

Liuzhou River Snails Rice Noodle in China: Development of Local Wisdom and Educational Literacy

Thitisak Wechkama*, Xiaoying Qin

Faculty of Fine-applied Arts and Cultural Science, Mahasarakham University Mahasarakham 44150 Thailand

Corresponding author: Thitisak Wechkama, E-mail: thitisak.w@msu.ac.th

ARTICLE INFO

Article history

Received: December 26, 2024

Accepted: March 4, 2025

Published: March 31, 2025

Volume: 13 Issue: 2

Conflicts of interest: None

Funding: None

ABSTRACT

The study explores the historical development, cultural significance, and economic potential of Liuzhou River Snail Rice Noodles (LRSRN) as a representation of local wisdom and educational literacy in China. Rooted in the historical, cultural, and natural context of Liuzhou, Guangxi Province, the production process and unique flavor of LRSRN reflect the region's rich traditions, ethnic customs, and culinary heritage, fostering cultural identity and transforming consumer behaviors. Using qualitative research methods, we collected the data through literature reviews, surveys, interviews, observations, focus group discussions, and seminars. The findings reveal that LRSRN has evolved into a cultural symbol through marketization, branding, and industrialization, contributing to regional cultural preservation and economic growth. Furthermore, innovative packaging design incorporating visual elements of Guangxi and Chinese cultural symbols effectively bridges cultural inheritance with modern economic benefits. By integrating local values with modern technology, this study underscores the role of LRSRN as a medium for promoting cultural literacy, enhancing regional identity, and providing educational insights into preserving and disseminating cultural heritage.

Key words: Liuzhou River Snail Rice Noodles, Local Wisdom, Cultural Heritage, Packaging Design, Educational Literacy

INTRODUCTION

Liuzhou, a prefecture-level city in the north-central part of Guangxi Zhuang Autonomous Region, is situated in the Liujiang River Basin. Renowned for its rich natural resources, superior ecological environment, and comprehensive industrial infrastructure, Liuzhou has become a significant hub of cultural heritage and economic activity. The city's developed transportation network and waterway systems have further strengthened its industrial development, particularly in the automobile sector. At the same time, its unique cultural ecology, shaped by multi-ethnic customs, has significantly influenced the evolution of Liuzhou River Snail Rice Noodles (LRSRN) as a local delicacy. The city's natural resources, social environment, and industrial foundation have collectively promoted the modernization of this traditional food (Chen & Li, 2018).

Although LRSRN gained prominence in the late 1970s and early 1980s, its cultural roots can be traced back to the local ancestors' consumption of river snails over 20,000 years ago. Originating from Liuzhou's folk culinary practices, the dish reflects the harmonious relationship between the local natural environment and ethnic customs. Its distinctive flavor derives from a combination of

ingredients such as rice noodles, river snails, sour bamboo shoots, peanuts, and bean curd, accentuated by special chili oil and sour seasonings. This culinary heritage, enriched by traditional skills, has garnered nationwide recognition and international appeal. On June 10, 2021, LRSRN was included in the fifth batch of National Intangible Cultural Heritage Representative Projects (Heritage Number VII-277), signifying its profound cultural and historical significance. The importance of strengthening measures for its protection and inheritance to preserve its cultural essence (Cheng, 2023).

The industrialization of LRSRN has been a key driver of economic transformation in Liuzhou. How modern production facilities and standardized processes have enhanced production efficiency and ensured product quality consistency (Huang & Guo, 2021). The expansion of online sales platforms has allowed LRSRN to transcend geographical barriers, enabling its reach to national and international markets. This transition from local street food to a widely recognized culinary symbol has elevated its economic value and reinforced the dissemination of Liuzhou's cultural identity. The success of LRSRN has deepened public recognition of Liuzhou culture, positioning it as a significant representation of regional heritage and local wisdom (Fan, 2022).

However, as market competition intensifies, the packaging design of pre-packaged LRSRN faces challenges of homogeneity, often needing unique branding and cultural depth. Innovative packaging strategies that integrate modern technology and local cultural symbols are essential to address this. Incorporating the imagery of a Zhuang ethnic girl as a core visual element, along with regional characteristics of Liuzhou and Guangxi, enhances the product's cultural appeal. The role of packaging as a frontier for cultural communication, effectively embedding local heritage into product design to increase market recognition and global cultural dissemination (Guo, 2021). By reflecting local characteristics and Chinese cultural charm through creative visuals and multi-layered design, the packaging of LRSRN not only strengthens cultural identity but also promotes educational literacy about Liuzhou's heritage and values.

Liuzhou River Snail Rice Noodles exemplifies the interplay between local wisdom, cultural heritage, and economic development. Through modernization, industrialization, and innovative packaging design, LRSRN preserves regional traditions, enhances cultural literacy, and fosters an educational understanding of Liuzhou's unique culinary and cultural legacy.

Research Objective

The primary objectives of this study are to investigate the historical development, cultural significance, and economic potential of Liuzhou River Snail Rice Noodles (LRSRN) as a representation of local wisdom and educational literacy in China. Specifically, the study aims

- to examine the role of LRSRN in preserving and promoting regional traditions, ethnic customs, and culinary heritage while exploring its transformation through marketization, branding, and industrialization.

By integrating local values with contemporary technology, this study aims to highlight the capacity of LRSRN to foster cultural literacy, enhance regional identity, and offer educational insights into the preservation and dissemination of intangible cultural heritage.

LITERATURE REVIEW

The academic research on Liuzhou River snail rice noodles mainly focuses on industrial development, marketing strategies, external image communication, and food culture. From the perspective of industrial development, The development status of the Liuzhou River snail rice noodles industry and explored its path to promote rural revitalization in "Research on the Path of Guangxi Zhuang Autonomous Region's Characteristic Industries to Promote Rural Revitalization: Taking Liuzhou river snail rice noodles Industry as an Example," pointing out that it is necessary to strengthen standardization and institutionalization, brand and cultural construction, and cooperation between universities and villages to promote rural revitalization (Song et al., 2022). From the perspective of marketing strategy, The current status of Liuzhou River snail rice noodles' online marketing in the "Internet +" era in "Research on the Online Marketing and

Communication of Agricultural Products in the "Internet +" Era: Taking Liuzhou river snail rice noodles as an Example," pointing out the problems of insufficient topic attraction and lack of brand image, exploring the starting point and diffusion point of online marketing under the background of "Internet +," and proposing new strategies for these problems (Liu, 2022). From the perspective of external image communication, "Strategic Analysis of the "Phenomenal" International Communication Effect of Local Food Culture: Taking Liuzhou river snail rice noodles as an Example" that we should use Liuzhou river snail rice noodles as a food carrier to build a bridge for food culture communication through overseas sales, and fully display China's unique food culture (Li & Xiao, 2021). From the perspective of food culture, The symbolization process of Liuzhou River snail rice noodles from the perspective of food anthropology in the article "Research on the Construction of Food Symbols and the Strengthening of the Consciousness of the Chinese Nation's Community: Taking Liuzhou river snail rice noodles as an Example," and explored how it, as a local food symbol, promotes the formation of the consciousness of the Chinese nation's community (Wen, 2022). By combining the literature, it is found that the academic community's research on Liuzhou River snail rice noodles is gradually increasing, and the research perspective is also beginning to shift to deep cultural analysis. These studies show that scholars focus on the cultural value and significance of river snail rice noodles.

At the same time, the study found that integrating regional characteristics and modern design concepts into packaging design effectively spread local culture and improved the market awareness and economic benefits of Liuzhou River snail rice noodles. Guiding students to learn the cultural background of river snail rice noodles and combining regional culture with innovative design improved students' in-depth learning and innovation capabilities. This study used the six basic goals of Bloom's taxonomy cognitive category: remember, understand, apply, analyze, evaluate, and create. Applying Bloom's taxonomy to food design education can effectively construct learning activities and enhance students' conceptual understanding and practical skills. This theoretical support shows that structured educational methods positively affect the improvement of packaging design practices (Anderson & Krathwohl, 2001).

Educational literacy is essential for fostering students' ability to engage with cultural heritage, regional identity, and innovation, particularly within food culture and packaging design. Bloom's taxonomy, with its six cognitive levels—remember, understand, apply, analyze, evaluate, and create—provides a structured framework that enhances critical thinking, creativity, and practical skills. In food design education, this framework enables students to contextualize local foods' historical and cultural significance, such as Liuzhou River Snail Rice Noodles (LRSRN), while developing innovative solutions that align traditional knowledge with modern design principles. By integrating regional symbols into packaging design, students preserve cultural identity and promote economic benefits, effectively bridging cultural heritage with contemporary market demands.

Furthermore, structured educational strategies and experiential learning approaches empower students to connect theoretical knowledge with practical applications. Collaboration between universities and local industries enables students to address real-world challenges, such as branding and packaging, fostering cultural preservation, and economic growth (Long, 2021). Through higher-order thinking—analysis, evaluation, and creation—students critically engage with regional heritage, enhancing their capacity to innovate while promoting cultural literacy. This integrated approach strengthens their cognitive and practical skills, enabling them to represent traditional foods like LRSRN as symbols of local identity and economic sustainability in a modern context.

RESEARCH METHODS

This study employs a qualitative research methodology to explore the historical development, cultural significance, and packaging design of Liuzhou River Snail Rice Noodles (LRSRN). Data were collected through literature reviews, field research, and interactive analysis, ensuring a comprehensive understanding of the subject. The research process was conducted in six systematic steps as follows:

1. A thorough review of relevant literature, including concepts, theories, and previous studies related to LRSRN, was undertaken. This provided a theoretical foundation to guide the research design and analytical framework while offering insights into existing knowledge gaps.
2. Historical archives, industry reports, and field investigations were used to examine the formation, origin, development, industrialization process, and inheritance of LRSRN. Data sources included archival visits, enterprise surveys, and industry-related documentation to establish a holistic perspective of its historical and industrial evolution.
3. A range of qualitative research methods—including surveys, observations, interviews, and focus group discussions—was employed to investigate the historical development, skill learning, inheritance, cultural value, and packaging design applications of LRSRN. The interview participants included residents, students, producers, packaging designers, and cultural experts. Additionally, questionnaires were used to analyze the impact of LRSRN on local cultural heritage and economic development further.
4. In-depth case studies of selected LRSRN production enterprises and cultural examples were conducted to gather and analyze real-world data. Data visualization techniques and interactive platforms were employed to digitize findings, creating tools that present the history, culture, and industrial development of LRSRN. These tools were designed for online platforms to enhance public awareness, social cognition, and cultural communication.
5. Drawing on theoretical concepts, related literature, and field data, the study explored the application of innovative packaging design to promote the cultural connotation and economic benefits of LRSRN.

A comprehensive analysis of existing packaging shortcomings was conducted, leading to the design of a theoretical model for improved packaging. The model was evaluated based on social impact, practical application, cultural heritage preservation, and economic development to assess its role in enhancing brand image and market competitiveness.

6. The data were systematically analyzed in alignment with the research objectives, and the findings were presented using descriptive and analytical methods. The results were synthesized into an academic paper, summarizing the history, skill learning and inheritance, cultural significance, and packaging design of LRSRN. This paper is intended for submission to an international journal to provide a scientific basis and practical guidance for cultural preservation and economic development strategies.

By integrating qualitative methods, field data, and theoretical analysis, this study provides a comprehensive framework for understanding LRSRN's cultural and economic contributions while offering practical recommendations for packaging design and cultural communication.

RESULTS

The Historical Development, Skill Learning and Inheritance, Cultural Connotation and Value

Historical development of Liuzhou river snail rice noodles

With complex terrain and a pleasant climate, Liuzhou is located in the central part of Guangxi, forming a unique production environment for river snail rice noodles. The local terrain is high in the north and low in the south, with many rivers and a subtropical monsoon climate, and the soil is suitable for rice growth. Rivers such as the Liujiang River and the Rongjiang River provide a rich habitat for river snails. At the same time, abundant rainfall and sunshine promote the production of river snails and rice noodles. In addition, Liuzhou's natural resources provide rich raw materials for producing river snail rice noodles, such as sour bamboo shoots and sour beans.

There are three legends about the origin of Liuzhou River snail rice noodles. The first legend holds that in the mid-1980s, a clerk at a grocery store on Jiefang South Road in Liuzhou mixed dried cut noodles with river snail soup from the grandmother next door, which was welcomed by customers, and river snail rice noodles became popular. The second legend comes from the Gubu Street Night Market in the late 1970s, where vendors cooked river snails with rice noodles, gradually forming the prototype of river snail rice noodles. The third legend tells the story of a vendor in the 1980s who soaked rice noodles in river snail soup and added ingredients, which was favored by customers and contributed to the popularity of river snail rice noodles.

During this period, the economic development of Liuzhou and the prosperity of night markets promoted the formation of river snail rice noodles. The combination of river snails and rice noodles gradually became popular. Although the production methods differed, Liuzhou people's preference

for sour and spicy taste laid the foundation for river snail rice noodles.

River snail rice noodles were constantly explored and improved during this period. Some practitioners focused on preparing river snail soup, while others focused on processing river snail meat. As the flavor gradually became unified, river snail rice noodles developed the characteristics of “sour, spicy, fresh, and hot.” However, this stage also experienced the impact of market competition and the financial crisis, which led to fluctuations in the quality of river snail rice noodles.

In 2011, Liuzhou River snail rice noodles (Figure 1) began to go beyond the local market, and the first Beijing River snail rice noodles store opened. In 2012, the program “A Bite of China” introduced river snail rice noodles, significantly increasing their popularity. In 2014, Liuzhou’s first pre-packaged river snail rice noodles company was established, marking the entry of river snail rice noodles into the industrialization stage. In 2016, river snail rice noodles began to be exported, and in 2018, they obtained the geographical indication certification trademark.

During this period, the international popularity of river snail rice noodles increased significantly. Li Ziqi’s videos and CCTV International’s reports have attracted global attention to them. The spread of Internet media has made them a hot topic on the Internet, and the popularity of the snack has increased significantly. Mainstream media reports have further promoted the internationalization of river snail rice noodles.

Learning and inheritance of the skills of Liuzhou river snail rice noodles

River snail rice noodles are one of the most representative delicacies in Liuzhou City and are very popular at home and abroad. However, unlike traditional delicacies in other regions, Liuzhou river snail rice noodles have not been integrated into the family tables of Liuzhou people, and it is rare to make river snail rice noodles at home. River snail rice noodles are mainly consumed in rice noodle shops or restaurants. Although most people know the production process



Figure 1. Liuzhou river snail rice noodles
Source: www.czq.gov.cn, 2021

daily, the operation is still complicated. Therefore, although river snail rice noodles are a well-known local specialty food, their production process is still regarded as a relatively “professional” skill in daily family meals.

The Intangible Cultural Heritage Law of the People’s Republic of China, implemented in 2011, emphasizes the key role of schools in the inheritance of intangible cultural heritage and requires relevant education to be carried out by the regulations of the education department. In response to this requirement, Liuzhou City established the Liuzhou River Snail Rice Noodle Industry College to cultivate professional talents, and at the same time, opened a river snail rice noodle cultural experience activity for primary and secondary school students, aiming to promote the protection and dissemination of the river snail rice noodle culture.

On May 28, 2020, the Liuzhou Bureau of Commerce, Liuzhou Vocational and Technical College, and river snail rice noodle enterprises cooperated to establish the Liuzhou River Snail Rice Noodle Industry College. Relying on the Liuzhou River Snail Rice Noodle Industry Base, the college integrates policy, talent, industry, and management resources through close cooperation between universities, governments, and enterprises, aiming for technology research and development, services, talent training, cultural inheritance, and innovation. Since its establishment, the college has trained many professional talents for the river snail rice noodle industry. It has also actively explored the production process of river snail rice noodles, promoting the scientific inheritance and sustainable development of Liuzhou river snail rice noodles.

In order to deepen the understanding of the culture of Liuzhou river snail rice noodles among primary and secondary school students, several “Liuzhou river snail rice noodles production skills” research and study activities have been carried out from the perspective of “intangible cultural heritage + research and study.” Taking the Chengzhong District Cultural Center of Liuzhou City as an example, it has been rated as a research and study education base for primary and secondary school students since 2021. It has opened a themed class on “Liuzhou river snail rice noodles production skills,” allowing students to get close contact with intangible cultural heritage inheritors and gain an in-depth understanding of the history and production skills of river snail rice noodles. Starting from 2021, 12 intangible cultural heritage classes have been held yearly. These activities will help stimulate primary and secondary school students’ enthusiasm for disseminating and inheriting intangible cultural heritage.

Liuzhou has adopted different methods for inheriting river snail rice noodles in schools. For primary and secondary school students, the intangible cultural heritage is spread through research and study activities, the intangible cultural heritage production skills are displayed, and the intangible cultural heritage is spread through experience. For college students, it starts from a deeper level, focusing on the development process of intangible cultural heritage, the inheritance of skills, and the cultural heritage contained, and encouraging students to enhance their attention and research on the overall traditional culture of my country through the

intangible cultural heritage, rather than just being limited to a particular intangible cultural heritage itself.

Study on the cultural connotation and value of Liuzhou river snail rice noodles

First, Liuzhou River snail rice noodles embody the fusion of multi-ethnic cultures. Liuzhou is located in the central part of Guangxi and is home to ethnic minorities such as the Zhuang, Miao, and Dong, as well as the Han nationality. River snail rice noodles combine the dietary habits of these ethnic groups: rice noodles reflect the Zhuang rice-growing culture, sour bamboo shoots reflect the Miao and Dong people's preference for sour food, and the spicy taste is influenced by the spicy culture of the southwest. This fusion gives river snail rice noodles a unique flavor, symbolizing the intersection of ethnic cultures.

Secondly, river snail rice noodles play an important role in local communities and economies, promoting ethnic unity and social identity. They enhance collective identity through community gatherings and festivals. The industrialization of river snail rice noodles has driven agriculture, processing, and sales, increased farmers' income, made an important contribution to poverty alleviation, and promoted cross-regional and cross-industry cooperation, enhancing the spirit of social collaboration.

In addition, river snail rice noodles embody the city spirit of Liuzhou. As China's intangible cultural heritage, they showcase Liuzhou's natural resources and cultural heritage. By promoting the nationalization and internationalization of river snail rice noodles, Liuzhou has demonstrated its innovation and industrial capabilities, enhanced the city's reputation, and made river snail rice noodles an important part of China's cultural output.

River snail rice noodles include rationality, dynamicity, and inclusiveness. Rationality is reflected in its ingredients and flavors, such as river snails and rice noodles originating from the natural environment of Liuzhou, and the sour and spicy flavor reflects the local eating habits. Dynamicity is reflected in the continuous innovation of production techniques to ensure the sustainability of traditional craftsmanship in modern society. Inclusiveness is reflected in the absorption and integration of foreign cultures by river snail rice noodles, which enables it to adapt to a broader cultural context while maintaining its regional characteristics.

River snail rice noodles have important values in four aspects: economic, social, spiritual, and historical. Economically, they have promoted the development of the local economy and industry; socially, they have enhanced national cultural identity and social harmony; spiritually, they have demonstrated the tolerance and innovation of the people of Liuzhou; historically, they have recorded the food history and cultural heritage of Liuzhou. River snail rice noodles are a symbol of local cuisine and a microcosm of cultural integration and social development.

As a cultural symbol of Liuzhou City, river snail rice noodles represent the uniqueness of local food culture and the identity of Liuzhou citizens. They have a wide influence among local residents and immigrants and have become an

important window for Liuzhou City to communicate with the outside world. River snail rice noodles are not only a symbol of food but also an important part of Liuzhou City's lifestyle and cultural traditions.

As a regional cultural symbol, river snail rice noodles help Liuzhou people establish their own cultural identity. They have formed a deep sense of cultural identity among local groups and enhanced the pride and identity of Liuzhou City through their unique charm and profound cultural heritage. The successful promotion and cultural identity of river snail rice noodles have further promoted the inheritance and development of local culture.

River snail rice noodles help Liuzhou people distinguish themselves from "others" through their unique flavor and eating habits. Facing internal others, such as Nanning Laoyou rice noodles and Guilin rice noodles, Liuzhou river snail rice noodles are significantly distinguished by their sour and spicy flavor and special production process. Facing external others, the unique flavors of river snail rice noodles, such as sour bamboo shoots and chili, make it challenging to be accepted nationwide. This dietary feature strengthens the cultural identity of the Liuzhou people and becomes a unique symbol of the city's image and social memory.

This study selected typical river snail rice noodle production enterprises and cultural cases, deeply analyzed actual data, and revealed the development trend and cultural background of the river snail rice noodle industry. Data visualization technology and interactive platforms were used to digitize the research results and produce multiple interactive display tools. These tools show the history, culture, and industrial development of Liuzhou River snail rice noodles and provide students and the public with an intuitive cultural experience through online platforms. This method has enhanced the society's cognition of Liuzhou river snail rice noodles, promoted cultural dissemination, deepened the understanding of local cuisine, provided data support and practical cases for learning and designing packaging, and promoted the promotion of cultural connotations and economic benefits.

Study the Local Wisdom and Design Packaging to Promote the Cultural Connotation and Economic Benefits

This study uses the theory of Bloom's taxonomy to construct a theoretical model for river snail rice noodle packaging design to ensure that students' learning is scientific and reasonable and to improve the quality and credibility of the research.

Understand the application value of Liuzhou river snail rice noodles packaging design

As a national intangible cultural heritage, Liuzhou River snail rice noodles are a treasure of Chinese food culture and a representative of local specialties. Although its packaging design is relatively mature, exploring its cultural charm and historical connotation is still necessary. Improving packaging design can better showcase the cultural characteristics

of Liuzhou and China, increase product-added value, enhance international influence, and attract more consumers. Well-designed packaging can also shape the brand's cultural image and improve brand awareness and loyalty. Packaging design combined with regional cultural resources can promote the development of Liuzhou's cultural tourism industry, enhance consumers' awareness of river snail rice noodles and Liuzhou, and promote regional brands' cultural influence and economic benefits. In learning and designing, students can enhance their understanding of cultural protection and economic value through practice and explore how to integrate cultural elements effectively.

Discovering the problems in the packaging design of Liuzhou river snail rice noodles

With the application of online shopping and the development of packaging design, traditional packaging design can no longer meet the communication needs of the modern market, which is mainly reflected in the following aspects: First, the current packaging design of river snail rice noodles lacks regional cultural characteristics, the packaging is single, and it fails to highlight the unique cultural elements of Liuzhou and China, resulting in a bland visual effect and difficulty in attracting consumers. Second, the problem of design homogeneity is serious. Most packaging uses similar colors and styles, needing more innovation, affecting the brand's recognition and market competitiveness. Third, the international market adaptability needs to be improved. The existing packaging design mostly stays in localized expression and must effectively integrate international aesthetic trends and different cu grounds. These problems limit the performance of river snail rice noodles in domestic and foreign markets and affect their cultural communication and economic benefits. In design learning, students need to pay attention to these issues and explore how to enhance the market appeal and international competitiveness of packaging through innovative design.

Study the innovative application of Liuzhou river snail rice noodles packaging design

Based on this, this packaging design uses the minority characters in Guangxi, Zhuang ethnic girls, as the core visual elements, accurately reflecting the unique characteristics of local culture. The design cleverly integrates elements such as the mountains and rivers of Liuzhou, Guangxi bronze drums, river snail rice noodles, and redbud flowers. It uses illustration style for artistic creation, showing rich regional customs and cultural connotations. The primary tones include cherry red, apricot yellow, and emerald green, highlighting the local characteristics and forming a sharp contrast and harmonious match visually. Through the delicate design of the spatial relationship of points, lines, and surfaces, the packaging presents a rich and delicate picture effect. The organic combination of these design elements not only highlights the regional characteristics of Liuzhou and Guangxi but also deeply reflects the charm of Chinese traditional culture, making the packaging design aesthetically pleasing

and effectively conveying the cultural story of river snail rice noodles. In the packaging design of the ingredient package, each ingredient package cleverly incorporates historical and cultural stories related to Liuzhou and integrates various local cultural elements. At the same time, the packaging design brand of this study is "River Snail Girl" Liuzhou River Snail Rice Noodles, divided into box packaging and bag packaging products. The structural design includes three parts: box packaging design, bag packaging design, and inner packaging (ingredient package) design. The material selected for the box packaging is copper plate cardboard, the bag packaging uses aluminum foil, and the inner packaging (ingredient package) can use a plastic bag. Using packaging design technology, the core elements of Liuzhou River snail rice noodles are integrated with the representative cultural elements of Guangxi and Chinese style, showing rich Chinese characteristics and cultural stories. This design not only enhances the product's market value but also its cultural added value. In this process, students can use the packaging design skills they have learned through actual projects to explore how to integrate local culture into the design, thereby enhancing the cultural and economic benefits of the product.

Evaluation feedback

This study effectively integrated the cultural and regional characteristics of Liuzhou River snail rice noodles through packaging design, enhancing consumers' cultural identity and interest (Liu, 2024). The design not only enhances the product's market competitiveness but also provides innovative packaging references for local specialty foods. In addition, during the learning and design process, students mastered integrating local culture into packaging design through practice, successfully conveyed the cultural story of river snail rice noodles, promoted cultural inheritance, and increased market awareness and economic value.

The packaging design effectively conveys the brand value and regional culture of Liuzhou River snail rice noodles through exquisite graphics, text, and colors, enhancing market appeal and cultural identity. In terms of theme creation, the design accurately shows the local characteristics of river snail rice noodles, combined with modern aesthetics, and successfully balances tradition and innovation (Fu, 2024). In terms of technical implementation, advanced printing and materials are used to ensure packaging quality. In the students' design learning, they effectively combined traditional culture and modern aesthetics in packaging design through these technologies and creative applications (Figure 2).

The Educational Literacy of Liuzhou River Snails Rice Noodle

The educational literacy of Liuzhou River Snail Rice Noodles highlights the role of intangible cultural heritage in fostering cultural awareness, interdisciplinary learning, and practical skills. By integrating heritage education into various levels of schooling, Liuzhou has created a comprehensive framework for transmitting its unique culinary tradition. At the primary and secondary levels, research-based programs

and experiential workshops introduce students to river snail rice noodles' history and production techniques, fostering a deeper appreciation for cultural preservation. Institutions like the Liuzhou River Snail Rice Noodle Industry College in higher education provide specialized training in production processes, cultural innovation, and industrial development. These programs emphasize the interplay between traditional craftsmanship and modern technology, ensuring the sustainable inheritance of this cultural symbol.

Moreover, integrating river snail rice noodles into education enhances students' cultural identity, creativity, and economic awareness. The dish reflects the cultural fusion of ethnic groups, including the Zhuang, Miao, Dong, and Han, symbolizing Liuzhou's multicultural heritage and distinct culinary traditions. Through educational initiatives, students understand the dish's socio-economic significance, learning how food culture serves as a medium for community cohesion, regional development, and cultural diplomacy. These programs promote pride in Liuzhou's identity and encourage students to explore innovative approaches to showcasing cultural heritage in a globalized context, such as product branding, packaging design, and cultural tourism promotion.

Furthermore, educational activities centered around Liuzhou River Snail Rice Noodles contribute to practical literacy and skill development, bridging the gap between theoretical knowledge and hands-on experience. Students engage in collaborative projects integrating cultural storytelling, design innovation, and technical research to address contemporary challenges, such as enhancing product competitiveness and international market adaptability. These initiatives equip students with essential skills in creativity, entrepreneurship, and cultural dissemination while instilling a sense of responsibility for heritage preservation. Ultimately, the educational integration of Liuzhou River Snail Rice Noodles ensures the sustainable transmission of intangible cultural heritage and cultivates a new generation of cultural advocates capable of driving economic and societal development.

DISCUSSION

River snail rice noodles have been consumed for more than 20,000 years, and the delicacy itself emerged in the late 20th century, reflecting deep cultural ties. At the same time, local governments and relevant institutions have effectively preserved and disseminated traditional production techniques by establishing river snail rice noodles industry colleges and organizing cultural learning activities. These efforts combine heritage protection with modern education, promoting innovation and skill development (Li & Gao, 2021). To further promote this process, the study highlights how industrialization and the "Internet +" strategy have promoted the recognition of river snail rice noodles at home and abroad, making it a regional cultural symbol and a driving force for economic development (Li, 2024). The success of this traditional snack is not only reflected in its culinary attributes, but also in its ability to enhance local identity and regional pride.

The study also provides new insights into the role of innovative packaging design in enhancing cultural and economic



Figure 2. The packaging design combination effect of "River Snail Girl" Liuzhou River Snail Rice Noodles
Source: Photographed by Xiaoying Qin, 2024.

value. Just as the evolution of river snail rice noodles has benefited from strategic marketing and packaging innovations that emphasize its cultural significance and modern appeal (Li, 2023). The study further demonstrated the educational benefits of integrating Bloom's taxonomy into design courses, enabling students to analyze, design and execute packaging solutions at a deeper level of cognition. This approach not only enhances students' technical and creative skills, but also increases their awareness of cultural preservation and economic development. At the same time, integrating culture and economy through innovative design can modernize traditional cuisine and improve market competitiveness and cultural value (Liu & Wang, 2022). This integration provides a replicable model for future research and design education, demonstrating how traditional food heritage can thrive in the contemporary market while maintaining its cultural essence.

CONCLUSION

In summary, this study provides significant implications for government policies, education, cultural promotion, and digital media in preserving and enhancing the value of Liuzhou River Snail Rice Noodles. By combining traditional cultural knowledge with innovative educational practices, the study demonstrates how cultural heritage can be effectively integrated into modern economic and social contexts. Initiatives such as on-site teaching, experiential workshops, and digital media platforms enable students and the public to understand better the cultural and historical significance of Liuzhou River Snail Rice Noodles, fostering greater cultural appreciation and awareness. The establishment of institutions like the River Snail Rice Noodle Industry College and the inclusion of design education have further facilitated skill development and innovation. Specifically, students learn to incorporate local and Chinese cultural elements into packaging design, aligning with contemporary market demands while preserving the dish's cultural essence. This process enhances both market appeal and cultural added value, contributing to the

region's economic growth and the broader dissemination of its intangible cultural heritage.

Additionally, leveraging digital media tools, such as on-line displays and interactive platforms, has proven effective in expanding the cultural influence of river snail rice noodles to a global audience. This study highlights the importance of interdisciplinary education, combining cultural literacy with practical design skills, to ensure sustainable cultural inheritance and economic advancement. The findings underscore how innovative approaches in education, policy, and cultural promotion can bridge the gap between tradition and modernity, providing valuable practical experience for students and offering a replicable model for preserving other regional cultural heritage in the face of globalization and industrialization.

ACKNOWLEDGEMENTS

This research project was financially supported by Mahasarakham University.

REFERENCES

- Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives* (1st ed.). Longman.
- Chen, Z. Y., & Li, B. (2018). From street snacks to global "Internet celebrity": Liuzhou river snail rice noodles' "explosion" path and inspiration. *Farmer's Friend*, 28(9), 24–25.
- Cheng, H. L. (2023). *Research on the inheritance and development of Liuzhou river snail rice noodles from the perspective of intangible cultural heritage* [Master's thesis]. Guangxi University for Nationalities. <https://doi.org/10.27035/d.cnki.ggxmc.2023.001012>
- Fan, Q. Z. (2022). *Research on the Construction and Communication of Food Culture on City Image* [Master's Thesis]. Lanzhou University, China. <https://doi.org/10.27204/d.cnki.glzhu.2022.002103>.
- Fu, H. F. (2024). Research on the Design and Application of Cartoon Characters of Liuzhou River Snail Rice Noodles under Brand Packaging Strategy. *Grand View*, 10(02), 30–32.
- Guo, C. (2021). Exploration on the Design and Development of Liuzhou River Snail Rice Noodles Brand Packaging Based on Batik Elements. *Journal of Liuzhou Vocational and Technical College*, 24(03), 26–29. <https://doi.org/10.16221/j.cnki.issn1671-1084.2021.03.006>.
- Huang, F. H., & Guo, X. (2021). On the Coupling of Liuzhou Industrial Culture and Liuzhou River Snail Rice Noodles Corporate Culture. *Journal of Liuzhou Vocational and Technical College*, 24(03), 1–4. <https://doi.org/10.16221/j.cnki.issn1671-1084.2021.03.001>.
- Li, B. (2024). Research on the Construction and Dissemination of New Cultural Symbols in Guangxi. *News Forum*, 15(03), 79–83. <https://doi.org/10.19425/j.cnki.cn15-1019/g2.2024.03.031>.
- Li, B., & Xiao, X. (2021). Strategic Analysis of the "Phenomenal" International Communication Effect of Local Food Culture: Taking Liuzhou River Snail Rice Noodles as an Example. *External Communication*, 30(09), 35–39.
- Li, F. W. (2023). Research on the Application of Batik Elements in the Packaging Design of Liuzhou River Snail Rice Noodles. *Shanghai Packaging*, 45(12), 45–47. <https://doi.org/10.19446/j.cnki.1005-9423.2023.12.015>.
- Li, R. X., & Gao, J. (2021). Construction and Communication of Cultural Brands of Traditional Skills Intangible Cultural Heritage in the Context of Media Integration: Taking Liuzhou River Snail Rice Noodles as an Example. *Journal of Yangtze University*, 46(02), 37–41.
- Liu, L. (2022). Research on the Internet Marketing and Communication of Agricultural Products in the "Internet +" Era: A Case Study of Liuzhou River Snail Rice Noodles. *Shanxi Agricultural Economics*, 30(07), 181–183. <https://doi.org/10.16675/j.cnki.cn14-1065/f.2022.07.057>.
- Liu, X., & Wang, D. (2022). Research on Innovative International Communication Paths of Chinese Cultural Products: Taking Liuzhou River Snail Rice Noodles Cross-Border e-Commerce Live Broadcast as an Example. *Comparative Study of Cultural Innovation*, 08(04), 144–147.
- Long, B. Y. (2021). Research on the Talent Training Model of Advertising Art Design Professional Based on the Demand of Liuzhou River Snail Rice Noodles Industry. *Journal of Liuzhou Vocational and Technical College*, 24(03), 10–15. <https://doi.org/10.16221/j.cnki.issn1671-1084.2021.03.003>.
- Song, T. H., Zhang, T. T., Zhou, D. X., & Cao, B. L. (2022). Research on the Path of Guangxi Zhuang Autonomous Region's Characteristic Industries to Promote Rural Revitalization: A Case Study of Liuzhou River snail rice noodles Industry. *Rural Science and Technology*, 15(02), 24–26. <https://doi.org/10.19345/j.cnki.1674-7909.2022.02.044>.
- Wen, J. (2022). Research on the Construction of Dietary Symbols and the Strengthening of the Consciousness of the Chinese Nation's Community: Taking River Snail Rice Noodles in Liuzhou, Guangxi as an Example. *Journal of Nanning Vocational and Technical College*, 30(06), 46–51.