



A Study on Productive Preservation and Design Innovation of Taoyuan Wood Carving

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Abstract. Taoyuan wood carving—a gem among intangible cultural heritages in Hunan Province—is deeply important to the region’s folk culture. However, it is one of the folk arts that faces an urgent risk of extinction due to a sharp decline in sales, lack of a new generation of “Taoyuan artisans,” and a decline in teaching skills to younger generations. Once it is lost, we will not be able to revive it. Hence, its study should facilitate its revitalization through social innovations and assist its adaptation to contemporary society, as well as integration into modern life. This article adopts the perspective of “productive preservation” in the study of Taoyuan wood carving, building a Taoyuan wood carving intangible cultural heritage knowledge platform through social innovation to digitalize and preserve intangible cultural heritage resources while also helping Taoyuan wood carving continue to shine in the modern commercial environment as a form of art by commercializing its achievements.

Keywords: Taoyuan wood carving · Productive preservation · Design innovation introduction

1 Introduction

Taoyuan woodcarving (TWC) is a form of folk wood carving rooted in the Yuan River and Li River basin, located at the tail end of the Wuling mountain range. The craft was named for the fact that most of its artisans are Taoyuan artisans from Taoyuan County. Taoyuan wood carving—a gem among intangible cultural heritages in Hunan Province—is deeply important to the region’s folk culture, because it bears a rich cultural memory, as well as the sentiments, life, and faith of this region’s people. However, it is one of the folk arts that faces an urgent risk of extinction due to a sharp decline in sales, lack of a new generation of “Taoyuan artisans,” abandoned workshops, and decline in teaching skills to younger generations. Previous research indicates that in the 1950s, there were more than 100 wood carving artisans in Shejiaping Village alone; however, there are now less than 30 in all of Taoyuan County. Wood carving requires both physical and mental labor. According to surveys [1–4], the majority of the artisans are in their sixties. Their declining physical strength and eyesight make it difficult for them to continue their work.

Taoyuan wood carving, as an intangible cultural heritage, is continuously carried forward by humans. Once it is lost, we will not be able to revive it. Hence, its study should facilitate its revitalization through social innovations and assist it in adapting to the time changes, as well as integrating it into modern life.

2 Related Work

Current studies on TWC focus on two main aspects: its history and artistic style—namely, the origins and connotations of forms and patterns in wood carving articles—and its culture. The former focuses primarily on studying and analyzing forms and pattern designs, as well as their potential use in furniture and other home applications, substantiated by fruitful results of connotation analyses of wood carving patterns. The latter mainly focuses on history, sociology, and literature. There are several notable studies on the historical origins and artistic styles of this craft: Wenchao Du studied and explored the cultural origins of wood carving and its artistic characteristics by analyzing different themes, proposing methods for its application in interior design [5]; Boxiong Lu studied the origins and developmental course of TWC, specifically exploring the themes, techniques, and connotations of representative works [6]; and Xiaoli Xie studied sculptural styles based on the materials and forms of Taoyuan wood carving, as well as its historical and cultural backgrounds [7]. The cultural aspect of research on Taoyuan wood carving has been explored by Yuehui Qi, who believed that TWC is a crucial folk-art resource and source of power for the construction of Changde's unique city culture [8]. Ping Liang adopted socio-anthropological methodology and studied 52 TWC artisans from 10 counties and urban districts in Changde City, Hunan Province through field research [9]. He researched their basic information, trajectory and mode of inheriting skills, current conditions of their artworks, current income levels, and other social activities, aiming to analyze TWC artisans' living conditions and forms of skill inheritance; this study intended to propose plans to pass on the intangible cultural heritage of this craft. Xiong Zhao compared the subject matters and techniques of Taoyuan and Huxiang wood carvings [10]. Through the lens of a shared origin between Xiang and Chu cultures, he studied the distinct cultural connotations of Huxiang wood carving.

TWC has over two thousand years of history as a folk art rooted in the Yuan River basin in northwestern Hunan Province. Nevertheless, under the pressure of market economy and modern industry, this art has been gradually declining for two primary reasons: First, the wood carving culture that accompanies the traditional agricultural lifestyle can neither keep up with the changing times, nor integrate into modern life; second, methods by which artisans pass on these skills are very fragile. It mostly relies on one-on-one teaching from masters to apprentices or among family members, with high risks of interruption or variation. Moreover, it is passed down through family lines as a marketable skill. Targeting the problems identified above, this study has two implications. First, from the perspective of the productive protection of an intangible cultural heritage, TWC must adapt to the needs of modern time, generate profit, and develop into an industry to promote its continuity and development. Therefore, there is theoretical significance for research that contributes to a knowledge platform and

sharing database for TWC and encourages the sustainable development of local cultural resources through design and social innovation. Second, on the basis of preserving the original culture and unique artistic characteristics of TWC, it is of value to research to effectively transform the craft from an intangible cultural heritage into products and services through business model innovation and support for the preservation, promotion, innovation, and industrialization of traditional culture in northwest Hunan.

The research presented above mainly focused on the artistic achievement and survival status of TWC without deeply exploring how to protect this craft. Hence, this article adopts the perspective of “productive preservation” in its study of Taoyuan wood carving, building a Taoyuan wood carving intangible cultural heritage knowledge platform through social innovation to digitalize and preserve intangible cultural heritage resources while also helping this craft shine in the modern commercial environment as a form of art.

3 Research on the Intangible Cultural Heritage (ICH) of the Taoyuan Woodcarving Craft (TWC) from the Perspective of Productive Protection

This study adopted an artistic anthropological method when dealing with the issue of TWC’s productive protection. In the early stage of the study, substantial research of print literature and actual artifacts were conducted. The findings obtained from these processes comprise the basis of our research. These were supplemented by field investigation methods adapted from anthropological research, such as direct and participatory observations, as well as structured and non-structured interviews. Research group members conducted systematic field investigations on the ICH of TWC to understand the population structure, production methods, consumption patterns, and social organization of the target villages. The researchers also explored the subject matter together with villagers of Taoyuan County and local TWC artisans who are non-familial inheritors of the craft to ensure that the designers identified problems with the inner perspective of the cultural holders and to find effective ways of innovating within that specific cultural ecosystem. Figure 1 shows the TWC field investigation site.

3.1 Field Investigation of the TWC Artisans

More than 50 inheritors of TWC skills from 10 county areas in Changde City were surveyed; data were gathered on their general circumstances, apprentice pedigree, method of learning the craft, current status of their craft, income, and social activities. From the findings, the first issue identified was the small number of practicing craftsmen [11]. They are advanced in age and rich in work experience, but the structure of their teams lacks rationality. In the 1950s, there were more than 100 woodcarvers in the Shejiaping Township of Taoyuan County alone; now, the entire county has fewer than 30 artisans. The average age of the artisans interviewed was 54.7 years old, 17 of which (32.7%) were over 60 years old. Of the 4 under 40 years old, 3 had left to work as migrant workers elsewhere [12]. Woodcarving involves both physical and mental

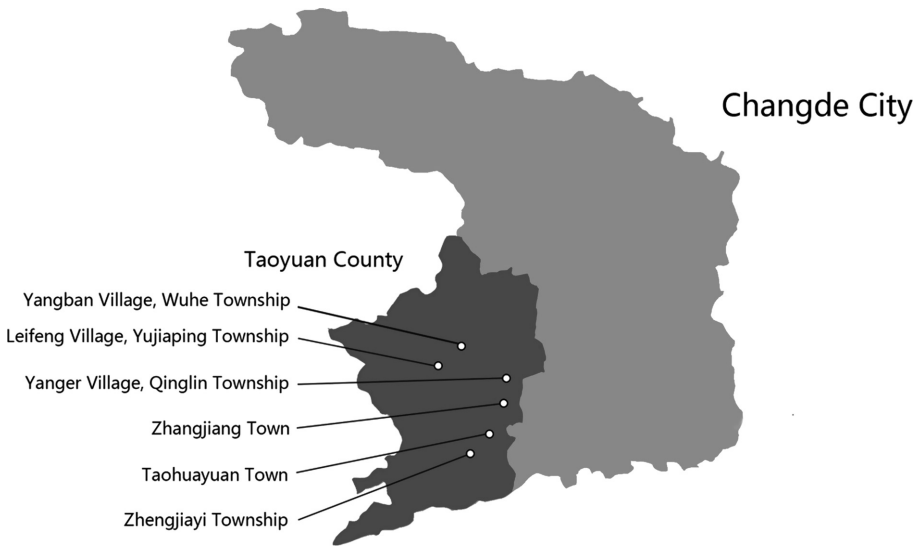


Fig. 1. Map of the TWC field investigation site

work and demands meticulous attention to details. Generally, craftsmen over 60 years old lacked the competence required for the work due to weakening physical strength, declining faculty of memory, and blurred eyesight. Most of them began learning the craft early in their lives: 13.5% of them had been in the trade for more than four decades, while 71% of them had worked for more than three decades. Despite their weakening physical states and their meager incomes, they struggled and persisted out of their deep passion for woodcarving.

The second issue was the collapse of the apprentice system through which the masters passed down their skills. There were very few apprentices. It was difficult to pass down interpretations of skills, and team succession was not implemented. During the agricultural era when transportation was inconvenient and information was lacking, the main method of passing down folk arts was the father-son relationship at home or the master-apprentice relationship in the workshop. In the age of informatization, the population's level of integration and mobility had accelerated. People's lifestyles, production methods, consumption awareness, and attitudes toward life had also changed. These had severely affected the system of passing down handicraft skills among blood relatives, family members, in-laws, or locals from the same village. Among the interviewed artisans, only a few had taken over the trade from their father. Of the woodcarvers, 75% had not trained any apprentice in the past two decades, and only three of them had apprentices over the past 15 years [13]. This was because the general population believed that they could not earn much from learning a craft and that future prospects of the trade were bleak. Young people preferred to select their own careers and be migrant workers elsewhere. Another reason was that the artisans felt that "the process of training apprentices is time-consuming and laborious, and they would leave after mastering the skills." Separately, some artisans insisted that

apprentices must be family members who are related by blood, as they did not want the skills to be passed to outsiders. Various factors had led to the severe shortage of young people engaged in the folk art of TWC, leading to a situation in which there was no team succession planned. There is a worrying trend that the craft would disappear in the future if it is not passed down continuously.

The third issue identified was the sluggish market demand and the resulting lack of business, meager incomes, and team instability. During the Qing Dynasty and the era of the Republic of China, whenever the people of the Yuanli Watershed or their children got married, they would commission TWC artisans to carve decorations for the house and prepare dowry items. These included the *qiangongchuang* (千工床), a marital bed that requires thousands of craftsmen to make; *wangongjiao* (万工轿), a bridal sedan that takes craftsmen tens of thousands of hours to complete; and *shilihong jiazhuang* (十里红嫁妆), which refers to the bride having so many dowry items that the procession carrying these stretches for several kilometers. Even those from lower-income families would hire the artisans to make simpler items with less ornate carvings. In the industrial age, furniture items that are mass produced by machines on a large scale have multiple design options and varieties. These items quickly monopolized the market with their low prices, causing TWC—which relies on the patronage of locals from the rural villages—to lose its unique niche and avenue of survival.

A survey conducted at Huangfengping Village in Qihe Town of Taoyuan County revealed that in the 1960s, 90% of the approximately 80 households owned furniture with decorative carved patterns. The village has 132 households today, but none had engaged a woodcarver for nearly 30 years [14]. Only one household owns a wooden carved bed. Among the interviewed craftsmen, nine had switched careers since there were no woodcarving jobs available. Another eight were in semi-retirement due to the lack of business. Those who were still clinging on to the trade were mainly creating replicas of ancient wood carvings for parks, scenic spots, temples, ancestral halls, or furniture stores (Fig. 2).



Fig. 2. Taoyuangong studio artisans (the author photographed at the field study site)

In summary, TWC artisans are presently facing a bottleneck that is difficult to break through: finding ways to innovate and develop the traditional and local culture in the context of urbanization of rural areas. The ages of permanent residents living in Taoyuan's villages are extremely polarized. Many adults have left to be migrant workers elsewhere. Psychologically, they have a blind obedience to urban modernized

culture and have denied or deliberately forgotten about TWC and its representation of the traditional and local culture. These mindsets and behaviors have caused them to refrain from participating in folk cultural activities and be unwilling to accept folk arts, such that there is no one to whom the artisans could pass on their skills. At the same time, the artisans' enthusiasm to engage in and develop the craft had been seriously undermined, and they were not motivated to innovate. From the perspective of productive protection, it is necessary to encourage the artisans to actively participate in design innovation. This will transform them from being pure manual laborers to owners and co-producers of ICH, thereby making them actors and internal forces driving innovation.

3.2 Research on the TWC's Artistic Forms and Characteristics

The subjects and themes of TWC are varied and include characters, landscapes, flowers and birds, antique utensils, and decorative patterns. Character-related themes can be subdivided into historical figures (e.g., Jiang Ziya fishing, Zhang Liang formally became an apprentice to a master), operatic figures (e.g., Pan Jinlian flirting with Wu Song, poet Li Bai drunk), and religious/mythological figures (e.g., the Eight Immortals crossing the sea). Items with religious themes account for a large proportion of the works. Religions make use of folk art to convey messages, and the contents generally reflect parables that people are familiar with. Religions are a social phenomenon: ordinary people often seek a form of spiritual comfort and solace in the fantasy world of religions to extricate themselves from their own difficulties and pains [15]. This has led to the creation of many themes that represent people's desires for beauty and happiness, such as "the Eight Immortals crossing the sea," "Liu Hai playing with the golden toad," and "Guanyin carrying a child." Most TWC works embodying such themes come in complete sets, are realistically carved, and vividly depict the characters' facial expressions, movements, and even the patterns on their clothes [16].

Another considerable proportion of TWC works are small articles that reflect local customs, such as zither, Go (a chess-like game), calligraphy, and painting, which are considered to be the four arts that Chinese scholars must master; children at play; farmers cultivating the land, and abundant harvests of grains and food crops. The theme of flowering plants and fruits include plum blossoms, Chinese roses, peonies, lotuses, peaches, and pomegranates [17]. The animal theme commonly includes dragons, phoenixes, lions, bats, mandarin ducks, and butterflies. Some items depict patterns found on porcelain objects such as bottles and pots, presenting a form of antique charm. These are usually motifs of abstract geometric shapes and serve as thematic border decorations.

For the animal theme, carvings of bats and lions leave the deepest impressions. The latter represents power, dignity, and majesty; the former is *bianfu* (蝙蝠) in Chinese, with the second character being the homonym of good blessing and fortune (福), so it is commonly used in TWC as an auspicious symbol [18]. In the past, artisans would spend time being creative and thinking about the designs and layouts of bats, leading to a multitude of representations being showcased. Some would carve the bats' heads into that of dragons', which added a touch of mythical magic; others transformed the heads into the shape of *ruyi* (如意), a ceremonial scepter representing auspiciousness; some

carved bats in the shape of butterflies, making the scene lively and interesting while others used abstract techniques to present decorative beauty, such that those who looked at the carvings could not help but admire the artisans' originality and ingenuity.

Hand-crafted items that are most closely related to the people's lives are often the most succinctly designed for purpose of convenience and ease of use. However, it is precisely these items that manifest the artisans' level of craftsmanship. In general, artistic creations by artisans are the materialization of beauty found in local quaint customs. It is not about the flaunting one's power or showing off one's mastery of brilliant technical skills; rather, the aim is to express meaning in a simple and straightforward way and to achieve a decorative effect that is simple and down to earth. Most of these woodcarving works are coarse, unrefined, wild, and uncouth, with some even bearing the marks of axes and carving knives. Yet, such seemingly rough qualities are actually manifestations of the artisans' true skills. There is an impeccable natural beauty about these works: coarse but not botched, unrefined but not mediocre, wild but not untamed, and uncouth but not inelegant. Folk wood carvings are precious exactly due to their being coarse, unrefined, wild, and uncouth.

The traditional approach of shifting perspective and mobile focal points are adopted in the composition, with the carved objects arranged in an orderly and proportionate manner depending on the scale of the scene portrayed, with the juxtaposition of real and imaginary situations. The main subjects, birds, and flowers are usually placed at the center of the scene for prominence with magnified forms, while the sizes of the secondary characters would be reduced to complement the main theme. This approach creates a clear distinction between the main and supporting subjects, resulting in a fast, rhythmic effect. The artisans may not deeply understand the theories of composition such, as juxtaposing the real and imaginary, matching black and white, or dense versus sparse arrangements. However, their carvings are densely packed and visually overwhelming, with the entire scene filled with details. Some scenes are even completely filled with various characters and patterns, leaving no empty space. Although the finished products look unrefined, these reveal an abundant, simple, and genuine artistic conception. These give people a sense of satiation and actuality compared to the ethereal beauty of Western paintings and modern art. Figure 3 shows the TWC works.



Fig. 3. The TWC works (the author photographed in the Taoyuangong studio)

In summary, although TWC has its unique artistic value, integrating it into modern living to achieve economic benefits is a difficult process. For productive protection, the

key issue is establishing the means to effectively transform ICH outputs into products and services through business model innovations, while preserving TWC's inherent cultural and artistic features. The next step was to study and propose an appropriate productive protection strategy.

4 Productive Protection Strategy for TWC

4.1 Establishing an ICH Knowledge Platform for the TWC's Productive Protection

The core of the entire digital preservation project was the establishment of the ICH knowledge database for TWC, which is connected to the Web via computers. In his book *Big Data*, Viktor Mayer-Schönberger pointed out that “data has become a form of commercial capital that can create new economic benefits. With a change in mindset, data can be ingeniously used to inspire new products and types of services [19].” The digitization work being undertaken currently will bring about unlimited potential for the subsequent design innovation and application of TWC. The applications of the craft are limited to traditional furniture and building supplies, and the scope of development for the industrial model of traditional woodcarving is similarly limited. The shortcomings are reflected in several areas. First, the mechanism for diversified and innovative development—evolving from handicrafts to products of traditional arts and crafts, and finally to contemporary products with innovative designs—has not been formed. Second, there is no public service platform that strikes a balance between the preservation of the original cultural ecology and the internationalization of innovative designs and industrial transformation. Third, TWC artisans have limited abilities for independent innovation and market expansion and have yet to form an influential brand and production base.

The establishment of the ICH knowledge platform for TWC was guided by the industrial needs of woodcarving. It provides important information support for related industries to undertake digitization, informatization, and product design, as well as a comprehensive, rich, and diversified industrial chain. These support existing artisans in establishing and developing their brands and will help to groom a new batch of talents with an innovative spirit to undertake design innovation and carry on the TWC tradition. The digitized platform—based in Hunan to provide the entire industry with localized services—will contribute by promoting development of the local economy and culture.

4.2 Details on the ICH Knowledge Platform for TWC

The establishment of the ICH knowledge platform for TWC involved three main aspects. The first was the establishment of a TWC basic database, with the aim of it being a unique thematic database for knowledge sharing. The vision was to create a professional knowledge database that integrates TWC culture and techniques, based on information retrieved from literature searches and collected from field investigations. Next was the establishment of a resource database of case samples. It was determined

that the structure for the development of TWC applications required multiple domains and diversified data; then, information technology was used to collect, store, and organize the resources. The specifications for establishing a shared data resource library and related designs were then finalized to ensure that the case samples can be reused indefinitely. This will address the lack of a resource library for the design and development of derivative products from woodcarving, as well as a thematic case resource library oriented towards domain applications [20]. The last was the setting up of a TWC portal website that acts as the social portal for the digital platform. is shown in Fig. 4.

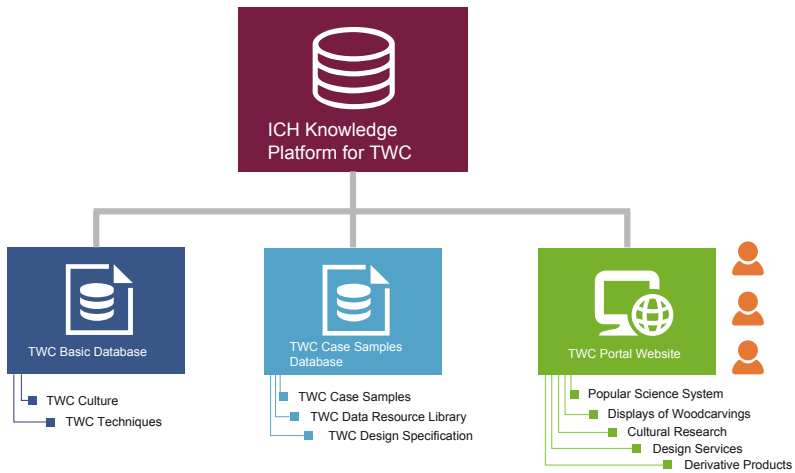


Fig. 4. Details on the ICH knowledge platform

4.3 Steps for Establishing the ICH Knowledge Platform for TWC

- Analysis of the platform's orientation.** The target vision for the ICH knowledge platform for TWC was to integrate the various main modules, including a popular science system, displays of woodcarvings, cultural research, systems for derivative products, design services, and innovation promotion. The database combines the dual functions of a digital museum and a library of industrial application materials, thereby becoming a platform for sharing of cultural resources, improving the efficiency of design applications, and catalyzing rational innovation.
- Functions of the platform.** The platform for propagating and promoting woodcarving was built upon a public application framework and oriented toward the industry. It provides a source platform for obtaining resources and inspirations, promoting cultural integration, displaying of products, and facilitating business cooperation. This helps to create a digital brand for TWC. At the same time, the business model and operational activities of the users' website could be explored while taking into account its developmental stage and users' characteristics. is shown in Fig. 5.

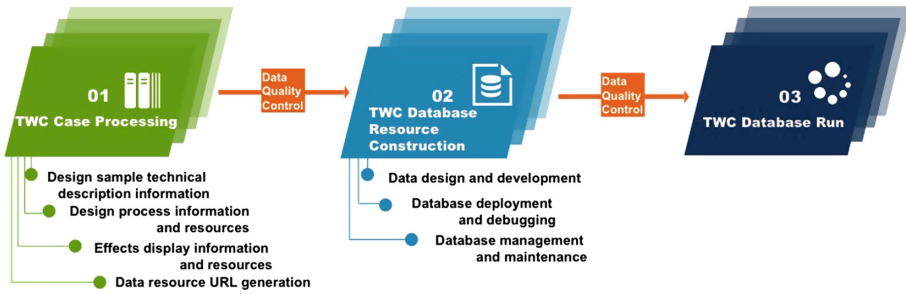


Fig. 5. Framework of the ICH knowledge platform

- Design innovation based on the ICH knowledge platform for TWC.** The databases to be built include a digital museum for TWC’s case samples and a library of materials used in the craft. Considering the current crisis of the decline of TWC, an important topic of cultural preservation is to ensure that the woodcarving craft culture goes beyond the confines of Taoyuan County so that more people know about and understand it. The digital museum is crucial to the knowledge dissemination platform and is of great significance when applied to the preservation of the woodcarving craft. First, it is digital-based, therefore it has the advantages of large storage capacity and diverse storage methods. Second, there is no longer any restriction in terms of regionality and distance because the collection is displayed on an online platform. This infinitely expands the scope for propagating knowledge and culture. This is further enhanced by the various display modes, including pictorial, textual, audio, and video. This will allow users to experience the collection in a comprehensive, multi-perspective, and in-depth manner. Last, the museum’s system for derivative products can provide new ideas for the innovative development of woodcarving.

The library of woodcarving materials serves as an application platform for related industries and can be considered a general resource sharing platform. Users can search for resources matching their needs and then download and use them. Its existence can greatly improve the work efficiency of related industries. It aims to realistically and completely vectorize traditional woodcarving patterns and standardize the traditional style of the patterns, thereby establishing a cultural framework for the reuse of patterns and prevention of deviation when the graphics are used. This is also one of the ways that the platform is participating in design. Moreover, with the integration of CAM technology, the downloaded materials are in formats that can be directly used in production, which greatly reduces the gap between culture and the market. This reduction in the distance between culture and products will further promote the propagation of culture to a great extent is shown in Fig. 6.

Systematic research on Taoyuan wood carving (TWC) and its social innovation is conducted by combining the study of art works and literature review through a cultural anthropology perspective. The craft may be combined with modern design methodology, and its application will be attempted in real life based on the results of theoretical studies. The detailed methodology is as follows: Study the functions and forms

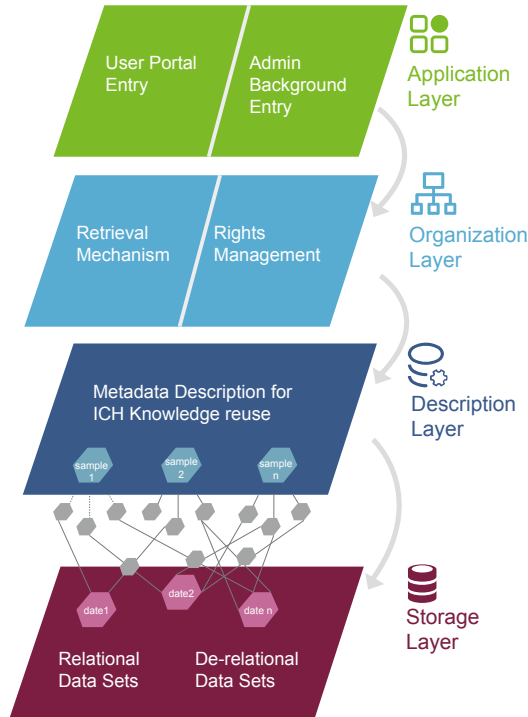


Fig. 6. Framework of digital museum for TWC's case samples conclusion

of TWC in furniture, interior design, and other goods through a literature review to gather explicit knowledge on the local culture, folk customs, and lifestyles; adopt methodologies from anthropological research and conduct field studies at TWC markets and workshops to discover and learn about the techniques and skills involved in TWC; gather tacit knowledge, including idea generation, subject matter selection, and creating process by conducting structured and unstructured interviews or participatory observation with artisans. On this basis, the building of a TWC knowledge platform includes two parts: Building a TWC database through methods such as literature sorting, on-site data collection, and normalized data centralization to integrate knowledge resources on the craft such as its subjects, sculpting styles, techniques, and categories. This process yields an extraction of intangible cultural heritage knowledge from cultural and technical perspectives. Building a TWC digital database using 3D scanning, 3D modeling, and photography is a study on the preservation and inheritance of intangible cultural heritage knowledge using digital tools. Future research is necessary to understand the essence of Taoyuan intangible cultural heritage knowledge by using distinct methods such as image scaling, semantic space, adjective extraction, and context paneling to determine the design components of TWC through symbolic ambiguity mechanisms and help them conform to modern design culture and aesthetic notion. This also includes building a symbol system for TWC works and using it as a foundation to achieve design transformation.

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