

An Empirical Study on the Development Routes of Library Under the Cultural Digitization Strategy

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Abstract. With the rapid development of information technology, there is an emergence of the advancement in cultural digitalization and digital industrialization. By analyzing the implications of the value and technical routes of a cultural digitization strategy, the present study proposed a cultural digitization strategy that transforms the related works, knowledge and wisdom of cultural producers into quantifiable, traceable and tradable digital assets. Additionally, it promotes a more profound level of processing, including the processing and service of cultural resources, which further extends the supply chain of cultural digital resources, while promoting the integration and development within business sectors. This can assist the upgradation and transformation of the cultural resources to ensure an improvement of the digital service levels of cultural resources, along with stimulating new vitality norms of the cultural resources. Further, it can be a motivation factor to promote the creative development of a national culture. Libraries are cultural hub enriched with literature within diverse audience to drive the information circulation. The implementation of a cultural digitization strategy can effectively promote the transformation and upgradation of the library elements by providing a solid channel to focus on libraries as an institution resulting in strategic positions of cultural power in a changing global environment. By focusing on the key tasks and long term goals of cultural digitization, the active adoption and implementation of “enabling digital technology applications by integration and innovation” can be achieved.

Keywords. Cultural digitization; Library; Implementation lines; Development routes

1. Introduction

Over the last 5 years, with a rapid development of 5G/6G, artificial intelligence, AR/VA/MR, block-chain and other information technologies, and the integrated development of science and culture, there is a gradual emergence of cultural

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digitalization and digital industrialization. With the constant unlocking of the integration of cultural resources, there is a constant evolution of new forms of cultural industry and new scenes of cultural consumption. With an acceleration of the developments in the Chinese digital culture industry, cultural digitization has become a national strategy [1]. The digitization of culture is an important means for the “creative transformation and innovative development” of culture, and it is considered an appropriate route to build a strong socialist culture. Additionally, it enables the support in the development of a digital economy, thereby building a cultural power and supporting the rejuvenation of China as a nation. As a cultural place for the public to consult literature and obtain information and spread knowledge, there is a need to develop high-quality libraries that can adapt to the general trend of cultural digital development, and strengthen the development of new cultural formats. Currently, there is a need to transform and improve the traditional cultural formats, enhance the supply of high-quality digital cultural products, and create sustainable digital cultural samples by the libraries. These issues are some of the practical subjects that need to be contemplated by the librarians.

2. Connotation, value and technological route of cultural digitization strategy

2.1 Evolution process of a national strategy ascending with cultural digitization

Tracing its origin, China’s cultural digitization construction work started since past ten years. In 2012, the Outline of Cultural Reform and Development Plan during the 12th Five-Year plan proposed the implementation of the construction project of “cultural digitization”[2], pointing out that the comprehensive digitization of cultural resources, cultural production and cultural communication should be promoted to boost the integration of culture and technology. The need to promote the digitization of cultural resources has also been drafted into the report of the 18th National Congress of the CPC [3] in the same year. Since then, it has opened a new stage, wherein the culture and technology continue to accelerate the integration and development process. In 2019, the Chinese Ministry of Science and Technology and other six departments jointly issued the “Guiding Opinions on Promoting the Deep Integration of Culture and Technology”, that presented clear guiding opinions on the deep integration of culture and science and technology in key fields such as industrialization, innovation system construction, technology research and development, big data construction, etc.[4]. In 2022, the “Opinions on Promoting the Implementation of National Culture Digitization Strategy” was officially issued by the two State Offices [5]. A chapter on “Culture” was deployed in the Report of the Party’s 20th National Congress that clearly proposed the implementation of “National Culture Digitization” strategy and strategy driven by major projects in the cultural industry. Since then, China has ushered a new track for the development in cultural digitalization. The 14th Five-Year Plan for National Economic and Social Development and the Outline of 2035 vision goals clearly put forward that by the end of the 14th Five-Year Plan period, China will build a multidimensional cultural service system featuring a complete network infrastructure, integration of online and offline services, and full coverage of cultural services [6]. It further encompasses the acceleration of the development of new cultural enterprises, innovation of cultural business forms and updating the cultural consumption patterns [7]. Also, it focused the development and strengthening of the online audio-visual

platform, digital publishing, creativity and entertainment, and online performance. This initiative can improve the level of public culture digitization, accelerate the digital layout of the cultural industry and promote science and technology to empower the cultural industry, in order to ensure a cultural big data system of quick link, key integration and comprehensive sharing by 2035 [8].

In the last decade, the Chinese culture digitalization has comprehensively evolved and developed, and new formats, new scenes, new ideas and new models based on the innovations in digital technology have been continuously integrated into cultural life, cultural production and cultural ecology with fruitful development [9]. “Implementing National Culture Digitization Strategy” was a prodigious decision concerning the strategic arrangement made by the Party Central Committee to grasp the direction of digitization, intellectualization and network development. It also enabled an effective approach to promote the mutual interaction, mutual promotion and coordinated development of cultural industries, cultural undertakings and cultural forms of business [10]. The ‘data’ is an important factor in the production and development infrastructure, which has become an important focus of the Chinese national policies. With the evolution of the unstoppable and irreversible “digital age”, the “digital survival” is considered to be an important reality faced by the human race [11]. There is a need for increasing the participation and contribution of the digitization of culture. The “Implementing the Strategy of Digitization of Cultural Industry” is a strategic plan made by Communist Party of China based on the reality that the digital information industry can promote the rapid development of the society and economy. It is also a strategic choice to realize the 2035 vision target plan and the great rejuvenation of the Chinese nation.

2.2 Connotation of the cultural digitization

2.2.1 Connotation of digitalization

With the development of the Internet, digitization and informationization go hand in hand. The essence of the digitization process is the process of converting real things from digital equipment to analog signals for processing, storage, transmission or processing of binary code; introducing the computer to uniformly process into numbers or data through model converter; and then re-constructing these numbers or data into appropriate digital models. Digitization emphasizes the refinement and accuracy, truth and science, norms and standards, efficiency and benefits, and global and systematic norms. Digitization also greatly improves the product quality, shares information resources, and stimulates people’s pursuit of excellence in response to the product efficiency. Application of the digitization methods promote the advancement of science and technology and foster an improvement in the management level of all social strata. In the information age, the digitization of information is increasingly valued by researchers. All aspects of the people’s daily life can be integrated using digital technology and can be “digitized”. As a result, the concepts of “digital economy”, “digital humanity” and “digital survival” continue to prevail. The application of digital technology has incubated a large number of new industrial forms, and the creation of new value by digital technology has promoted the emergence of new industrial models. Enterprises with new models recognized by the market have rapidly gathered into new social industries. “New business forms - new models - new industries” is the basic logical path for the cultural digitalization to promote the industrial development [12].

2.2.2 Connotation of cultural digitization

Industry + Digitalization present the implication of digitalization in the four links of the economic society, *viz.*, production, distribution, exchange and consumption. Digitalization profoundly affects the different forms of the industrial organization, efficiency of the industrial output, and structure of the human society and economy. It has huge subversive innovation ability for traditional industries and creates a grand economic size. “Cultural digitization” is a vivid practice of “digitalization” in the cultural industry. It refers to the use of modern video and audio coding, intelligent algorithm, digital copyright, network communication and other information digital technologies to store, create, transform, spread, consume and trade the existing various “non-digitalized” cultural resources to form a new “digital” culture. It can realize the upgradation of the cultural content, cultural transmission and cultural consumption mode, and assists the innovation of the existing cultural ecological system for the social and economic benefits. Apart from enhancing the process of cultural digital application in the process of digital display and integration of cultural resources, it also the process of amalgamation of national cultural big data system by using digital technology to serve the national cultural production, consumption and transmission channels [13]. Cultural digitization is a kind of sharing and service mode with interactivity, experience and innovation. Therefore, cultural digitization is not a single technical transformation of “using numbers to give wisdom”, but is an iteration and innovation of the integrated digital cultural system.

The development of the digitization of Chinese culture has three stages, *viz.*, the stage of production and consumption of cultural content in the pure Internet mode; the two-way integration of traditional culture and the Internet; and the offline and online integration and application of highly developed digital technology. Currently, people look forward for the digitalization of the whole process of cultural “creation, production, marketing, management and service”, so as to enjoy the cultural feast of excellence and get the ultimate spiritual pleasure. Cultural digitization is a stage and process of development in which technology, culture, humanities and economy constantly integrate, evolve and develop. From the technical aspect, cultural digitization should include the following contents: technology platform of hardware facilities (VR/AR, AI, spatial holographic projection, film and television digital shooting, cloud service platform for data processing, etc.), software facilities of file content creation and information processing (AI audio and video production software, 3D special effects production software, intelligent graphics generation software facilities, etc.), information flow and generated content of cultural digitalization, and human digital culture consumption pattern. With the development of cultural digitalization, it is moving forward to the digital and intellectual stage of culture, and the stage of cultural content digitalization is moving forward to the stage of cultural industry digitalization [14]. The hyper-realistic function of digital culture has given rise to a digital cultural virtual person and immersive virtual environment. Cultural digitization has fostered the cross-border integration of cultural travel and literature, and enabled them to be used in the related industries of society and economy, thereby increasingly forming a national cultural big data system with three-dimensional coverage, logical correlation, key integration and comprehensive sharing.

2.3 Value function of cultural digitization

The world is vibrant because of its interconnection, and the value of data is available and deployed around the corner and around the globe. Data factors provide an important multiplier effect on the capital, labor, technology, land and other production factors. In the digital information age, big data has become a new driving force for high-quality social leapfrog development. In the era of digital economy, data is an important factor of production, as well as, a basic strategic resource of the country [15]. The essence of cultural digitization is to correlate the data in the cultural field and continuously transform the related data containing the knowledge and wisdom of artists into tradable, traceable and quantifiable cultural assets. The core driving force of cultural digitalization is to promote the effective transformation and continuous development of the value of cultural assets and constantly activate the consumption power and source vitality of the cultural resources. The emergence of digital culture has rapidly changed the commercial space of retail, tourist attractions, mass consumer goods and other industries, and prompted significant changes in the service, marketing and production mode of many industries. Presently, life scenes such as e-commerce, live streaming, virtual human shopping guide, virtual human hosting and immersive visiting experience have become very common. The deep integration of digital culture and many industries continues to deepen and promote the iterative upgradation of many industries. Currently, the people's demand for digital culture shows a "blowout" trend. Furthermore, digital culture has become an effective way to meet people's high-quality spiritual and cultural needs. Cultural digitization enables the real economy and has become an important engine to promote the optimization and upgradation of the social and economic industrial structure. Cultural digitization is an internal requirement in promoting the high-quality development of the cultural industry. The national strategy of cultural digitization profoundly changes the overall structure, output value and industrial form of cultural industry. In addition, it influences and promotes the development of the cultural industry and social related industries. Thus, cultural digitization is an important starting point for China to achieve the goal of building a strong culture in 2035, and it is also a systematic project to achieve digital cultural governance under the leadership of the CPC [16].

2.4 Implementation routes of cultural digitization

The practice of cultural digital production, consumption and communication has been carried out in China for more than decades. In the digital strategy of China's cultural industry, it has been clearly proposed to build a "cultural big data service system". In this system, it is necessary to build a "national cultural private network" relying on China's radio and television network, and strengthen the construction of "national cultural big data cloud platform" relying on the national radio and television network. Furthermore, it also strengthens the construction of China's "digital cultural production line", promotes the integration of information technology and cultural elements, effectively integrates cultural industries and cultural undertakings, and fosters a series of new social and cultural business forms in China. The overall structure of the national cultural "big data system" can be summarized as two sides of supply and demand + four terminals [2], where the two sides of supply and demand refers to the demand and supply side of cultural digitalization, and the data generated in the consumption link of the digital culture field is called the demand side of digital culture. The data sources

that people randomly pick from the national cultural big data system database is called the Supply side. The ‘four terminals’ include the resource terminal, production terminal, consumption terminal and cloud terminal of cultural digitalization. Libraries, museums, newspapers and other sections and units that keep or collect cultural resources form the “resource terminal” of cultural digitization. All the institutions that collect process and produce data for cultural resources make the “production terminal”. The institutions or places of digital culture consumption form the “consumption terminal”. Finally, the cultural data service platform or service center that serves the release, transmission, storage and transaction of cultural digitalization is called the “cloud terminal”. For example, cloud service platform and national cultural private network are both available via the “cloud”. In fact, institutions as public cultural resources can sometimes be regarded as both the “resource terminal” and the “production end” of cultural digitalization. “Cloud” is the link connecting the other “three terminals”. “Cloud” can realize the “interconnection” of data in various industries and fields and gathers rich and massive big data resources, which is the key for the big data to play the “magic” role.

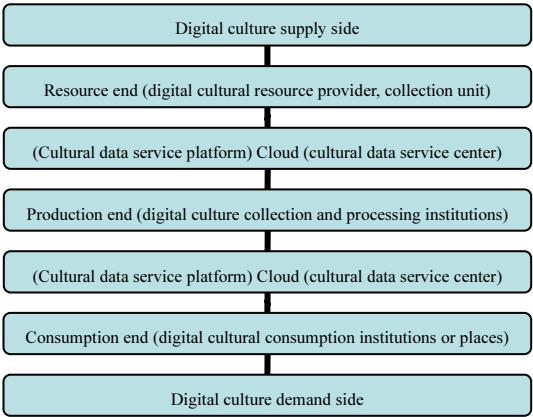


Figure 1. National cultural digitization framework system

Interconnection is the key for the successful implementation of the national cultural digitization strategy [17]. Chinese culture has a long history of more than 5,000 years. The cultural attributes and the elements of each unit, department or platform are the “gold hills”, but they still remain as the isolated islands of information. The major hurdle is faced in the extraction of cultural symbols and elements with inheritance value and to make overall use of the existing or under construction cultural achievements to create data with unified standards, scientific classification and labeling standards. Subsequently, under the support of “computing power” and “algorithm” can be correlated to the large database of Chinese culture and transformed into cultural production factors. This is the goal of implementing the national cultural digitization strategy.

3 Relationship between cultural digitization and library development

Digital cultural resources have become an extremely important factor of production under the condition of digital information. Cultural digitalization is a great historical

process of the development of today's society. Cultural digitization converts the related works, knowledge and wisdom of cultural producers into quantifiable, traceable and tradable digital assets. It promotes the deep-level processing and service of cultural resources, extends the supply chain of cultural digital resources, and promotes the integration and development of different sectors. Cultural digitization strategy penetrates the whole process of cultural construction by promoting the upgradation and transformation of cultural resources, improving the digital service level of cultural resources, and stimulating the new vitality of cultural resources. Thus, it is an inspiration to promote the creative development of the national culture. Cultural digitization strategy is a great opportunity to realize the great rejuvenation of the Chinese nation. China has experienced the development process of "digitalization of cultural resources - digital application of cultural industry - operation of national cultural data system", and will soon adopt the new business model of integrated development of information technology and culture in a compound three-dimensional way. The "meta-universe" full intelligent life style of symbiosis of the virtual and real will be soon witnessed. Development of cultural digitization also truly presents the development of the new 'digital economy' from scratch. It is an inevitable result of modern information technology to promote the development of productive forces, and the inevitable result of cultural digital technology to promote the integration and development of other industries. In today's information age, mankind has gradually entered the era of "digitalism" or "intellectualism". The main contradiction of society is the "digital divide" between the demand for information and cultural digital resources and the lack of data in the process of social material production. The process of cultural digitization is a process in which human beings form a systematic and efficient cultural digitization system in the production, consumption and dissemination of cultural resources. It is a process in which human beings actively consider shortening the cultural digital gap. In order to stand at the forefront of the global information development, relevant cultural industries must fully adopt the existing facilities and networks, actively utilize the most advanced digital technology for resource integration, and promote cultural creative transformation and innovative development. This is not only a new growth point of the Chinese economy, but also a new level of the development of human culture.

Library is a cultural building with rich documents, a cultural market with rapid information circulation, and a cultural island with flexible spatial functions. The library itself is a culture with profound connotation, which is developed by the progressive inheritance of the past, the present and the future. It stands by the fusion and reflection of things (the library), people (readers and librarians) and gods (the wisdom and spirit carried by the collection of documents). With a development of the society, there is an ever-increasing importance of the library in the people's mind. There are several proverbs in this regard, including "Library is the door to knowledge", "library is a university without walls", "library is not only the organ of cultural crystallization, but also the organ of cultural propaganda", "one more library, one less prison". As a social and cultural institution that collects, keeps and arranges books, the library's mission is to provide the people with all kinds of published text, images and audio information freely and without reservation. This helps to create a good environment for the people to enjoy reading, improve their study and conduct scientific research. The library naturally bears the sacred mission of providing basic conditions for scientific research, independent decision-making, lifelong learning and cultural development of individuals or social groups, and naturally becomes a "growing organism". From ancient library to

modern library, from modern paper library to modern digital library, the emergence of modern electronic library and network digital library is closely related to computer network technology, communication technology, and science and information technology. In the age of information data, people have higher requirements of reading in the library for “open environment, convenient service and efficient resource sharing”. For decades, libraries have adhered to the service concept of specialization, individuation and digitalization by continuously building multifunctional electronic reading room, carrying out online exhibition activities, storing a large number of documents and video materials, and constantly strengthening the construction of information resources. In the digital age, cultural space will enter the new mode of “third space” from the compound platform, and “virtual space” will become the “door” through the real physical world. Reading is no longer a process of limited knowledge acquisition, but a process of “tasting culture, edifying sentiment and enlightening mind”. People are increasingly demanding the immersive intelligent cultural space of the “condensed visual elements integrated with scientific and technological features, complex and multiple functions, and conveyed humanistic atmosphere” in libraries. At present, the construction of Shanghai Lingang Digital Science and Technology Library with digital immersion experience as the core is under way. By then, the library will provide readers with complete scientific and technological information and full sensory interactive reading experience with smooth international cooperation, which will be a model and benchmark for the construction of new digital libraries.

In the age of digital revolution, all cultural industries are facing great survival challenges and great new opportunities for development. In the new era, in order to fulfill the sacred mission of leading and promoting the reading of the whole people, there is a need to adapt to the new development and changes, open a new situation in the changing situation, and nurture new opportunities in the crisis. Libraries should deepen their understanding of the cultural digitalization strategy, and firmly grasp the historical opportunity of the new round of information revolution and industrial transformation. Further, they should strengthen the digital construction, actively expand the “Internet plus” and “smart plus”, apply mobile Internet, big data, Internet of Things, block-chain and other technologies, and empower the library supply chain. Enhancing the library’s response, perception, connection and operation capabilities in the construction of “national cultural big data service system” can provide a more and better efficient resource allocation. The implementation of cultural digitization strategy can effectively assist in the promotion of the transformation and upgrading development of libraries. Additionally, it provides a solid channel and assurance for the high-quality development of libraries, and paves a path and space for the development of libraries. The implementation of the national cultural digitization strategy can greatly promote the digital transformation and service innovation of libraries [18]. In view of the implementation plan, specific tasks and strategic objectives of “culture digitization”, the library has ushered in an unprecedented significant development opportunity. The library must keep up with the present issues, uphold the innovative mentality, and maintain the forging attitude. In addition, libraries should constantly strengthen the digital construction by using advanced digital technology, and accumulate and transfer the useful and novel information resources. Thus it should “run fast with big steps when it is certain and practice with small steps when it is uncertain”. There is a need to find a way to transform and develop this cultural digitization strategic projects that contain an infinite wealth and development space.

4 Development path of library under the background of cultural digitization strategy

4.1 Enabling technology and Upgrading the digital library technology application

With the rapid development in the network, communication and computer technology, “digital library” - a member of the digital family is known as one of the main information industries in the 21st century. The library integrates different digital technologies like information compression, optical character recognition and digital scanning to establish a distributed network resource database structure model. In the construction of cultural digitization, the basic requirement is to digitize all the existing paper documents and convert such documentation into electronic documents which is recognizable, retrievable, understandable and queried by computers. Subsequently, it can be applied to library database collection, storage and processing. Most libraries have employed advanced digital management system in the past, and purchased professional digital reading terminal equipment, including electronic book borrowing machine, self-service book borrowing and returning equipment, and digital resource collection equipment. However, these expensive digital management systems have not been effectively used due to the lack of visualization system, complete information digitization supporting equipment and related skilled information technology. This seriously hinders the depth and development of library digital construction. No matter how strong the construction of library information digitization resources or the construction of library think tank resources are to realize digitized, humanized and intelligent literature retrieval service, it is necessary to rely on advanced hardware equipment to upgrade a library’s digital technology application system. This includes display screen, switch, network adapter, database management software, general or special application software and other software facilities. The library should develop and establish a corresponding digital application, management and service platform according to its own library management. Libraries should vigorously introduce system software, build a service platform by using data analysis system and visualization system, use AI, big data, cloud computing and artificial intelligence to build a library system management. It should be followed with a service system through resource sharing, monitoring and intelligent scheduling, and creating a digital library with “data-based management”. There is a need to improve the library’s ability of information mining, preservation, efficiently transmission and sharing of knowledge. This can help to realize the multi-content and high-quality cultural service supply of the library and meet people’s spiritual and cultural needs at a higher level.

Cultural digitization is a powerful means to promote the innovative and integrated development of social resources. As the distribution center of information knowledge and human civilization, it is necessary to enhance the construction of library digitization. According to the requirements of the construction of “National Cultural Big Data Service System”, the library should comprehensively sort out all kinds of information resources according to the principle of “logical correlation and physical distribution”. Subsequently, it should scientifically classify them according to the standard marks of national cultural resources, and complete the collection, storage, distribution, transmission and processing of all library materials and data in the large system of national cultural private network. The establishment of library database in accordance with ISLI (International Standard Association Identifier for Information and Literature), initiated by China, facilitates the formation of Chinese cultural resources

database. Based on the innovative and iterative development of digital technology, libraries should rely on the national cultural private network, build a data service platform, provide digital culture search and query, matching transactions, identity analysis and other services. This can assist in improving the digital service and creating a batch of first-class digital literature resources and culture, thereby realizing the continuous appreciation of the collection resources. As a cultural highland, libraries should strengthen the comprehensive and collaborative application of information technology, such as mobile Internet and communication technology. They should strive to use new information technologies such as artificial intelligence technology to find a wide and deep space for multi-type and multi-level digital application, and form a mechanism for digital innovation technology to augment the cultural integration and development. Also, they should form a driving force for the digital culture production, consumption, and sustainable innovation and development. To upgrade the application of digital technology in libraries, there is a need to strengthen the integrated application of 3D engine, virtual reality engine, digital human engine and other technologies. These can strengthen the integration of library information resources, improve the function of guidance, access and service of libraries, and give full play to the resource advantages of libraries in the ecological chain of “cultural communication”.

4.2 Integration and innovation to consolidate the new library digital infrastructure

In recent years, new forms of digital culture such as webcast, short video and virtual environment have increasingly become people's way of life. Under the pressure of innovative information integration technologies such as AI, AR/VR/MR and FNT, information digitization has profoundly affected the whole process of human life in multiple fields. Digital empowerment of cultural heritage has led to a multi-dimensional immersive continuous experience [19], and the deep integration of information digital technology and culture will reshape the new form of social development. Science and technology are the primary productive forces, while network information technology is the key means of the digital construction of a library. Libraries must conform to the developing trend of the digital age, and thus develop new level of digital infrastructure on the premise of ensuring continued stability, scalability and compatibility of various library digital platforms. China's new digital infrastructure includes VR, AR, MR, virtual reality technology, Internet of Things, industrial Internet, artificial intelligence, integrated computing and other infrastructure [20], which is an important basis for the national digital construction. AR/VR/MR fosters immersive cultural experience, while the Internet of Things technology realizes the real-time simulation experience of cultural environment. The upgrade of artificial intelligence realizes the intelligent cultural experience. The application of digital technology reconstructs the relationship between “people, things and fields”, and promotes the iterative upgrade of cultural consumption. Integrated information technology provides feasible strategies for the utilization, dissemination and protection of library collection cultural knowledge.

The new digital infrastructure can create tactile, rendering and immersive cultural products that can easily convert the complex data back and forth to realize the integration of digital resources. It can enable in-depth and high-quality development of cultural products to create a new environment for data circulation, and build a cultural lending system with supply and demand matching and efficient circulation. At present, audio-visual resources such as video and audio in a library only provides a

two-dimensional display mode. If three-dimensional virtual reality literature can be generated with the help of virtual reality technology to make these precious literature resources “alive”, the preservation and utilization of resources can be better realized. The library should adapt to the development trend of digital technology, actively use 3D digital, VR, AR and MR to accurately locate the location of books. Use of artificial intelligence and cloud computing should be enhanced to strengthen the underlying algorithm of the library. The block-chain, artificial intelligence, digital twin and other technologies can be employed to enable the contents, images and relics of library books to be presented in a multi-dimensional and three-dimensional way with realistic pictures. Finally, a “meta-universe” library can be created that integrates the virtuality and reality. There is a need to employ new virtual digital infrastructure to strengthen the collation, organization and indexing of library information, build an orderly and standardized digital information base, convert electronic books, image materials and information materials into 3D format, build a three-dimensional data information management system, and complete the basic work of digitized and digitized library literature information. In addition, it can realize the digital text description of library literature information, realize the upgrade and transformation of traditional library resource information and form a new information library. Alternatively, the “human-computer interaction” information technology can be used to extract the information from cataloging, circulation, classification, and collection, and digital processing can be enhanced by three-dimensional reconstruction, digital twinning, Internet of Things and other technologies. Readers can move into or join the virtual space with virtual identities, thereby realizing the dialogue scenes between readers and characters in the book across time and space, and allowing readers to “personally visit” the world in the book. Meeting the “He, she, it” in the book forms a vivid and flexible intelligent interactive interface for the reader. It realizes the readers’ intelligent operation and three-dimensional visual desire in the link of literature retrieval and information browsing. Moreover, it realizes the readers’ dream of convenient operation of the super-space-time simulation scene, so that the reader enjoys multi-dimensional dynamic and materialized reading and greatly reduces the distance of readers reaching “knowledge”. Furthermore, it enhances the appeal, attraction and communication power of library collection resources, for the protection of Chinese culture, cultural inheritance, cultural transmission to fly high with wings.

4.3 Expand applications and improve library digital services

At present, the new forms of digital culture consumption show the characteristics and trends of “enhancing the senses, emergence of new consumer products, and creating chained wealth”, and new service industries such as “related intellectual innovation” keep emerging. Libraries should actively link the scattered resources of different departments to connect the databases in different fields, and combine audio, pictures, text and other data in different forms. They should vigorously promote the timely use of library related resources on the cloud, and promote the deep mining and wide dissemination of collection resources. To make full use of digital resources and establish green ecology of digital resources, libraries should try their best to use digital technology to strengthen digital communication of all paper resources in their collections through text exhibition, picture display, audio and video playback. This can help to realize permanent communication and preservation of library digital resources that are simultaneously displayed offline and online. By combining online games,

online animation and webcasting with the creation of new library digital industries, the library digital resources can be widely disseminated through terminals, so that people can conveniently enjoy the excellent cultural achievements of the collection without time and space restrictions. This leads to an improvement in the level of library digital reading and communication, and promotes the structural reform of library digital supply side. There is a need to promote the digital integration of library collection resources in all forms, processes and domains. This can be achieved by building the library digital resource database and building immersive new scene of library cultural experience. Improving the library computing service system and enhancing the supply capacity of library digital culture can lead to development of the universality and coverage of library digital services. Also there is a need to improve the digital service level of library resources, and realize people's desire for the digital culture of fast sharing and rendered experiences in the library.

Integrated technology can be adopted to build a library "cloud" resource data system, which can enrich the means of protecting library collection resources, actively link or associate with other data sources or cultural industry entities, and lay a solid foundation for further mining the value of library data resources. At present, many libraries are embarking on the "digitalization" project, but their digital development is only reflected in the network communication and sharing of the collection materials such as video and text, rather than "transferring the traditional content production and business development positions to the digital platform to activate the digital momentum of the library" [21]. In the process of digital construction, the library can actively recombine, deconstruct and create new 3D/4D works that are "constantly surprised and never get used to" by reorganizing, deconstructing and creating the document resource elements scattered around the corners of the library. This includes the text data and the image data, historical biography, text interpretation and graphic design of a certain theme (such as - *A Dream of Red Mansions*). Subsequently, it can cooperate with related cultural enterprises to create a new cultural consumption industry with wealth index. The library should take "serving cultural communication" as its core value and promote the development of new forms of business such as "immersive reading, intelligent library and meta-cosmic library" with its own cultural elements and digital elements of information. Also, it should promote the internal and external interaction and transformation of collection resources, strengthen the cooperation with cultural enterprises, and expand new scenes of consumption of digital cultural exhibitions with different themes. To create a batch of first-class digital culture consumption service products, the library should truly build into a "regional network center, nationwide reading education center, information and a literature resource service center". These steps can solely promote the library's excellent digital culture to the world in a deeper, more extensive and wider scope, and illuminate the development road of Chinese culture digitalization.

5 Conclusion

With the rapid development and strong drive of digital technology, the digital development road of Chinese culture is moving towards an important, efficient and intelligent direction. As one of the strategic positions of cultural power, the library should keep pace with the changing times, and focus on the key tasks and long-term

goals of cultural digitalization strategy. There is a need to increase the digitization process of collection resources, increase the formation of library digitalization information flow, content flow and service flow. This will assist in highlighting the unique resource advantages and professional contributions of library in the construction of system of national cultural big data. The library should actively face up to the new situations, new technology and new problems in the process of digital development. It should strive to imbibe the technology empowerment, integration and innovation ability and application ability of the library's digital construction. This can provide more practical reference value for the digital development of Chinese culture, which is a vital expectation and requirement of the national cultural digitalization strategy.

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