towards the digital economy domain (Hou Jiyang et al., 2022)[1]. Cognizant of this imperative, it is noteworthy that the "Industrial Digital Talent Research and Development Report (2023)," jointly unveiled by Renrui Talent, Deloitte China, and the Social Science Literature Press, prognosticates that the dearth of digital acumen in China's labor force is poised to burgeon to a staggering margin of approximately 25 million to 30 million individuals by the temporal juncture of 2035.

Five years have elapsed since the inaugural authorization by the Ministry of Education of the People's Republic of China, granting institutions of higher learning the prerogative to establish dedicated academic tracks centered around the digital economy, marking its commencement in 2018. During this temporal span, the evolutionary trajectory of digital economy curricula within Chinese academe has been characterized by dynamic advancement, culminating in the establishment of a robust and comprehensive disciplinary framework marked by substantial scale and effective administration. Functioning as the preeminent authority for the dissemination of domestic higher education academic offerings, China Education Online, in conjunction with the handheld college entrance examination platform, has jointly unveiled an array of national-level academic program information. Meticulous examination of these data underscores that as of March 2023, a cumulative total of 68 institutions of higher learning across the expanse of the nation have ushered in digital economy-focused academic endeavors.

The realm of digital economy studies, an emerging domain inextricably intertwined with the deployment and propagation of digital technologies, is poised to remain in alignment with the temporal currents inherent in the ongoing evolution of digital technology. Notably, the trajectory of China's digital economy curricular construction occupies a vanguard posture within the global landscape, furnishing pivotal contributions to the maturation of the digital economy as well as to the metamorphosis and augmentation of industries on a worldwide scale. An exhaustive review of the prevailing landscape vis-à-vis China's digital economy

pedagogical edifice, coupled with an in-depth analysis of the cardinal attributes and extant challenges encapsulated therein, serves to not only facilitate the formulation of judicious policies by Chinese regulatory authorities and institutions of higher learning, but also extends the purview of insights to institutions of higher learning worldwide that are invested in cultivating digital economy expertise. These insights, in turn, stand poised to catalyze an enhanced ecosystem of talent cultivation and disciplinary advancement within the global milieu of the digital economy.

2. The research results of the professional construction of digital economy

The establishment and development of the digital economics discipline constitutes a pivotal underpinning during the accelerated phase of growth within the digital economy sector. It assumes a pivotal role as a foundational cornerstone for nurturing and advancing high-caliber digital economic expertise within the nation. Moreover, it assumes strategic significance as a catalytic nexus for nations to secure prominence within the discourse of the global digital economy paradigm (Qi Yudong and Chu Xi, 2021, Pugacheva, et al.,2020)[2]/ [3].

In the trajectory of digital economics discipline evolution, the integration of digital economic tenets into the pedagogical curricula of Western economics within institutions of higher learning emerges as an indispensable imperative(Olssen* and Peters, 2005) [4]. This pragmatic endeavor responds to imperatives in the realms of fundamental theoretical instruction, aligning with the exigencies of real-world challenges, accommodating the cultivation of novel business acumen in the contemporary epoch, and edifying the foundational stratum of digital economics theory. Divergent from classical economics, digital economics assumes the mantle of explicating the complete continuum encompassing the production, exchange, distribution, and consumption of digital products and services, all transpiring within the contours defined by digital constituents. This novel strain of economics orbits around the pivotal axes of artificial intelligence, big data, software science, cloud computing, statistics, computer science, jurisprudence, management, theoretical economics, and applied economics, coalescing into an interdisciplinary fabric that constitutes the avant-garde of nascent economics.

The orchestration of the digital economy discipline remains a globally resonant pursuit. Primary consensus among scholars underscores that digital economics constitutes an integral facet of the contemporary liberal arts landscape. Notably, the tenets and imperatives intrinsic to the digital economics discipline harmonize congruously with the trajectory of the modern liberal arts' development (Zou Xinyue et al., 2022)[5]. The foundational structure of the digital economics discipline is progressively attaining clarity. Noteworthy are frameworks posited by certain scholars, encapsulating domains of digital economic development, digital industries, digital markets, and digital enterprises. Integral to this scholarly discourse are specialized courses embracing realms of digital industry, digital enterprise management, digital finance, digital trade, and digital statistics . It is postulated that innovative curriculum systems or modules ought to encompass thematic facets like digital economics, digital trade, digital finance, digital industry development, and digital economic growth (Tong Jiadong and Zhang Qian, 2022) [6].

Concomitant with the vibrant pace of research exploring the cardinality of discipline construction, the evolutionary pathways of disciplines, and the foundational paradigms inherent in digital economics discipline development, the epistemic landscape has borne swift and notable advancements. Within the context of the digital economy's resolute trajectory, it becomes incumbent to expeditiously assimilate a nuanced comprehension of the prevailing panorama and distinctive attributes encapsulating the digital economy discipline's construction. Simultaneously, it behooves us to surface and elucidate extant challenges manifest at the current phase, thereby catalyzing the articulation of congruous directives for future undertakings. This dialectic is poised to galvanize the continued momentum of digital economy discipline advancement, engender incremental augmentation of educational quality and pedagogical efficacy, and harmoniously satiate society's burgeoning demand for adept digital economic practitioners.

3. Analysis of the Current Situation of Digital Economy Majors in Chinese Universities

3.1 Overall situation analysis

3.1.1 School type and admission status

From Figure 1 Presently, a cumulative total of 68 academic institutions in China have embarked on the pedagogical endeavor of offering digital economy majors. A classification scheme predicated on the distinct typologies of these educational establishments reveals their categorization into eight discrete clusters: finance and economics, comprehensive, science and engineering, normal, ethnic, agriculture and forestry, language, as well as politics and law. In this classification, finance and economics universities exhibit the most robust presence, constituting a contingent of 26 entities; subsequently, comprehensive and science and engineering universities each contribute 17 and 15 institutions, respectively. In stark juxtaposition, the domains of politics and law, language studies, as well as agriculture and forestry each house only one university within their respective categories.

From Figure 2 in a delineation predicated on the ascending order of the institutional minimum admission scores, it becomes evident that, with the exception of 7 institutions where pertinent data is unavailable, the entrance benchmarks for digital economy majors tend to cluster predominantly within two scoring bands: the 500-599 and 400-499 point ranges. Notably, these two bands are demarcated by a 100-point differential. This pattern is observed across a collective sum of 29 institutions within the higher band and 25 institutions within the lower one, collectively encompassing 80% of the analyzed institutions. Such observations coalesce to illuminate that the academic institutions within China that have embraced digital economy majors predominantly occupy the spectrum defined by medium-high and medium-low admission score brackets.

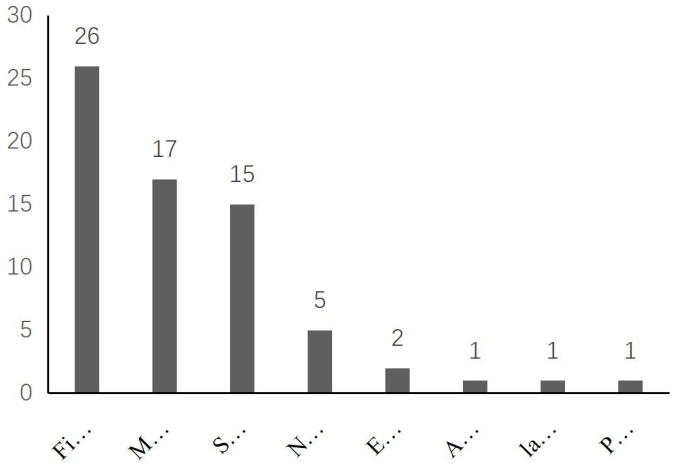

Figure 1 Digital economy majors classified by school type

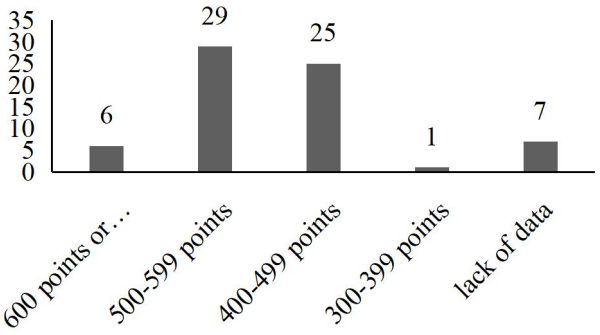

Figure 2 Digital economy majors are classified according to their enrollment scores.

3.1.2 The nature of the school

From Table 1 the purview of China's digital economy academic offerings extends beyond the confines of state-run institutions to encompass private higher education establishments as well. In aggregate, the domain of digital economy studies is embraced by a conglomerate of 50 public universities and 18 private universities, collectively totalling 68 institutions. Illustrative of the academic landscape within public universities are venerable entities such as Renmin University of China, Zhongnan University of Economics and Law, and Minzu University of China, while emblematic private counterparts include Jiahua College of Beijing Technology and Business University and Dalian University of Finance and Economics, among others.

From Figure 3 among the comprehensive assemblage of 68 universities proffering digital economy programs, a notable subset comprising 41 institutions have instituted master's degree programs, constituting 60% of the aggregate. Evidently, the institutional realm of master's degree programs is exclusively confined within the domain of public universities, with private educational entities yet to secure authorization for the conferral of master's degrees.

In the domain of specialized enrollment modalities, an analysis of disseminated statistical records illuminates the prevalence of various distinct approaches adopted by 28 universities. Among these, a contingent of 16 universities emerge as exemplars of Sino-foreign collaborative educational initiatives. Conspicuous amongst these are institutions such as Beijing Technology and Business University and Zhejiang University of Finance and Economics. The educational landscape also encompasses distinctive modalities such as national special initiatives and preparatory programs tailored for underrepresented minority groups.

Table 1 Classification of digital economy majors according to school nature and master's degree enrollment

Private	Undergraduate	Jiahua College of Beijing Technology and Business University, Anhui Xinhua College, Dalian College of Finance and Economics, Guangdong Baiyun College, Guangdong Peizheng College, Guangzhou Nanchang College, Guangzhou Xinhua College, Nanchang Business College of Jiangxi Agricultural University, Liaoning Finance and Trade College, Nanning College, Shenyang Science and Technology College, Wuhan Institute of Business and Technology, Changchun Institute of Finance and Economics, Changchun Institute of Electronic Technology, Chongqing Institute of Finance and Economics, Chongqing Institute of Foreign Economics and Trade, Chongqing Yitong Institute, Yenching Institute of Technology	18
	Undergraduate and Master's degrees	Nil	0
Public	Undergraduate	Guangxi University of Finance and Economics, Guangxi Vocational Normal University, Handan University, Henan University of Finance and Economics, Hohhot University for Nationalities, Hunan Engineering University, Shandong Petrochemical University, Tongling University, Wuzhou University	9
	Undergraduate and Master's degrees	Nanjing University, Harbin Institute of Technology, Renmin University of China, Nankai University, Hunan University, Zhongnan University of Economics and Law, China University of Geosciences (Beijing), Southwestern University of Finance and Economics, South China Normal University, Communication University of China, Minzu University of China, Guangdong University of Technology, Changsha University of Science and Technology, Jiangxi University of Finance and Economics, Anhui Normal University, Liaoning University, Southwest University of Political Science and Law, Shandong Agricultural University, Zhejiang Gongshang University, Guangdong University of Foreign Studies, Beijing Technology and Business University, Zhejiang University of Finance and Economics, Jimei University, Xi'an University of Posts and Telecommunications, Anhui University of Finance and Economics, Guilin University of Electronic Science and Technology, Guangdong University of Finance and Economics, Hebei University of Economics and Business,	41

	Minnan Normal University, Fujian Institute of Technology, Shandong Jiaotong University, Harbin University of Commerce, Shanghai Lixin College of Accounting and Finance, Jiujiang College, Guizhou University of Finance and Economics, Inner Mongolia University of Finance and Economics, Xinjiang University of Finance and Economics, Guiyang University, Lanzhou University of Finance and Economics, Yili Normal University, Hebei University of Finance

Data source: China Education Online and Pocket College Entrance Examination website

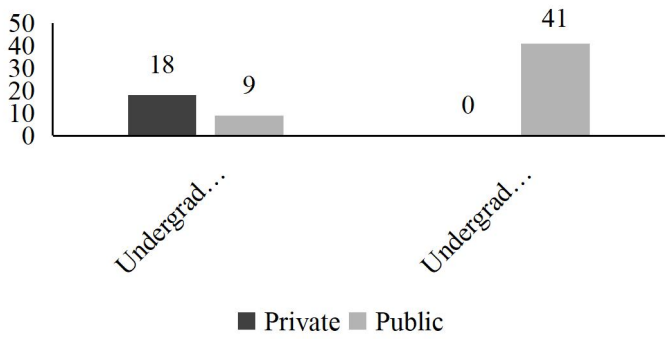

Figure 3 Digital Economy Major Digital Economy Major is classified according to school attributes

3.2 Analysis of professional curriculum setting

Predominantly, the landscape of higher education institutions offering digital economy majors within China is marked by a notable convergence in the configuration of academic curricula, resulting in the discernible emergence of curricular homogeneity. From Table 2 An examination of the 68 universities reveals that a significant proportion, specifically 76% of these institutions, have manifested analogous curricular constructs in their digital economy programs. Such curricular commonalities encompass a repertoire of courses, encompassing but not confined to econometrics, statistics, the foundational tenets and applications of blockchain, principles and applications pertinent to databases, initiation to digital economy paradigms, as well as classical macroeconomics and microeconomics. Moreover, this academic symphony extends to encompass domains such as operations management within the digital ambit, Python-based analysis of large datasets, and the purview of Internet-enabled operational paradigms.

However, amidst this prevalent trend, a select group of 5 institutions out of the 68 offering digital economy programs have chosen to embolden their curricular architecture with distinct and idiosyncratic dimensions. Within this subset, Guangdong University of Finance and Economics has directed its emphasis toward an in-depth exploration of the economy prevalent within the Guangdong-Hong Kong-Macao Greater Bay Area. At Harbin University of Commerce, an accentuation is evident in the form of courses elucidating neural networks and business intelligence. Chongqing Yitong College delineates its academic ethos through a resonance with the manufacturing sector, manifesting in course modules spanning intelligent

manufacturing and the management of production operations. Beijing Technology and Business University's educational ethos finds expression in distinct courses underscoring the sharing economy and case studies tethered to sustainable development. Similarly, the signature courses at Guilin University of Electronic Science and Technology encompass training modules oriented towards social and economic surveys, accompanied by immersive experimentation within the domain of digital marketing.

Table 2 Analysis of digital economy professional courses

University name	Professional setting	
52 Universities		Econometrics, statistics, blockchain principles and applications, database principles and applications, introduction to digital economy, macroeconomics, microeconomics, Internet + operations management, Python big data analysis, management
Zhongnan University of Economics and Law, Guangdong Peizheng University, Shenyang University of Science and Technology and Guangxi Vocational Normal College	Not clear	For example: digitally identify the out-of-stock rate of goods on shelves for operational analysis, and plan and implement the digital transformation of enterprises and institutions.
Guangdong University of Finance and Economics	Main subjects and core courses	(1) Main subjects include economics, statistics, and data science (2) Core courses include microeconomics, macroeconomics, econometrics, digital economics, digital currency, programming, digital product development, big data visualization technology, data structure, business big data analysis, text data mining, area Blockchain principles and applications, Python data processing, digital economic statistics, introduction to the Internet of Things, Guangdong-Hong Kong-Macao Greater Bay Area economy, cross-border e-commerce, etc.
Harbin University of Commerce		Economic Mathematics (Calculus, Probability Theory, Linear Algebra), Microeconomics (Elementary, Intermediate), Macroeconomics (Elementary, Intermediate), Statistics, Econometrics, Introduction to Digital Economy, Network Economics, Platform Economics, Information economics and game theory, information theory, machine learning, numerical examples, data mining, data visualization, Java programming, neural network, business intelligence, etc.
Chongqing Yitong College	Main subjects and core courses	(1) Main disciplines include economics, management, and data science. (2) Core courses include microeconomics, macroeconomics, political economy, finance,

		finance, econometrics, data analysis and statistical applications, Internet and e-commerce, intelligent manufacturing and production operation management, blockchain and Token economy, smart city planning, etc.
Beijing Technology and Business University	Basic course modules, digital economy course modules, cross-disciplinary modules, and practical course modules	(1) Basic course modules include an introduction to the basic principles of Marxism, advanced mathematics, college English, macroeconomics, microeconomics, probability theory and mathematical statistics, etc. (2) Digital economy course modules include introduction to digital economy, legal regulation and data compliance of digital economy, money bank and digital currency, sharing economy, Python high-level language programming, Internet + operation management, blockchain technology and application, etc. (3) Interdisciplinary modules include management, international economics, regional economics, industrial organization theory, finance, accounting, international business law, data mining and business intelligence, business ethics and corporate social responsibility, etc. (4) Practical course modules include free trade zone case studies, sustainable development case studies, e-commerce theory and practice, cross-border e-commerce theory and practical training, etc.
Guilin University of Electronic Technology	Economics module, digital technology module, digital economy application module	(1) Economics modules include microeconomics, macroeconomics, econometrics, public finance, finance, management, statistics, accounting, etc. (2) Digital technology modules include blockchain principles and applications, Python programming, database principles and applications, Python big data analysis, Internet + operation management, etc. (3) The digital economy application module includes an introduction to the digital economy, comprehensive training on economic analysis based on big data, social and economic survey training, statistical comprehensive simulation training, blockchain financial training, digital marketing experiments, production internships, and graduation projects. wait.

Data source: China Education Online and Pocket College Entrance Examination website

3.3 Analysis of the employment direction of students

Amidst the cohort of 68 universities, a substantial majority of 60 institutions have enunciated explicit trajectories delineating the career prospects of graduates pursuing digital economy majors. Within this purview, it becomes evident that graduates hailing from 49 universities, from Table 3 notable among them being Nanjing University, Renmin University of China, and Nankai University, predominantly navigate their vocational pathways into the realm of economic enterprises and institutions. In the context of such economic establishments, the professional engagements of these graduates predominantly encompass domains such as industrial digital strategizing and implementation, data analysis, and the orchestration of digital management paradigms. In a contrasting paradigm, the sector of public institutions beckons graduates to predominantly undertake roles spanning data analysis and mining, and the pivotal realm of digital transformation initiatives.

Moreover, a distinct pattern crystallizes whereby graduates specializing in digital economy from institutions like Hebei University of Finance, Chongqing University of Finance and Economics, and Guangzhou Southern University predominantly gravitate towards public sector avenues including government agencies, financial institutions, as well as private enterprises and establishments. Within these domains, their responsibilities encompass substantial roles in big data statistical analysis, data mining, and consequential business intelligence-guided decision-making.

In an intriguing departure, eight institutions, Chongqing Institute of International Business and Economics, Beijing Technology and Business University, and Harbin University of Commerce among them, have embraced a holistic pedagogical approach, emphasizing diverse facets in the education of digital economy graduates. These multifaceted curricular orientations encompass extensive training in domains including profound big data analysis and processing, along with the salient purview of industrial digitization. Notably, these institutions embed distinctive ethos into their educational endeavors. For instance, Chongqing University of International Business and Economics accentuates cross-disciplinary integration between digital technology and economic management. Shenyang University of Science and Technology and Guangxi Vocational Teachers College accentuate the impetus upon propelling industrial digital advancement, facilitating their graduates' profound engagement with the spheres of industry, agriculture, and service sectors.

Amidst this academic panorama, Beijing Technology and Business University proffers a pedagogical emphasis on endowing graduates with prowess in economic policy analysis, economic (financial) scrutiny, and the intricate art of big data statistical analysis, thus germinating the seedbed for further scholarly pursuits. Changsha University of Science and Technology proffers a distinctive orientation, charting paths for graduates to venture into emergent domains, including the precincts of advanced manufacturing's smart factories and the realm of precision agriculture in the modern agricultural landscape. These graduates are equally primed to undertake roles within departments pivotal to digital economy governance. Concomitant to these discursive themes, students specializing in digital economy at Chongqing Yitong University invariably find themselves entwined with endeavors centered around industrial digital strategizing, data analysis, and mining.

The educational mandate of Harbin University of Commerce propounds employment within large enterprises as a pivotal trajectory. This expansive domain encompasses stalwarts of the corporate sphere such as Alibaba Group and Jingdong Group, as well as financial behemoths including the Industrial and Commercial Bank of China and China Construction Bank. Harbin Institute of Technology underscores its educational ethos by channeling graduates toward roles involving digital economic analysis, economic intelligent decision-making, digital governance, and the establishment of digital standards.

In synthesis, the overview of employment directions unfurled herein efficaciously encapsulates the myriad career pathways accessible to graduates specializing in digital economy across varied industries and domains. Collectively, this comprehensive tapestry underscores the rich spectrum of vocational trajectories and professional growth opportunities accessible to college graduates within the burgeoning sphere of the digital economy.

Table 3 Analysis of Digital Economy Professional Courses

University name	
Hebei University of Finance, Chongqing University of Finance and Economics, Guangzhou Southern University	Focusing on cultivating data processing talents, the employment direction is to select government agencies, financial institutions, and enterprises and institutions for big data statistical analysis, data mining, business intelligence decision-making and other related work.
Shenyang University of Science and Technology and Guangxi Vocational Normal University, Jiangxi Agricultural University Nanchang Business School, Shandong Agricultural University	The digital economy mainly studies the operation rules of the digital economy, measures the scale of the digital economy, promotes the development of digital industrialization and industrial digitalization, and realizes the deep integration of digital technology with industry, agriculture, service industries and other industries. For example: digitally identify the out-of-stock rate of goods on shelves for operational analysis, and plan and implement the digital transformation of enterprises and institutions.
Chongqing University of International Business and Economics	Possess good ideological and political quality and moral quality, solid economic foundation and good humanistic quality, have good comprehensive quality, innovation consciousness and certain international vision, master economic big data modeling, analysis and application ability, and be familiar with digital economy Operating rules and reform practices. During the training process, we pay attention to the cross-integration of digital technology and economic management, and train students to quickly adapt to the needs of economic and social development. After graduation, graduates can be qualified for jobs in companies, financial institutions, and government-related departments. They also adhere to diversified development and encourage students to be autonomous. Start a business and pursue further studies.
Beijing Technology and Business University	Graduates majoring in digital economy can work in national or local government agencies, industrial and commercial enterprises, financial institutions (including commercial banks, securities companies, insurance companies, etc.) Economic policy analysis, economic (financial) analysis, big data statistical analysis, and operation management in e-commerce and other fields, or independently carry out network entrepreneurship. Talents with strong scientific research capabilities can continue their postgraduate studies.

Changsha University of Science and Technology	The main employment areas for digital economy majors include five major areas. The first major aspect is the digital industry, which mainly includes enterprises and scientific research institutions such as artificial intelligence, blockchain, cloud computing, and big data. The second major aspect of the modern service industry is Internet finance, digital trade, precision marketing, e-commerce, sharing economy, smart life, platform economy and other digital fields. The third major aspect is digital fields such as smart factories in advanced manufacturing, industrial Internet and its applications, product lifecycle management, flexible customization, shared production platforms, and supply chain management. The fourth major aspect is new areas such as precision agriculture in modern agriculture. The fifth major aspect is the competent authority of the digital economy industry.
Chongqing Yitong College	The digital economy major is a key development major in the "14th Five-Year Plan", and graduates have good employment prospects. Can engage in industrial digital planning and construction, data analysis and mining, data governance, economic analysis, forecasting, planning, etc. in the field of digital economy.
Harbin University of Commerce	Government agencies, public institutions, the Internet, banks, securities, insurance, large and medium-sized state-owned enterprises, private enterprises, and listed companies. Such as: Alibaba Group, JD.com, IBM China, Suning.com, Industrial and Commercial Bank of China, China Construction Bank, Bank of China, China Pacific Insurance Company, Ping An Insurance Company of China, CITIC Securities, Central Red Group, Russia Express Group wait.
Harbin Institute of Technology	Employment industries include aerospace, Internet economy, communications, etc. Graduates can engage in digital economic analysis, data analysis, digital business optimization, economic intelligent decision-making, digital governance and digital standards in relevant departments.
Other universities	Economic enterprises: industrial digital planning and construction, data analysis, and digital management; Public institutions: data analysis and mining, digital transformation construction.

Data source: China Education Online and Pocket College Entrance Examination website

4. Characteristics of the construction of digital economy majors in Chinese universities

The development of digital economy majors within Chinese universities has undergone a five-year trajectory of growth and transformation.

First, this study examines the present landscape of domestic digital economy disciplines, highlighting distinct phase-based achievements and emergent characteristics. Notably, the rapid proliferation of digital economy majors across diverse institutional categories underscores its profound influence on China's higher education. This survey encompasses 68 universities offering digital economy majors, with a predominant presence in finance and economics institutions, followed closely by comprehensive universities. Of these, 50 institutions are publicly funded, while 18 are privately operated. A striking 87% of these

institutions are provincially administered, showcasing the distributed nature of this academic initiative.

In the context of contemporary China, the development of humanities and social sciences within academia is intricately intertwined with the nation's societal progress. Amidst the backdrop of China's pursuit of enhanced global economic and technological positioning, academic institutions have conscientiously cultivated disciplines such as applied economics and foreign languages and literatures. These disciplines inherently address the exigent demands arising from China's economic, technological, and cultural advancement. In the modern era characterized by rapid digitization, the ascent of the digital economy is a global phenomenon, and China is vigorously propelling its growth trajectory. The digital economy discipline has surfaced organically to cater to this paradigm shift, manifesting initially in private institutions and swiftly permeating the academic landscape of public universities. Despite its nascent inception, the digital economy discipline has remarkably matured in under half a decade, spanning a comprehensive spectrum of institutional profiles.

The second, the distinct enrollment patterns within China's digital economy majors exhibit a discernible gradient, often harmonizing domestic academic paradigms with Sino-foreign cooperative models. As the digital economy embarks on a new phase of evolution, novel business frameworks endemic to this era have proliferated, triggering a corresponding surge in the demand for adept digital economy professionals. However, this demand manifests different characteristics across varying tiers of the professional market. This discrepancy in market demand is mirrored in the diverse student body recruited by universities, leading to an evident stratification trend. Analysis of enrollment data reveals a concentration of digital economy majors in the intermediate to high-performance tiers as well as the intermediate to low-performance tiers. Notably, substantial discrepancies are observed between the highest and lowest admission scores, elucidating the pronounced variation in admission standards. For instance, Nanjing University records a highest admission score of 653 points, juxtaposed against the lowest score of 392 points at Wuhan Technology and Business College, thus spanning a notable 261-point range. This intricate enrollment hierarchy mirrors the multifaceted nature of the digital economy academic landscape.

The progressive evolution of China's reform and opening-up policy has engendered a viable avenue for the integration of foreign educational paradigms and high-caliber pedagogical resources through Sino-foreign cooperation in academia. This strategic approach serves to inculcate advanced educational concepts, enrich talent cultivation channels, and is progressively emerging as a pivotal facet of China's higher education landscape. By scrutinizing collaborative pedagogical models, refining quality assurance mechanisms, orchestrating curricular reform, and fortifying student self-governance, the instructional efficacy of Sino-foreign cooperative education has witnessed rapid amplification, steadily amassing societal and student commendation. Of the 28 Chinese universities that have unveiled distinct admission modalities, 16 have embraced Sino-foreign cooperative education, largely concentrated within the private education sphere. In particular, private higher education institutions have been enthusiastic proponents of Sino-foreign collaborative initiatives, augmenting the educational framework for digital economy disciplines with an emphasis on nurturing global perspectives and cross-disciplinary cogitation.

A third noteworthy facet lies in the maturation of China's digital economy workforce development, marked by an escalating proportion of master's degree programs. This trend mirrors China's ascendant economic trajectory and the concomitant necessity to foster adept professionals imbued with digital acumen, data analytical proficiency, and comprehensive business dexterity. Bridging the pedagogical spectrum between undergraduate and master's levels for digital economy domains has crystallized into a pedagogical focal point within multiple academic institutions. Notably, within the cohort of 68 universities surveyed, 41 host master's degree programs, representing a substantial 60%. Within this dynamic, there is a dual-pronged focus: one entails the sustained evolution of classical research streams, engendering a more comprehensive disciplinary framework; and the other pertains to the heightened adaptability and fluidity in research emphasis, thereby proactively expanding into emergent disciplines and enriching the landscape of higher education inquiry.

The burgeoning landscape of private institutions, comprising 18 universities offering digital economy programs, unveils a distinct discrepancy: none of these establishments have secured accreditation for master's degree bestowal in this discipline. This divergence underscores a discernible disparity in the depth of digital economy education conferred by private institutions vis-à-vis their public counterparts. This incongruity is reflective of private institutions' comparatively nascent foray into research endeavors, leading to an asymmetrical developmental trajectory and diminished scientific inquiry capacities. Consequently, this imbalance not only manifests within the realm of traditional disciplines' master's programs and flagship domains but also permeates burgeoning fields like digital economy due to constrained resources and institutional support.

The fourth dimension underscores a pervasive curricular uniformity while lamenting the scarcity of personalized academic trajectories. The surge of the digital economy era, characterized by the rapid influx of big data and artificial intelligence, has engendered novel business models and updated knowledge paradigms. This trajectory imparts fresh imperatives for the knowledge, competencies, and core proficiencies of business graduates. However, amidst 68 universities surveyed, a substantial 52 share analogous curricular outlines for digital economy programs. This congruence risks homogeneity in graduate profiles, countermanding the industry's requirement for diverse, specialized expertise[7].

Within the burgeoning digital economy era, pedagogy is shifting from a conventional teacher-centric framework towards a novel student-centered paradigm[8]. This transition entails a pedagogical pivot toward student development, learning outcomes, and educational effectiveness. To effectuate this paradigm shift, higher education inquiry necessitates robust attention and profound contemplation of individual student growth trajectories[9]. A promising trend is discernible within select Chinese institutions introducing distinct, tailor-made courses in their digital economy curricula. Illustratively, institutions such as Beijing Technology and Business University emphasize comprehensive knowledge integration, encapsulating fundamental modules, digital economy modules, interdisciplinary components, and applied experiential modules. In contrast, institutions like Guilin University of Electronic Science and Technology place a premium on practical applications, accentuating modules dedicated to digital economy applications. Concomitantly, institutions like Guangdong University of Finance and Economics, Harbin University of Commerce, and Chongqing Yitong University proffer context-specific courses anchored in institutional identity.

Lastly, the employability landscape for digital economy graduates is characterized by pronounced concentration, underscored by data analysis, mining, and digital transformation as predominant spheres. While digital economy education across 68 universities directs graduates toward positions in governmental entities, financial institutions, specialized establishments, and digitally evolving small and medium-sized enterprises, it is imperative to recognize the potentially adverse implications of the digital economy on employment. The contemporary milieu is poised for a transition where digital technology progressively supplants traditional labor-intensive roles, possibly exacerbating unemployment rates. As China strives to actualize "high-quality, comprehensive employment," students specializing in digital economy are progressively steering toward vocations that align with the sector's developmental blueprint. Presently, academic institutions nurturing digital economy acumen are gravitating toward roles encompassing industrial digital strategy, digital management, and enterprise digital transformation planning. Concurrently, applied education institutions prioritize graduates' placement within data analytics and mining domains, enmeshing them in economic and financial data-driven decision-making processes, thereby propelling enterprise digital metamorphosis initiatives.

5. Problems and suggestions in the construction of digital economy majors in Chinese universities

Through the analysis of the current situation and characteristics of the construction of digital economy majors in Chinese universities, we found that there are some problems in professional construction. These issues are not only worth pondering for China, but also have reference significance for the world.

5.1 The professional setting of digital economy lacks distinctive distinctions

The advent of the digital economy heralds an era of profound convergence between digital technology and various industrial landscapes, thereby necessitating a workforce adept not only in digital proficiencies but also in a diverse array of complementary skills. In light of this exigency, it becomes imperative for Chinese higher education institutions to proactively foster the development of digital economy majors. This academic pursuit encompasses a triad of interdisciplinary domains: economics, digital technology, and digital economic applications. Contemporary university curricula emphasize equipping students with the competence to comprehend, analyze, and apply data, underscored by the incorporation of cutting-edge subjects such as blockchain and big data within the educational framework. Notwithstanding these advances, shortcomings persist in the breadth and depth of cross-disciplinary amalgamation. Notably absent are lucid demarcations and personalized curriculum trajectories, interdisciplinary courses founded upon individualized foundational knowledge and vocational training orientations, and meticulously tailored pedagogical content. Nurturing the evolution of digital economy majors mandates a deeper contemplation and exploration of their distinctive evolution. As a means to address the multifaceted requisites of society, it is imperative to augment extant digital economy professional training by instituting a training regime oriented toward applied expertise while supplementing diversified talent development[10]/[11]. Synthesizing advanced theoretical concepts, the creation of integrated modules, and cultivation of digital economy practitioners endowed with multifarious

interdisciplinary competencies are requisite to meet the evolving requisites and challenges poised by the dynamic digital economy landscape.

5.2 The professional setup to serve the digital transformation of the industry needs to be improved

Industrial digitalization stands as the fulcrum of the digital economy's pivotal arena. The profound amalgamation of digital economy with tangible industrial realms has precipitated a discernible amelioration in production efficacy, prompting a paradigm shift in production methodologies. This confluence has consequently emerged as a potent catalyst underpinning industrial metamorphosis and advancement. The digital economy's intrinsic worth has transcended its antecedent role of transactional efficiency enhancement, evolving into a potent agent fostering industrial efficacy and propelling the trajectory of industrial digital transition. The process of digital transformation extends beyond the assimilation and recalibration of novel technologies; it entails a holistic reconfiguration spanning corporate cultural ethos, developmental paradigms, production schema, procedural oversight, stakeholder relations, and even the revitalization of employees' knowledge substrates and operational methodologies.

Within the milieu of industrial digital transformation, a salient challenge looms large: the dearth of comprehensive strategic planning acumen, inadequately constituted professional teams, and the conspicuous absence of adept thought leaders in the realm of the digital economy. These dimensions collectively underscore a critical impasse confronting the pursuit of effective industrial digital transformation.

In the purview of industrial digital talent cultivation, scant academic institutions have taken the initiative to establish dedicated curricular modules. It is imperative that a broader array of educational institutions glean insights from these pioneering pedagogical approaches, thereby proactively charting a trajectory that fosters industrial digital acumen. This mandates a concerted endeavor to synergize disciplinary intersections, professional curricula, and hands-on experiential learning, collectively engendering a cohort of adaptable students, primed to fill the niche of industrial digital transformation professionals. This orchestrated approach can substantially address the prevailing talent deficit obstructing the seamless realization of industrial metamorphosis and progression.

5.3 Insufficient training of innovative talents in the digital economy

China's digital economy is experiencing an epoch of accelerated expansion, emerging as a potent driver of economic advancement. Against the backdrop of this rapid trajectory, the inherent value of data components has evolved into a keystone of competitive advantage. The digital economy demonstrates a multifaceted developmental profile characterized by diversification, internationalization, variation, and individualization. This transformative milieu has engendered a plethora of novel business configurations and paradigms, manifesting through the reconstitution and amalgamation of industrial constituents. Instances include the sharing economy, the "stay-at-home economy," livestreaming commerce, digital currencies, and blockchain innovations. This novel tapestry of models and configurations augments the panorama of possibilities and prospects within the digital economy's domain.

At the nucleus of digital economy evolution lies innovation, an elemental factor propelling growth. Academic institutions hold a pivotal responsibility in cultivating a cohort of

innovative minds. Realizing this objective mandates a comprehensive mobilization of collegiate students' passion for innovation, galvanizing their ardor for probing the frontiers of the unknown, and nurturing creative ideation during their academic tenure. However, extant digital economy curricula within universities evince gaps in terms of fostering innovation: a dearth of distinctive majors, limited tailored educational modules attuned to novel business models, and a lack of pragmatic courses honed to cultivate inventive talents. In response to burgeoning trends and requisites in spheres germane to the digital economy, a paradigm shift is warranted. Innovative recalibration and enrichment of courses, integration of specialized electives, infusion of cutting-edge domain knowledge, and cultivation of inventive thought processes and pragmatic acumen collectively constitute a transformative impetus.

5.4 Private universities face challenges in the development of digital economy majors

China's private educational sphere encounters distinct challenges in fostering digital economy majors and nurturing proficient master's students. Private institutions confront impediments such as resource limitations, paucity of policy support, and competitive pressures when endeavoring to establish digital economy programs. Overcoming these hurdles necessitates heightened investments in human capital, material resources, and financial provisions to elevate the quality of training and research competence within digital economy disciplines.

However, as private universities progressively delve into the realm of digital economy programs, they are poised to narrow the gap vis-à-vis their public counterparts. A collaborative triad comprising the government, industry enterprises, and civil society assumes paramount significance in bolstering private higher education institutions' capacity to construct robust digital economy programs. Facilitating additional support and resources, incentivizing collaborative exchanges with public institutions, and collectively advancing the digital economy's educational frontier are pivotal pursuits. Concurrently, private institutions must continually elevate their educational standards and research prowess, with emphasis on enhancing faculty rosters, augmenting teaching quality, and proactively nurturing adept individuals capable of adroitly navigating the digital economy epoch, thus catalyzing the sector's developmental trajectory.

6. Conclusion

Since the Ministry of Education of China first granted universities the permission to establish digital economy programs in 2018, the digital economy major in China has rapidly developed. As of 2022, there are 68 universities offering such programs. Currently, schools offering digital economy programs in China cover various types of institutions, with many universities offering both undergraduate and graduate programs in this field. However, the development of digital economy programs in Chinese universities is still in the early stages. There is a high degree of consistency in the curriculum, but there is a lack of industry-specific characteristics, and employment directions tend to be concentrated.

In the future, the development of digital economy programs in Chinese universities needs to be accelerated to meet the individual development needs of students, the disciplinary construction needs, and the development needs of higher education itself. The future development of the digital economy major requires a balance between research direction and

disciplinary development, achieving an optimal combination of centripetal force and centrifugal force to improve and optimize the program's construction. In response to these conundrums, two salient propositions emerge: Firstly, advocating for comprehensive collaboration to establish a synergistic "core discipline + multilateral support" framework. A meticulously orchestrated digital economy curriculum encompasses economic, digital economy, digital technology, and experiential application modules. Resource constraints impel the exploration of interdisciplinary, inter-faculty collaborative mechanisms to harness collective resources and strengths, thereby galvanizing the consolidated development of diverse domains. Secondly, the steadfast cultivation of specialized majors geared toward fostering sector-specific experts assumes paramount importance. The broad-reaching demand for digital economy acumen pervades myriad industries, warranting tailored interdisciplinary curricula that seamlessly bridge existing institutional strengths to meet sector-specific talent requisites. Collectively orchestrating comprehensive collaboration while maintaining a steadfast trajectory toward distinctive program offerings empowers academic institutions to enhance the calibration of digital economy curricula, bolstering their quality and applicability. This concerted approach substantiates the cultivation of adept professionals primed to navigate the evolving digital economy landscape while offering students diverse academic avenues aligned with their unique needs. Moreover, forging robust ties with industry and governmental entities allows institutions to glean deeper insights into industry trajectories, ensuring that educational provisions align with prevailing labor market needs, thereby making substantial contributions to the digital economy's sustained growth.

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