



Sustainable and Bio-based Food Packaging Design of Chinese Agricultural Products Under the “Internet Plus” Mindset

Chen Tao ¹ , Dr. Mohamed Razeef Abd Razak ^{2*} , Li Jingjing ³ , Peng Mingqian ⁴ 

¹ Doctoral Candidate, College of Creative Arts, Universiti Teknologi MARA, Malaysia; Lecturer, Lu Xun Academy of Arts, Yancheng Kindergarten Teachers College, Yancheng, China.

E-mail: 2021697752@student.uitm.edu.my

^{2*} College of Creative Arts, Universiti Teknologi MARA, Malaysia.

E-mail: razeef080@uitm.edu.my

³ Lecturer, Lu Xun Academy of Arts, Yancheng Kindergarten Teachers College, Yancheng, China. E-mail: lijingjing650728@163.com

⁴ Bachelor, Academy of Fine Arts, Jiangsu Second Normal University, Nanjing, China.

E-mail: 1325632481@qq.com

Abstract

National identity is people's emotional attachment to the country, which is related to personal growth and success as well as the prosperity and stability of the country. The advent of the "Internet Plus" era marks a new ecological evolution in the networked society, significantly impacting personal national identity. On the one hand, the proactive, dynamic, autonomous, and connective nature of "Internet Plus" provides abundant resources and novel platforms to enhance individual national identity. On the other hand, its openness, compatibility, diversity, and anonymity can also challenge and influence personal perceptions of national belonging. This study delves into the nuanced interplay between national identity and the packaging design of Chinese agricultural products within the "Internet Plus" framework, exploring emerging trends, changes, and characteristics. This paper presents an in-depth literature assessment on the comprehensive methodology of Bio-based Food Packaging (B-FP) for food within the cyclical economy. It emphasizes three principal domains: (1) the function of B-FP within a circular goods layout method and material selection during the

preproduction life cycle phase; (2) the contribution of B-FP to oval resource administration structures and the item's elimination life cycle phase; and (3) the optimum utilization of B-FP concerning the prioritization of end-of-life therapy. It scrutinizes the underlying issues and deep-seated causes, enriching the theoretical discourse on national identity. Through literature review and surveys, this paper firstly defines and clarifies the concepts of "Internet Plus," national identity, and the B-FP design of Chinese agricultural products. It then investigates the implications of "Internet Plus" for national identity within pastoral product B-FP design, examining its supportive role. Furthermore, survey data is analyzed to evaluate the impact of B-FP design on national identity from various aspects such as structure, visual appeal, and the absence of green design principles. Identifying key challenges and attributing them to factors such as brand competitiveness and rural revitalization strategies, the study ultimately seeks to formulate design strategies for agricultural product B-FP from a national identity perspective within the "Internet Plus" context.

Keywords:

National identity, internet plus, agricultural product packaging design, information and communication technology (ict), bio-based food packaging.

Article history:

Received: 07/05/2024, Revised: 02/07/2024, Accepted: 02/08/2024, Available online: 30/09/2024

Introduction

"Internet Plus" has been deeply rooted in people's hearts, which no longer solely represents the integration of Internet technological know-how and common industries; however, it marks facts of technological know-how to promote monetary and social development. Especially in the area of agricultural packaging design, "Internet Plus" gives a new point of view and technical ability for this direction, making the packaging graph no longer solely the center of attention on the look of splendor and practicality but pay greater interest to facts and intelligence (Fung et al., 2013). "Internet Plus" enables the packaging design of agricultural products to use technologies such as QR codes and RFID tags. By scanning the QR codes on the packaging, consumers can quickly obtain information such as the source, production date, quality, and safety information of agricultural products. In this way, It has dramatically enhanced consumers' trust in farm products. At the same time, through the Internet platform, Bio-based Food Packaging (B-FP) design can be personalized and customized to meet the diverse needs of consumers (Versino et al., 2023; Rodrigues et al., 2021). "Internet Plus" also promotes the green and environmentally friendly design concept of agricultural product B-FP. By using Internet technology to conduct market research, designers can more accurately grasp consumers' needs for environmentally friendly packaging and reduce the environmental impact by using degradable materials and reducing the number of B-FP layers. Therefore, "Internet Plus" is vital in promoting innovation in agricultural product B-FP design, strengthening consumer interaction, and promoting environmental protection concepts. This not only helps improve the market competitiveness of agricultural products but also provides opportunities for agricultural product brand building and sustainable rural development—new ideas and methods.

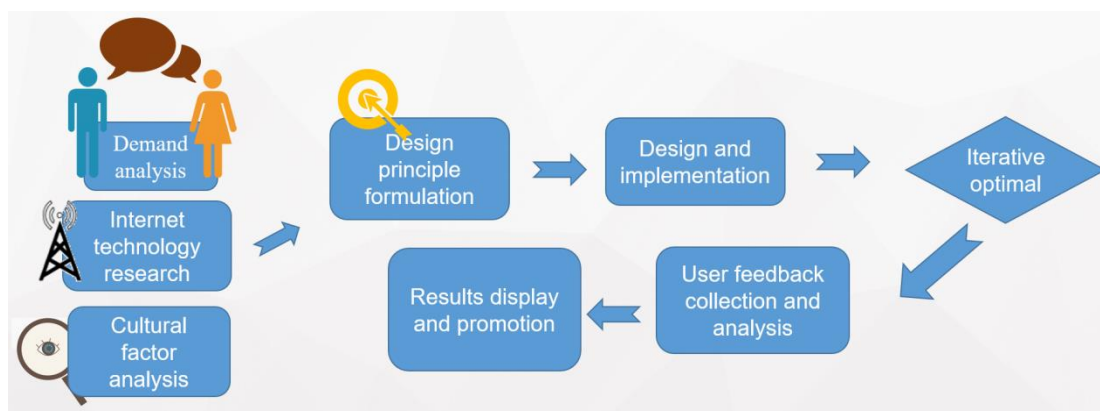


Figure 1. "Internet Plus" research route

In figure 1 the context of "Internet Plus," national identity has shown profound cultural heritage in the B-FP design of Chinese agricultural products (Jian & Zhou, 2019). This reflection plays a decisive role in improving the market competitiveness and brand influence of products. Integrating national symbols, traditional cultural elements, and local characteristics into B-FP design can attract consumers' attention and enhance the attractiveness and recognition of the product but also sincerely convey the country's and culture's deep respect and recognition (Jing & Li, 2019; Baker et al., 2003). This design strategy can establish a strong emotional connection in consumers' hearts and significantly contribute to promoting cultural heritage. Conveying national identity through B-FP design not only strengthens citizens' sense of identity with their own culture but is also a meaningful way to demonstrate Chinese culture's charm and soft power (Hesse et al., 2005; Han, 2010). In this way, the competitiveness of Chinese agricultural products in the international market can be enhanced, and a global influence can be created for the brand. Strong brand image. For example, using B-FP design to showcase China's unique tea culture can attract international consumers and allow them to feel the unique charm of Chinese culture while enjoying Chinese products (Lin, 2013). With the advent of the "Internet plus" era, the level of informatization and intelligence in agricultural product B-FP design continues to improve, which provides new possibilities for effectively conveying national identity (Fan, 2008). Driven by "Internet Plus," this trend will become more significant and profoundly impact the brand-building of agricultural products and the sustainable development of agriculture.

Related Works

National identity theory explores how individuals or groups form a sense of identity with their country through culture, history, and language. In agricultural product B-FP design, the application of this theory is reflected in how to convey national identity and cultural respect through design elements. Relevant scholars have studied B-FP design in different cultural backgrounds and found that designs containing national symbols, traditional patterns, or local characteristics can better stimulate consumers' desire to purchase (Tang, 2010; Zeng, 2019). The study also found that with the acceleration of globalization, consumers are increasingly inclined to products that represent the cultural characteristics of their own countries. Therefore, integrating national

identity into agricultural product B-FP design is a market strategy and an essential means of cultural inheritance and national image shaping.

Integrating "Internet Plus" and agricultural product B-FP design combines technology and design, which can enhance the value, attractiveness, and functionality of farm products. This research will also explore how digital technologies such as QR codes, Internet of Things (IoT), and virtual reality (AR) can be applied to product B-FP to improve the interaction between consumers and products (Yang et al., 2022; Ma, 2020). Through relevant market research, it was found that integrating "Internet Plus" elements into B-FP design helps understand the product's origin better, and interactive marketing strategies can enhance consumers' purchasing experience. This approach also reduces waste through more efficient logistics and innovative B-FP solutions. Related research (Chen et al., 2017; Zhao, 2016) highlights the importance of integrating network technology and B-FP design to meet the needs of contemporary consumers while promoting national identity and cultural values through B-FP. This integration of "Internet Plus" and agricultural product B-FP design marks a shift in consumption patterns toward a more innovative, consumer-centered approach. Integrating information and communication technology (ICT) into the B-FP design of agricultural products brings innovation to the farm market. It is vital to enhance consumers' national identity with Chinese agricultural products. Research by relevant scholars shows that ICT can effectively integrate and display products' cultural and geographical indications in agrarian product B-FP design (Andersson & Smith, 2023; Tohir & Soewardikoen, 2018). In this way, consumers can have a deeper understanding of B-FP recognition of the stories and cultural values behind the products. Some scholars are studying the application of QR codes and virtual reality technology in B-FP design, which increases the information content and visual appeal of B-FP and provides consumers with a new interactive experience (Bartosz, 2022; Machizawa et al., 2008). Consumers can scan the QR code on the B-FP to access detailed information about the produce, such as its origin, processing, and relevant cultural background. The application of these technologies makes agricultural product B-FP a medium for conveying information and stories, enhancing consumers' trust and recognition of products (Feizollahi & Roopesh, 2021; Dewi et al., 2020). The application of AR technology opens up new possibilities in agricultural product B-FP design. It can combine virtual information with physical B-FP to give consumers an immersive experience. Through AR technology, consumers can see the images on the packaging more vividly through their smartphones or tablets, showing consumers the B-FP environment, processing process, or traditional cultural stories related to the product (Babalís et al., 2013; Guan et al., 2024).

Based on the above research results, it is essential to study how to integrate and reflect national identity in the B-FP design of Chinese agricultural products in the context of the "Internet Plus" era. This helps increase the competitiveness and recognition of Chinese farm products in the global market and promotes cultural confidence and national brand building. By studying how to integrate and reflect national identity in the B-FP design of Chinese agricultural products, the research can explore how to effectively combine traditional cultural elements with modern design concepts, thereby strengthening consumers' trust in the quality of Chinese farm products while promoting and spreading Chinese culture.

Methodology

Biobased adhesives are compositions made using organic raw substances, excluding those sourced from geological or fossil origins (Arias et al., 2021). This phrase encompasses adhesives composed of biopolymers derived from botanical, zoological, and organic gum sources. In the quest to create bio-based adhesives with characteristics akin to conventional products, peptides, tannins, cellulose, and polysaccharides are environmentally acceptable biological polymers that fulfill these criteria. Their applicability is primarily confined to cardboard, papers, metallic foil, and hardwood in building contexts. These adhesives attain adhesion rapidly but demonstrate low-strength characteristics. The majority are liquid in water and utilize water as a solution. They are provided as liquids or dry particles for mixing with water, while some exist as dispersion solutions.

The application of biobased polymers in the labeling of glassware presents a compelling alternative, as there is limited research addressing the utilization of bioadhesives for this reason (Islam et al., 2022). Eliminating label adhesive just with water is advantageous operationally, financially, and ecologically. Labels that are easily removed would enhance the separation of recyclable garbage wrapping, improving the container's overall recyclability and decreasing power and water use. Moreover, in contrast to the prevalent commercial method of labeling removal with diluted NaOH remedies, water is an economical renewable resource repurposed, necessitating just essential treatment for effluent before disposal.

This study explores the reflection of national identity in the B-FP design of Chinese agricultural products under the "Internet Plus" thinking. With the increasing application of Internet technology in agricultural product B-FP design, this survey aims to establish an evaluation system for national identity reflection by designing a series of Internet-related agricultural product B-FP questions. One part of the questionnaire focused on collecting basic information from participants and their contact habits with Internet agricultural product B-FP; the other part explored the different dimensions of agricultural product B-FP in reflecting national identity, including national image, cultural heritage, and the integration of modern and traditional designs. The opinion of. This study studies how national identity is reflected in the B-FP design of Chinese agricultural products in the context of "Internet Plus" and analyzes existing problems and their underlying causes.

This questionnaire was designed with the theme "The Reflection of National Identity in China's Agricultural Products B-FP Design" based on references to relevant theories and existing research results. This survey adopted an online questionnaire survey. 500 social personnel participated in the survey, and 481 valid questionnaires were recovered, with an effective recovery rate of 96.2%. The sample is evenly distributed in all dimensions and meets the demographic variables requirements of the questionnaire survey. The basic information of the sample and the practical information statistics of the questionnaire are detailed in Table 1.

Table 1. Distribution of basic information of survey samples

Category	Subcategory	Number	Percentage (%)
Gender	Male	209	43.4
	Female	272	56.6
Ethnicity	Han Chinese	428	89.0
	Minorities	53	11.0
Household Registration	Provincial Capital City	75	15.6
	Prefecture-Level City	52	10.8
	County City	77	16.0
	Township/Village	277	57.6
Political Affiliation	Communist Party Member	52	10.9
	Communist Youth League Member	370	76.9
	Masses	59	12.2

This questionnaire incorporated several vital questions to understand the survey participants' identification with their homeland: B1 addressed how innovative B-FP design and online marketing strategies can bolster consumer support and national identification with local agricultural products in response to unfounded accusations by foreign brands on internet platforms. B2 examined how the performance of agricultural products in domestic and international markets during the COVID-19 pandemic of 2020, along with sales through the "Internet Plus" model, enhanced consumers' recognition of China's efforts to combat the epidemic and the role of B-FP design in this process. B3 queried how online governmental platforms, in the context of "Internet Plus," could offer a more transparent and reliable information dissemination channel for agricultural products and its impact on enhancing consumers' national identity and trust. Lastly, B4 explored the effects of inappropriate comments and cyberbullying on the internet on the brand image of agricultural products and consumers' national identification and how B-FP design could mitigate these impacts.

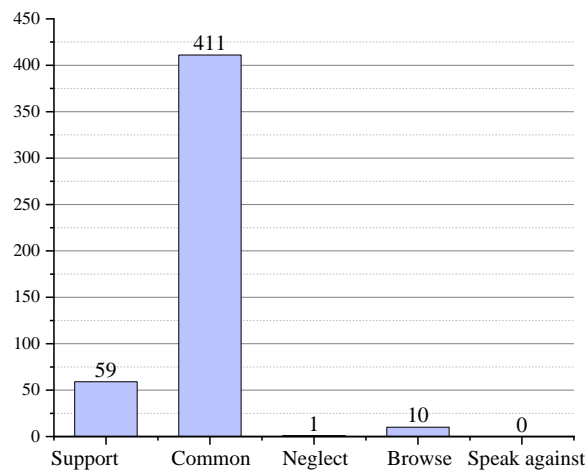


Figure 2. Investigators' results on B1

As indicated in Figure 2, regarding question B1, most opted for "innovative B-FP design," amounting to 412 people or 85.7% of the total participants. Following this, 52 individuals, representing 10.8% of the total, chose "expressing supportive comments." Notably, no one selected "expressing opposition," and only one person opted for "ignoring" the issue, demonstrating a strong sense of national duty and responsibility among the survey group. This shows their willingness to actively shield the country's territorial integrity and sovereignty in the face of exterior threats. Figure 3 suggests that in phrases of the Internet Plus income mannequin bettering cognizance of China's efforts towards the COVID-19 pandemic, the most significant group, accounting for 85.2% or 411 people, "strongly agreed," reflecting an excessive diploma of identification with their Chinese identification and countrywide pride.

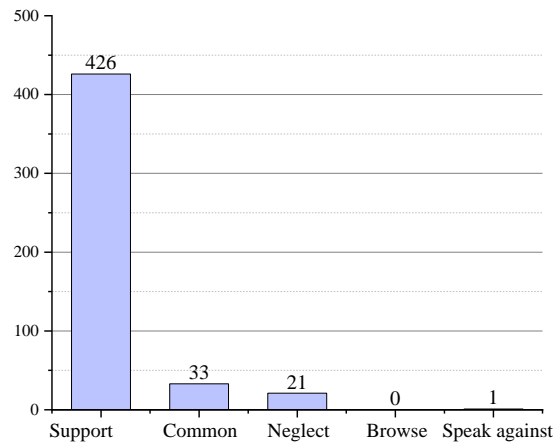


Figure 3. Investigators' results on B2

Figure 4 reveals differing opinions on how online government platforms could offer a more transparent and reliable information dissemination mechanism for agricultural products. The most significant portion of respondents, 41.6%, were indifferent to question B3, indicating a relatively weak sense of rights in the internet domain, suggesting a need for more active and practical guidance. Regarding question B4, the majority, though not surpassing half of the sample size at 181 people or 37.6%, "completely disagreed," highlighting a lack of continuous and effective regulation of their right to free speech on the internet.

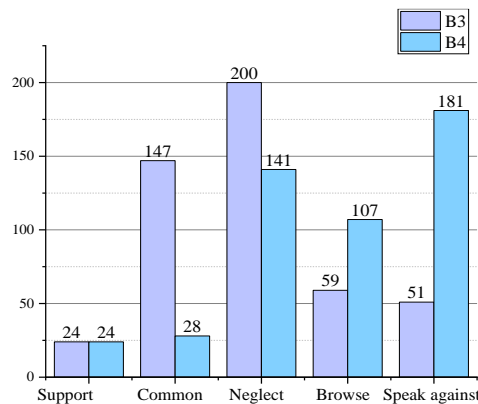


Figure 4. Investigators' results on B3 and B4

Combining the facts from Figures 2, 3, and 4, it is evident that the survey individuals firmly become aware of the nation's territory, sovereignty, and countrywide identification through the B-FP diagram of agricultural products. However, an enormous discrepancy exists in their cognizance of the rights and obligations that come with their citizenship.

In this survey, questions associated with the identification with the Chinese state covered B5, which requested how the B-FP layout of Chinese agricultural merchandise can replicate the integration and concord of the cultures of China's fifty-six ethnic groups, specifically in countering separatist rhetoric on the internet, and how B-FP graph can make more robust countrywide identification and ethnic unity. B6 explored how the Chinese Dream is represented in agricultural product B-FP design, especially how internet platforms can showcase B-FP designs that incorporate elements of the 56 ethnic cultures, thus fostering consumer identification with the great rejuvenation of the Chinese nation. The results of these two questions were analyzed quantitatively as follows:

In Figure 5, when facing separatist rhetoric on the internet, most of the survey group chose to "express opposing comments," totaling 280 people, accounting for 58.3%. Following this, 112 participants, or 23.2% of the total, selected "just browse," with no one choosing to "express support" for such rhetoric. Regarding attitudes towards internet content promoting the Chinese Dream, 44.6% (215 people) opted for "liking or sharing." Thirty-three percent (157 people) chose to "express supportive comments." In the selection of "just browsing," "ignoring," or "expressing opposing comments," a total of 109 people, or 22.8%, were accounted for. The choices across these two items demonstrate a high level of identification with the Chinese nation under the "Internet Plus" backdrop, prominently showcasing national confidence.

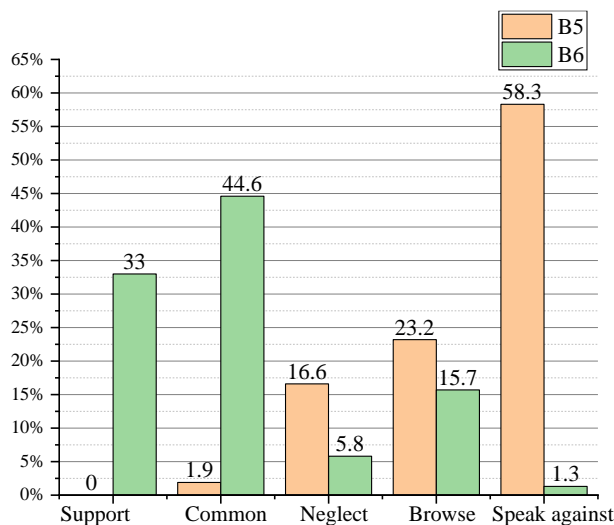


Figure 5. Investigators' results on B5 and B6

To explore aspects of national cultural identity, this questionnaire designed questions on traditional culture, revolutionary culture, contemporary culture, and foreign cultures. Specifically, B7 asked how the design of domestically produced agricultural product B-FP could focus more on exploring and applying China's

excellent traditional culture to enhance consumers' cultural identification and support in the "Internet Plus" context. B8 addressed the impact of intensifying punishment for internet distortions of agricultural history or defamation of agricultural heroes to protect the positive image of rural culture. B9 inquired about the role of integrating elements showcasing China's agricultural achievements and rural revitalization stories, like poverty alleviation efforts, into B-FP design to boost consumers' national identification and pride. B10 compared domestic and foreign agricultural products' B-FP designs, probing preferences and discussing how Chinese cultural elements could be ingeniously incorporated into B-FP design to enhance domestic farm products' cultural identity and competitiveness.

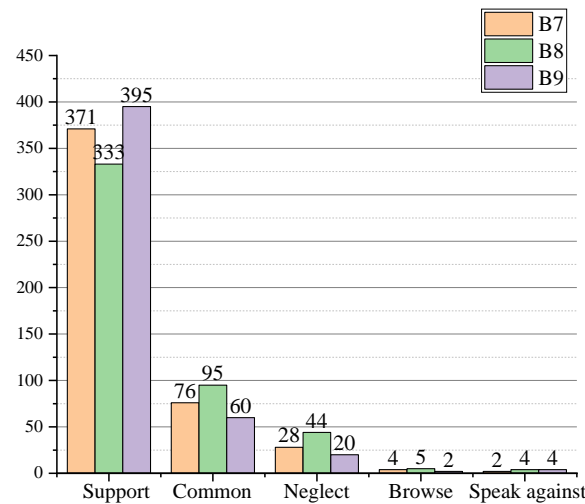


Figure 6. Investigators' results on B7, B8 and B9

Figure 6 reveals a high consensus among the survey group regarding contemporary mainstream culture, as reflected in question B9, with 82.1% strongly agreeing. Following this, attitudes towards traditional culture in B7 and revolutionary culture in B8 received strong agreement rates of 77.1% and 69.2%, respectively. This analysis indicates a high overall level of identification with contemporary, traditional Chinese, and revolutionary cultures among participants. Data from Figure 7, however, shows a significant divergence in attitudes towards foreign cultures: for question B10, comparing domestic and foreign film and television productions, the largest group, representing 34.3%, somewhat agreed. For question B11, regarding attitudes towards foreign cultures, the majority strongly agreed, accounting for 46.4%. The variance between these data sets suggests that while considerable room for change and much work to be done in attitudes toward foreign cultures, the survey group's responses indicate evolving perspectives and the necessity for continued dialogue and engagement in this area.

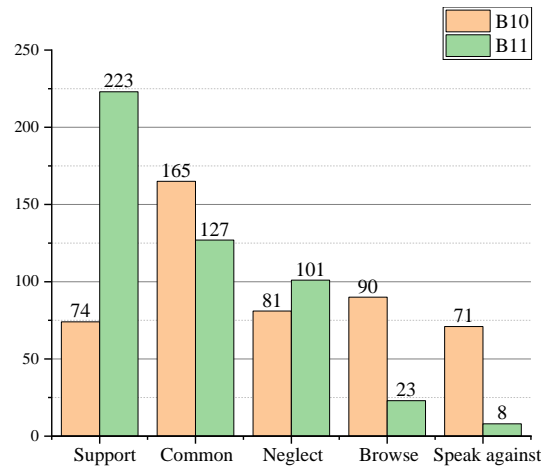


Figure 7. Investigators' results on B10 and B11

To gauge the survey group's identification with socialism with Chinese characteristics, the questionnaire included questions B12, B13, and B14. B12 inquired about how the rise of short video platforms allows a deeper understanding of the production and living conditions in impoverished areas, how these platforms can enhance consumer awareness and national identification with agricultural products, and attitudes towards exaggerated poverty claims online. B13 addressed the impact of globalization and reform and opening-up policies on the export of Chinese agricultural products and national security concerns related to internet openness. B14 considered the role of targeted content delivery via apps powered by robust databases and cloud computing in promoting knowledge about Chinese agricultural products and its effect on enhancing national identification with domestically produced goods.

Figure 8 indicates a generally high awareness among respondents about the country's socialist system and path. In B12, focusing on the socialist system, only 56.7% of students "completely disagreed," representing the majority but indicating a relatively low identification with the national political system. For B13, regarding the socialist path, 78.1% expressed "complete disagreement" with closing the doors to opening up and reform, showing a high level of identification with the path of socialism with Chinese characteristics.

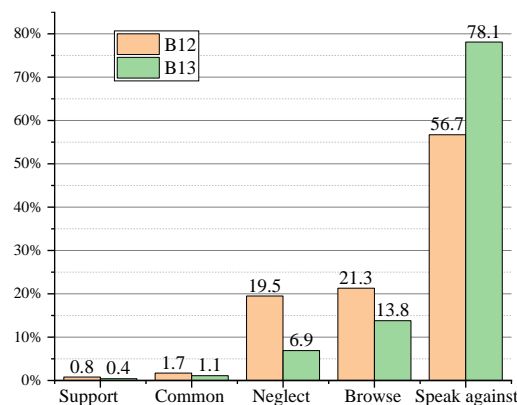


Figure 8. Investigators' results on B12 and B13

Figure 9 reveals that no one chose to "express opposing comments" regarding B14. Thirteen percent of respondents chose to "express supportive comments," and 44.6% opted to "like or share," indicating an overall positive and active inclination towards the theory of socialism with Chinese characteristics. However, it's important to note that the combined percentage of students who chose to "ignore" or "just browse" amounted to 42.4%, totaling 204 individuals. This suggests that a significant portion of the population still displays a passive attitude towards learning about the theory of socialism with Chinese characteristics, highlighting a need for strengthening education on China's socialist theory system.

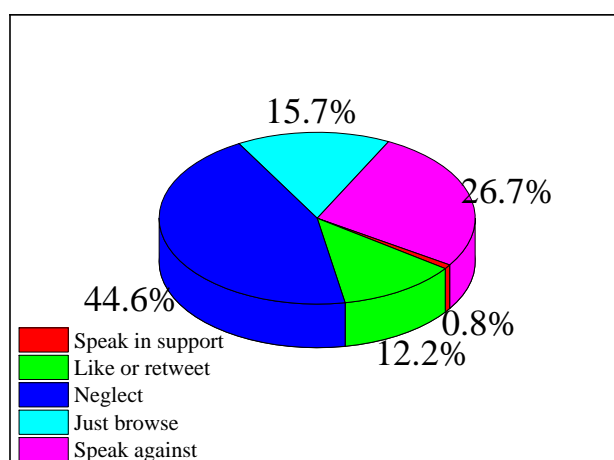


Figure 9. Investigators' results on B14

The globalization of internet technology provides certain culturally hegemonic nations with new means of cultural infiltration and presents new challenges and opportunities in designing agricultural products B-FP. Confronted with increasingly covert methods of cultural penetration, consumers, while enjoying the diversity of farm products brought about by globalization, struggle to discern the embedded cultural values within B-FP designs, inadvertently adopting foreign cultural ideologies, potentially undermining their identification with their national culture.

To explore the relationship between the Internet literacy of the investigators and people's national identity, the survey sets the three items of A1, "Internet platform selection," A2, "Weibo usage," and A3, "network data security cognition," as the Internet usage habits of college students, to reflect the Internet literacy of the survey group. After statistical analysis of the three items, the option with the most significant number of people selected in each item is extracted, and the data is shown in Table 2.

Table 2. Network usage of investigators

Topics	Options	Number/person
Internet platform selection	Use microblog	318
Microblog usage	Browse entertainment gossip	184
Network data security cognition	Web browsing information	174

The analysis results in Table 3 show that the total score of the Patriotism Questionnaire is significantly correlated with the total score of national identity. Specifically, the questionnaire mainly correlates considerably with the macro attitude towards the country in national identity ($r=0.55$). Therefore, the questionnaire is not as comprehensive as the National Identity Questionnaire of ISSP and only reflects a specific aspect of national identity. It is suggested that the National Identity Questionnaire of ISSP be used as a research tool in the follow-up research.

Table 3 Correlation analysis of respondents' scores in the ISSP National Identity Questionnaire

	1	2	3	4	5
1. Patriotism	-				
2. Macro attitude	0.55***	-			
3. Attitude towards external shocks	0.08	-0.08**	-		
4. Attitude towards traditional cultural agricultural products	0.13	0.23***	0.02	-	
5. National identity	0.54***	0.74***	0.45***	0.61***	-

Note: Patriotism is the total score of the Patriotism Questionnaire, ** $p < 0.01$, *** $p < 0.001$.

Survey data suggests that a segment of consumers might prefer B-FP designs incorporating elements of foreign cultures. This indicates a need for more confidence in domestic agricultural product B-FP designs and an affinity for designs representing foreign cultures. However, the majority believe the excessive use of foreign cultural elements in B-FP designs should be approached cautiously, emphasizing the importance of preserving and passing down the nation's cultural characteristics. This ambivalence towards foreign cultural elements in agricultural product B-FP design reflects the tension between globalization and local cultural identification in "Internet Plus."

This contradiction arises in the "Internet Plus" era, where cultural exchange brought by globalization is accompanied by the covert infiltration of cultural hegemony, placing consumers in a predicament. Therefore, how to appropriately integrate global elements with local culture in agricultural product B-FP design to strengthen national identity becomes a topic worthy of in-depth exploration. The issues of national identification among the surveyed population, emerging across different dimensions, result from the complex interplay within society. Conducting a root cause analysis of the real-world issues related to national identification faced by respondents from the perspective of "Internet Plus" technology is crucial for fostering a balanced approach to national identification cultivation in the context of "Internet Plus."

The global manufacturing of the bioplastics marketplace constituted less than 1% of the over 367 million tonnes of polymers generated in 2021, at 2.41 mm tonnes. Over the next five decades, output is anticipated to quadruple. Food packaging constitutes the primary use of bioplastics, accounting for 48%, equivalent to 1.15 million tonnes of the overall bioplastic marketplace. Bioplastics are being utilized well in both flexible and rigid alimentary B-FP. Figure 10 presents the worldwide bioplastics manufacturing capacity

by market categories for 2021. The subsequent two sections cover bioplastic uses in lightweight and stiff B-FP for food.

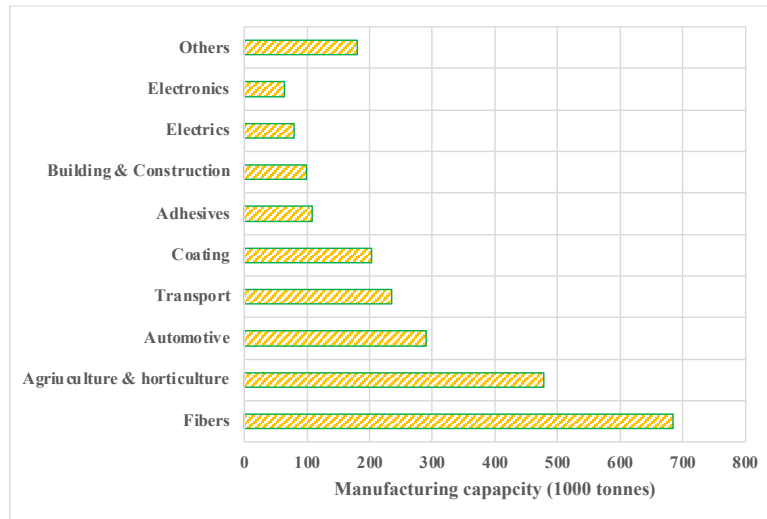


Figure 10. Manufacturing capacity analysis

Results and Discussion

Based on the data and content of this survey questionnaire, the results and discussion of national recognition in China's agricultural product B-FP design under the background of "Internet Plus" are as follows: This survey is based on the "Internet Plus" background, consumers' opinions on China's national identity in agricultural product B-FP design: identity attitudes and their influencing factors. In question B1, the majority of respondents (85.7%) chose innovative B-FP design to respond to foreign brands' false accusations about Chinese agricultural products, which shows that the vast majority of people believe that innovation in B-FP design can effectively enhance consumers' appreciation of local farm products: support and national recognition. Regarding the B2 topic, as many as 85.2% of the survey respondents strongly agreed that the "Internet Plus model" sales method could enhance their recognition of China's anti-epidemic efforts, reflecting consumers' high recognition and pride in Chinese identity. The survey results of question B3 show that many respondents (41.6%) hold an "indifferent" attitude towards agricultural product information provided by online government affairs platforms, which shows the lack of awareness of citizens' rights in the Internet field.

Regarding question B4, although the most significant number of people chose "completely disagree," overall, there are differences in understanding the continued practical normative constraints on the right to freedom of speech on the Internet. Other survey results reflect consumers' national identity complexity in the "Internet Plus" era. On the one hand, consumers demonstrate the people's strong sense of national responsibility and honor by actively responding to agricultural product B-FP designs with national identity elements. On the other hand, there are differences in attitudes towards information release on online government platforms and understanding of the normative constraints on freedom of speech on the Internet. This study also reveals the intertwining of cultural and national identities in the context of globalization and

"Internet Plus." While consumers enjoy the convenience of globalization, they remain cautious about appropriately integrating global elements and local culture in agricultural product B-FP design. This shows that designers must consider balancing globalization and regional cultural identity when innovating B-FP design.

In the context of "Internet Plus," the reflection of national identity in the B-FP design of Chinese agricultural products is not only related to consumers' purchasing decisions but also reflects consumers' sense of identity with the country and culture. "Internet Plus" has the characteristics of connectivity and dynamics, closely connecting all walks of life in society, creating a new educational ecology, and affecting the construction of people's national identity. Aiming at the main dilemmas investigators face on national identity in the context of "Internet Plus," exploring the main ways to break through the dilemmas is a vital topic in studying people's national identity. It is also an essential topic for coping with the changes in emotional needs in the context of "Internet Plus" and cultivating a society with Chinese characteristics. Inevitable move in a socialist society. The following solutions are proposed in response to the problems arising from the above survey results.

Increase the Integration of National Identity in Agricultural Product B-FP Design from the Perspective of Internet Plus

Although the diversity of agricultural product display methods has enriched the market, the authenticity of farm products is still a core factor affecting consumer decision-making. Integrating the characteristics of farm products into B-FP design not only helps to fully demonstrate the authenticity of agricultural products and stimulate consumers' willingness to purchase but is also an effective way to enhance national identity. Geographical indications, local vegetation, and soil and water conditions give agricultural products a unique appearance, taste, and nutritional content. These unique brand characteristics of farming products reflect the uniqueness of regional culture and agricultural production. Displaying these features through the Internet platform allows consumers to understand the product itself and feel the culture and stories behind the product, thus enhancing the sense of identification with the country and region.

Increase National Identity Through Regional Natural Scenery

When exploring the reflection of national identity in the B-FP design of Chinese agricultural products under the "Internet Plus" thinking, the research can focus on enhancing the national identity by integrating it into the regional natural scenery. Information visualization in the Internet era has become a mainstream trend in information transmission, which means that consumers prefer concise and intuitive visual B-FP designs rather than reading large amounts of text. Regional natural scenery not only carries deep humanistic feelings but also quickly touches the emotional resonance of consumers, becoming an ideal visual element in agricultural product B-FP design. When collecting and creating regional natural scenery, B-FP design elements, on-site drawing, or photography can be used to capture critical visual features, and then the additive and

subtractive design method can be used to apply these elements innovatively. The "additive" strategy refers to adding elements to the design. Continuously adding details strives to reflect the natural appearance of the region, while the "subtraction" strategy means appropriately simplifying details and conveying the spiritual connotation of the natural scenery through concise lines and shapes, thereby enhancing the sense of national identity.

Conclusion

In the context of "Internet Plus," national identity significantly impacts the B-FP design of Chinese agricultural products. This article provides an in-depth analysis of the survey results and shows that consumers support agricultural product B-FP design that reflects national identity. This preference is reflected in support of local farm products and in recognition of national image, cultural heritage, and development of the times. Despite variations in recycling capacities, all B-FP technologies examined in this paper are amenable to recovery via biological or mechanical methods. To enhance durability and augment the resiliency of B-FP, the optimal utilization of bio-based resources (both new and reused) ought to be a fundamental approach.

Consumers strongly support innovative B-FP design and online marketing strategies to counter foreign brands' false accusations against Chinese agricultural products, reflecting consumers' intense feelings of national identity and support for domestically produced agricultural products. For farm products sold through the "Internet Plus" model, consumers generally believe this will help enhance their identification with China during the epidemic, indicating that consumers highly value the country's ability and efficiency in responding to the crisis.

To sum up, the reflection of national identity in the B-FP design of Chinese agricultural products under the background of "Internet Plus" has far-reaching significance. This helps improve the market competitiveness of agricultural products and is a critical way to inherit culture and shape the national image. Faced with the challenges and opportunities of globalization, agricultural product B-FP design should pay more attention to integrating national identity elements and convey the unique charm and cultural value of Chinese farm products to consumers through innovation and technological means, thereby enhancing national identity and creating a better market for Chinese agricultural products. Gain more significant influence in global markets.

Author Contributions

All Authors contributed equally.

Conflict of Interest

The authors declared that no conflict of interest.

References

- Andersson, H., & Smith, A. (2023). Flags and fields: a comparative analysis of national identity in butter packaging in Sweden and the UK. *Social Semiotics*, 33(4), 861-882.
- Arias, A., González-Rodríguez, S., Barros, M. V., Salvador, R., de Francisco, A. C., Piekarski, C. M., & Moreira, M. T. (2021). Recent developments in bio-based adhesives from renewable natural resources. *Journal of Cleaner Production*, 314, 127892. <https://doi.org/10.1016/j.jclepro.2021.127892>
- Babalís, A., Ntintakis, I., Chaidas, D., & Makris, A. (2013). Design and development of innovative packaging for agricultural products. *Procedia Technology*, 8, 575-579.
- Baker, L., Wagner, T. H., Singer, S., & Bundorf, M. K. (2003). Use of the Internet and e-mail for health care information: results from a national survey. *Jama*, 289(18), 2400-2406.
- Bartosz, K. (2022). How will a sustainable packaging industry transition unfold? Impact of ICT on the reuse model for circular packaging and analysis of changes through MLP framework.
- Dewi, T., Risma, P., & Oktarina, Y. (2020). Fruit sorting robot based on color and size for an agricultural product packaging system. *Bulletin of Electrical Engineering and Informatics*, 9(4), 1438-1445.
- Feizollahi, E., & Roopesh, M. S. (2021). Degradation of zearalenone by atmospheric cold plasma: Effect of selected process and product factors. *Food and Bioprocess Technology*, 14(11), 2107-2119.
- Fung, A., Russon Gilman, H., & Shkabatur, J. (2013). Six models for the internet+ politics. *International Studies Review*, 15(1), 30-47.
- Guohua, Z. (2019). Urban and rural identity and online sales of "original ecological" agricultural products: "Internet +" entrepreneurship, media practice and commercialization of private life. *Ideological Front*, 45(4), 42.
- Han, Z. (2010). On National Identity, National Identity, and Cultural Identity: An analysis and reflection based on historical philosophy. *Journal of Beijing Normal University: Social Science Edition*, 1, 106-113.
- Hesse, B. W., Nelson, D. E., Kreps, G. L., Croyle, R. T., Arora, N. K., Rimer, B. K., & Viswanath, K. (2005). Trust and sources of health information: the impact of the Internet and its implications for health care providers: findings from the first Health Information National Trends Survey. *Archives of internal medicine*, 165(22), 2618-2624.

- Hongmin, F. (2008). Cultural identity and national identity in the construction of national identity: Implications after the Wenchuan Earthquake. *Journal of Zhengzhou Institute of Aeronautical Industry Management: Social Science Edition*, 27(5), 71-73.
- Hui, C., Gang, L., & Wei, L. (2017). Research on mainstream media's online public opinion voice and guidance strategies. *Modern Communication: Journal of Communication University of China*, 7, 7-9.
- Islam, M. N., Rahman, F., Das, A. K., & Hiziroglu, S. (2022). An overview of different types and potential of bio-based adhesives used for wood products. *International Journal of Adhesion and Adhesives*, 112, 102992. <https://doi.org/10.1016/j.ijadhadh.2021.102992>
- Jian, H., Xu, M., & Zhou, L. (2019). Collaborative collection effort strategies based on the “Internet+ recycling” business model. *Journal of Cleaner Production*, 241, 118120. <https://doi.org/10.1016/j.jclepro.2019.118120>
- Jianan, M. (2020). *Research on College Students' Ideological and Political Education under the Background of "Internet Plus"*, Master's thesis, Northeast Normal University.
- Jing, Y., & Li, D. (2019). Private roles in enhancing Multi-Level Governance: China's “Internet+” national strategy. *Public Policy and Administration*, 34(2), 144-164.
- Liwen, Y., Yue, L.X., Siyuan, C., & Rose, L. (2022). Application errors and improvement strategies of cultural value in regional public brand construction of agricultural products. *Hubei Agricultural Sciences*, 61(17), 209.
- Machizawa, A., Iwama, T., Saito, H., Gotoh, T., Toriyama, H., & Hosokawa, M. (2008). National Time and Frequency Standard Dissemination System in ICT Era. In *Asia-Pasific Workshop on Time and Frequency*.
- Qiong, Z. (2016). Realistic dilemma of national identity education and rational response. *Teaching and Management: Theoretical Edition*, 12, 21-23.
- Rodrigues, C., Souza, V. G. L., Coelhoso, I., & Fernando, A. L. (2021). Bio-based sensors for intelligent food packaging—Current applications and future trends. *Sensors*, 21(6), 2148. <https://doi.org/10.3390/s21062148>

- Shangli, L. (2013). The political logic of constructing modern national identity. *Chinese Social Sciences*, 8, 22-46.
- Tang Z. R. (2010). Reference significance of agricultural products logistics practice in developed Asian countries. *Social Scientist*, 6, 78-80.
- Tohir, M., & Soewardikoen, D. W. (2018). Visual Identity and Packaging of Dairy Products From Small and Medium Enterprises. *Bandung Creative Movement (BCM)*, 4(1).
- Versino, F., Ortega, F., Monroy, Y., Rivero, S., López, O. V., & García, M. A. (2023). Sustainable and bio-based food packaging: A review on past and current design innovations. *Foods*, 12(5), 1057. <https://doi.org/10.3390/foods12051057>
- Ying, G., Juan, W., Ping, X., & Wenhuan, W. (2024). Research on the supply chain model development of fresh agricultural products in Jiangsu Province under the background of "Internet +" consumption upgrading. *Modern Agricultural Equipment*, 01, 59-63.