

# Cultural Differences in Consumers' Purchase Intentions Towards Surplus Food in the Retail Sector: A Multi-Group Analysis in China and Spain

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# **Cultural Differences in Consumers' Purchase Intentions Towards Surplus Food in the Retail Sector: A Multi-Group Analysis in China and Spain**

## **Abstract:**

Surplus food retailing represents a potential solution to food waste and insecurity issues. This study explores cultural differences in consumer acceptance of surplus food products in the retail sector by examining how various drivers and barriers influence attitudes and purchase intentions in China and Spain. Drawing upon the Theory of Planned Behavior and Risk Theory, the proposed model was tested using data from 695 Chinese and 573 Spanish consumers. The results show consumers' perceived behavioral control positively influences surplus food purchases in China, but not in Spain, reflecting different market dynamics. Personal norms have a stronger impact on Chinese consumer attitudes. Spanish consumers perceived higher physical and financial risks, possibly due to differences in regulatory and economic environments, which negatively influenced their overall attitudes. The findings indicate cultural differences that explain the acceptance and rejection of surplus food and provide implications for international food chains and retailers.

*Keywords: Surplus Food; Perceived Risks; MultiGroup Analyses for Cross-Cultural Differences*

*Track: Retailing & Omni-Channel Management*

## 1. Introduction

Surplus food (SF), also referred to as food rescue or recovery, aims to redirect food that is excess or not sellable away from disposal towards consumption, thereby reducing food waste and combating hunger (Pandey et al., 2023). SF is collected and distributed via donations and sales, with retailers being the key players, particularly fresh produce (Cakar, 2022).

Innovations like digital platforms (e.g., Too Good To Go) and SF-specialized supermarkets (e.g., Wefood) enhance SF redistribution to low-income families (Cao and Miao, 2021; de Almeida et al., 2023). Despite the growing trend of SF in retail settings, a substantial portion of the market remains resistant, with consumer reluctance presenting a significant challenge (Cao and Miao, 2021). Understanding the factors behind this rejection is crucial, as consumer acceptance underpins SF revaluation. Concerns about safety and quality, fear of being judged by others, and losing the value of the money contributed to this rejection behavior (Adel et al., 2021). Many consumers lack awareness of SF benefits and purchasing channels, leading to perceived purchasing difficulties and rejection (Derqui and Filimonau, 2024). Additionally, consumers seek to protect their societal identity by aligning with desired norms (Sirieix, Lála, and Kocmanová, 2017), and a misalignment between norms and SF purchasing can also drive rejection behavior.

Despite the extensive literature on SF retailing, few studies have examined the impact of cultural differences on consumers' attitudes and purchase intentions toward SF. Consumer food choices vary across societies owing to different sociodemographic, cultural, and food consumption patterns. For instance, social status and others' perceptions are more important in collectivistic cultures than in individualistic cultures (De Mooij, 2019), which may lead to higher psychosocial concerns. In countries favoring locally sourced and seasonal foods, there is a greater focus on freshness, taste, and quality (Palau-Saumell et al., 2021). Consumers may be more cautious about financial losses when grocery shopping in countries where income inequality is more pronounced. Consumers may have higher food safety concerns in regions with high health consciousness (Truong & Truong, 2022). For instance, Adel et al. (2021) identified that health consciousness negatively affects consumers' attitudes towards SF in China but not in Egypt. It is essential to understand these distinctions for international food chains and retailers to tailor their strategies, and for governments to develop effective public policies.

This study aims to understand how different risk factors determine consumers' attitudes and purchase intentions toward SF products across Eastern and Western cultures. Specifically,

it focuses on performing an exhaustive multi-group comparative analysis of China and Spain. By applying a modified version of the Theory of Planned Behavior (TPB) in combination with Risk Theory, this study delves into the drivers and barriers explaining consumers' attitudes and intentions toward SF in these countries. Examining these influences in diverse cultural contexts, such as China and Spain, is essential for identifying key differences and similarities in consumer attitudes and intentions, leading to more effective strategies for promoting SF acceptance globally.

## **2. Theoretical Framework and Hypotheses Development**

### *2.1 The Theory of Planned Behavior (TPB)*

One of the most extensively studied models for anticipating behavioral intentions to comprehend consuming situations is TPB (Ajzen, 1991). The classic TPB model posits that attitudes, subjective norms, and perceived behavioral control (PBC) shape behavioral intentions and facilitate action. Its established nature and adaptable form, accommodating additional variables, have made TPB popular in consumer environmental behavior studies (Wong et al., 2018). This has led to improved research models that address TPB's limitations of TPB (Adel et al., 2021), such as the weak correlation between subjective norms and pro-environmental behaviors in some contexts. For instance, in food waste behavior studies, personal norms seem to offer more accurate predictions (Sirieix, Lála, and Kocmanová, 2017), which focus on individual values and obligations (Issock et al., 2020). Cultural values can influence TPB relationships, with individualistic and short-term-oriented societies like Spain emphasizing personal preferences and a focus on immediate outcomes in contrast to the collectivistic and long-term-oriented culture like China (Hofstede, 2011). In individualistic societies, individuals are more likely to base their intentions on personal attitudes and preferences, in contrast to collectivistic cultures where social norms and obligations play a more dominant role (Hassan et al., 2016). Thus, attitudes are expected to have a stronger impact on Spanish consumers' purchase intentions than on Chinese consumers. In collectivistic cultures, normative expectations significantly influence attitudes and intentions, depending on the alignment of behavior with norms (Hassan et al, 2016). In individualistic cultures, people actively seek information to make decisions, whereas in collectivistic cultures, decisions are based on interpersonal communication and trust (De Mooij, 2019). Collectivism cannot be independent in nature or specific to a particular group; it can only be established when norms specific to acceptable and appropriate behavior exist in a society (Ianole-Călin et al., 2020). Consequently, personal norms are expected to influence Chinese

consumers' attitudes and intentions regarding SF purchases more than Spanish consumers. Similarly, PBC is expected to have a stronger impact on attitudes and purchase intentions in China, as there are better online and offline market dynamics. With the popularity of online shopping, convenience of delivery, and diversified food choices, Chinese consumers may perceive less difficulty in purchasing SF products than Spanish consumers. Based on the above discussion, we propose the following hypotheses:

H1: Consumers' attitudes towards surplus food have a positive impact on their intention to buy SF, and a stronger effect is expected in Spain than in China.

H2: Perceived behavioral control over surplus food has a positive impact on consumers' intention to buy SF, and a stronger effect is expected in China than in Spain.

H3: Personal norms towards surplus food have a positive impact on consumers' intention to buy SF, and a stronger effect is expected in China than in Spain.

H4: Perceived behavioral control over surplus food has a positive impact on consumers' attitudes toward SF, and a stronger effect is expected in China than in Spain.

H5: Personal norms towards surplus food have a positive impact on consumers' attitudes toward SF, and a stronger effect is expected in China than in Spain.

## *2.2 Risk Theory*

Risk theory suggests that individuals assess potential negative outcomes before making decisions (Palau-Saumell et al., 2021). Regarding SF consumption, consumers perceive risks in terms of safety, quality, financial loss, and negative self- and social-image impacts owing to short consumption time, low price, aging appearance, and negative associations with lower social status and economic constraints (Cakar, 2022; Pandey et al., 2023; Adel et al., 2021). Spanish consumers, shaped by stringent EU and national regulations, prioritize food quality and origin, favoring locally sourced, traditional, and organic products for their perceived superior quality and safety (Palau-Saumell et al., 2021). Yue et al. (2024) discovered that Spanish consumers perceive food sustainability to be less important than sensory and healthiness attributes. Thus, Spanish consumers are expected to have higher physical and performance risks when buying SF than Chinese consumers. Income and economic status affect financial risk, especially for middle-to low-income individuals. In China, a larger low-income class and more pronounced income inequality may increase financial risk. Societal norms significantly shape concerns about judgment for opting for surplus items, viewed as "leftover" or indicative of financial constraints (Cao and Miao, 2021). Collectivistic cultures prioritize others' perceptions, a trait that is more pronounced in China than in Spain. Thus,

Chinese consumers are expected to have higher financial and psychosocial risks.

Consequently, this study proposes that:

H6) Physical risk has a negative impact on attitudes toward surplus food consumption and a stronger effect is expected in Spain compared to China.

H7) Performance risk has a negative impact on attitudes toward surplus food consumption and a stronger effect is expected in Spain compared to China.

H8) Psychological-social risk has a negative impact on attitudes toward surplus food consumption and a stronger effect is expected in China compared to Spain.

H9) Financial risk has a negative impact on attitudes toward surplus food consumption and a stronger effect is expected in China compared to Spain.

The proposed research model is illustrated in Figure 1.

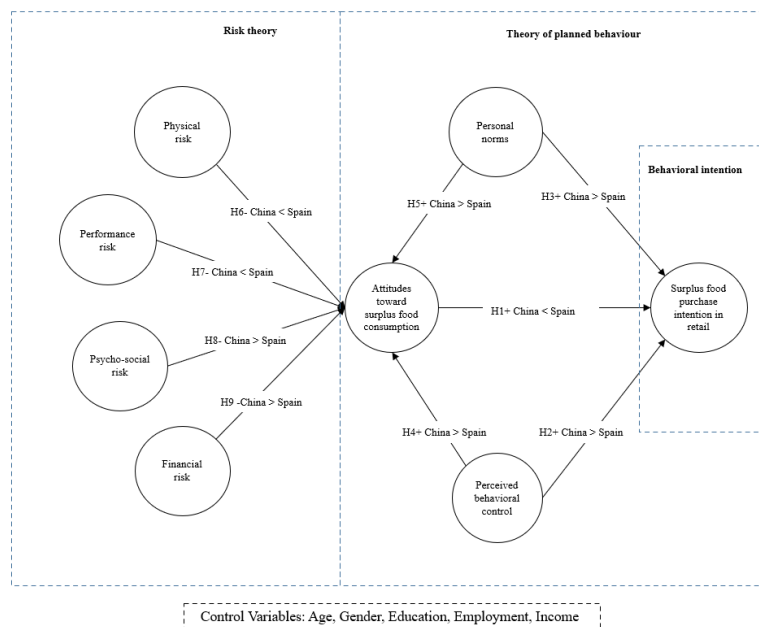


Figure 1. Conceptual framework

### 3. Research methods

China and Spain were chosen for this comparative analysis because of their distinct cultural orientations and differing regulatory and economic environments, which may influence consumer attitudes toward SF. Data were collected through an online survey targeting consumers involved in food product purchases. Participants were assured of the voluntary, anonymous, and confidential nature of their responses. The survey questions were randomized to prevent participants from inferring the study objectives. The survey was distributed by the popular panel companies WenJuanXing in China and Netquest in Spain. Among the 695 Chinese respondents, 57.27% were female, 56.12% were 31-49 years old, and 84.17% were graduates. Of the 573 Spanish respondents, 60.36% were female, 35.49% were

31-49 years old, and 48.57% were graduates. Regarding the questionnaire measurement, seven-point Likert scales (from 1= strongly disagree to 7= strongly agree) were developed based on instruments previously validated by related studies. The measurement items for the TPB variables were adapted from Ajzen (1991) and Wong et al. (2018). PN was measured using three items sourced from Issock et al. (2020). Different risk factors were measured using previously validated scales (Adel et al., 2021; Zeng, 2022).

#### **4. Results**

To test the proposed research model, the partial least squares structural equation modelling (PLS-SEM) method was applied using SmartPLS 4. software. A full collinearity test based on variance inflation factors (VIF) revealed no indication of common method bias. The items and constructs met the traditional reliability and validity criteria. Discriminant validity was also met because the heterotrait-monotrait (HTMT) ratios were all below the acceptable threshold of 0.9 (Hair et al., 2022). Before conducting a between-group analysis to assess the significance of the differences in group-specific parameter estimates, measurement invariance was ensured to confirm that the scale measured the latent construct equally and consistently across different groups. To reduce configural variance, the survey was meticulously designed to be identical using the same platform, distributed uniformly, and treated similarly during data analysis. Moreover, a nonparametric test with permutations was conducted to measure invariance in the composite model (MICOM). The results showed that all constructs have statistical compositional invariance, with all p-values exceeding the 0.05 threshold (Hair et al., 2022).

For hypothesis testing, a bootstrapping procedure and a multigroup analysis were conducted (Table 1). The results showed that attitudes significantly affected customers' purchase intentions towards SF in both China ( $\beta = 0.502$ ;  $t = 11.990$ ) and Spain ( $\beta = 0.521$ ;  $t = 11.977$ ), with no statistical difference, thereby rejecting Hypothesis 1. Similarly, personal norms predicted intentions in China ( $\beta = 0.224$ ;  $t = 5.624$ ) and Spain ( $\beta = 0.287$ ;  $t = 6.086$ ) with no difference, thus rejecting Hypothesis 3. As anticipated, PBC significantly impacts purchase intention in China ( $\beta = 0.178$ ;  $t = 4.691$ ) but not in Spain ( $\beta = 0.021$ ;  $t = 0.618$ ), with a significant difference (0.157), supporting Hypothesis 2. PBC also predicted attitudes in China ( $\beta = 0.293$ ;  $t = 9.430$ ) and Spain ( $\beta = 0.23$ ;  $t = 4.908$ ) but without differences, thus rejecting Hypothesis 4. Personal norms impacted attitudes differently in China ( $\beta = 0.536$ ;  $t = 18.52$ ) and Spain ( $\beta = 0.269$ ;  $t = 6.86$ ), with a significant difference (0.267), thus supporting Hypothesis 5. Physical risks negatively impact Spanish consumers' ATTs ( $\beta = -0.272$ ;  $t =$

4.855), but not Chinese consumers ( $\beta = -0.062$ ;  $t = 1.458$ ), with a significant difference (0.209), supporting Hypothesis 6. Contrary to expectations, financial risks negatively affect Spanish attitudes but not Chinese attitudes, with significant differences rejecting Hypothesis 9. Psychological-social and performance risks did not significantly influence attitudes in either country, with no differences, thus rejecting Hypotheses 7 and 8.

Path	Chinese sample			Spanish sample			Multi-group analysis		
	$\beta$	t-value	p-value	$\beta$	t-value	p-value	Difference (China - Spain)	1 tail p-value	2-tails p-value
Attitudes $\rightarrow$ Intentions	0.502	11.990	0.000	0.522	11.861	0.000	-0.020	0.631	0.738
PBC $\rightarrow$ Attitudes	0.293	9.430	0.000	0.229	4.815	0.000	0.064	0.129	0.259
PBC $\rightarrow$ Intentions	0.178	4.691	0.000	0.019	0.543	0.587	0.159	0.001	0.002
Personal norms $\rightarrow$ Attitudes	0.536	18.520	0.000	0.270	6.689	0.000	0.267	0.000	0.000
Personal norms $\rightarrow$ Intentions	0.224	5.624	0.000	0.291	6.043	0.000	-0.067	0.859	0.282
Performance risk $\rightarrow$ Attitudes	-0.071	1.616	0.106	-0.073	1.284	0.199	0.003	0.485	0.970
Physical risk $\rightarrow$ Attitudes	-0.062	1.458	0.145	-0.272	4.855	0.000	0.209	0.001	0.003
Psycho-Social risk $\rightarrow$ Attitudes	0.002	0.051	0.959	-0.003	0.076	0.940	0.005	0.466	0.932
Financial risk $\rightarrow$ Attitudes	-0.045	1.149	0.251	-0.189	3.351	0.001	0.144	0.017	0.035
	R <sup>2</sup> Intentions= 0.641 R <sup>2</sup> -Attitudes=0.647			R <sup>2</sup> Intentions= 0.514 R <sup>2</sup> -Attitudes=0.512					

Note(s): Analysis was performed at 5% significance level.

Table 1. The structural model results

## 5. Conclusions, limitations, and further research

This study aims to determine the factors influencing consumer purchases of SF products in China and Spain, representing collectivist and individualistic cultures, respectively, based on TPB and Risk theory. The results indicate that consumers' general attitudes and personal norms towards SF consumption explain their intention to buy SF in both countries, aligning with the literature that identifies personal norms as a key predictor of pro-environmental behavior (Issock et al., 2017). Unlike Wong et al. (2018), who found PBC significantly influences SF purchases, our study found this influence significant only in China, not Spain. This can be explained by different market dynamics. Urban China's food systems have transformed dramatically, enhancing agrarian efficiency, distribution, transportation networks, trade liberalization, and privatization of the retail sector, thus increasing food variety. Entering "near-expiry food" on major Chinese e-commerce platforms yields numerous relevant stores. The popularity of online purchases in China has increased purchase



convenience for SF retailing, while Spain has fewer stores and a low penetration of such businesses (Deuqui and Filimonau, 2024). This scarcity weakens the PBC over purchasing decisions, with many Spanish consumers unaware of SF availability. Enhancing SF product availability, variety, and distribution networks is essential for simplifying SF purchases.

Moreover, the Chinese sample demonstrated a stronger reliance on personal norms to shape attitudes and intentions. These findings are consistent with the collectivist nature of Chinese culture, in which perceived societal expectations and personal abilities often interact (Ianole-Călin et al., 2020). This cultural orientation fosters a sense of community and environmental responsibility, elevating personal norms related to sustainable practices (Huang et al., 2022). In collectivist societies, where group norms influence behaviors, personal norms that reflect internalized moral standards are reinforced (Ogiemwonyi and Jan, 2023). Individuals align their attitudes and behaviors with the benefits they benefit from the group. SF products promoted for environmental sustainability and waste reduction with government support have created a stronger personal obligation for Chinese consumers to support such initiatives. Communal responsibility enhances the positive impact of personal norms on Chinese consumers' attitudes. In contrast, the Spanish sample exhibited less reliance, likely due to individualistic tendencies and a higher emphasis on individual preferences.

The results show that safety and financial concerns constitute significant barriers to SF adoption in Spain, but not in China. This could be explained by differences in economic environments and food consumption patterns. Food prices experienced high inflation (25.1%) in Spain from 2021 to 2023, while income remained steady (3.5% annual growth) (World Bank, 2024), which may contribute to heightened financial risk perceptions of SF. China's economy appears solid, as evidenced by its low inflation and relatively stable food pricing, which could contribute to reduced financial risk. The Chinese market features intense competition and a diverse range of products, including economic options. This competitive landscape promotes a strong culture of seeking discounts, intensified by the rapid expansion of e-commerce and platforms offering group buying and flash sales. Consequently, Chinese consumers are accustomed to purchasing discounted food items, such as SF products, marketed as bargains rather than risks. Conversely, Spanish cuisine emphasizes high-quality ingredients that are more perishable and require strict handling and storage to ensure safety. Therefore, high standards for food safety and freshness may amplify the perceived physical risks in Spain, and SF products, often viewed as surplus or near expiration, may not meet these standards, raising concerns about the value of money and health, which is consistent with previous studies (Adel et al., 2021).

Performance and psychosocial risks did not impact consumers' intentions to purchase SF in either country, in contrast to previous literature that indicated quality concerns as a primary reason for not purchasing SF products (Adel et al., 2021). This may be due to the combined effect of cultural adaptation towards sustainability, social norms promoting environmentally friendly behaviors, and strong economic incentives creating a favorable environment for SF product acceptance. As sustainability becomes increasingly accepted and encouraged, psychosocial risks diminish. Consumers are less likely to feel judged to buy SF products and more likely to feel proud of their environmentally friendly choices. The environmental benefits of SF products, including reducing food waste, can lead consumers to view purchases as socially responsible and fulfilling, rather than as a threat to self-esteem or social status. SF products are often sold at lower prices than regular products, thereby providing tangible economic benefits. This can significantly reduce quality concerns as the perceived value of money increases, especially in economies with limited disposable income.

This study should be reinforced by combining MGA with Necessary Condition Analysis. Researchers are currently conducting such analyses. Future research should also extend these insights by conducting longitudinal studies and using experimental approaches to provide deeper insights into the factors driving actual purchasing behavior.

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