



OPTIMISING PACKAGING AND BRANDING OF RURAL AGRICULTURAL PRODUCTS THROUGH NEUROMARKETING: A NARRATIVE REVIEW OF CONSUMER ATTENTION, TRUST, AND PERCEIVED QUALITY

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Article Information:

Article Type:
Research Article

Manuscript Received:
13 February 2026

Final Revision Received:
25 April 2026

Published Online:
15 May 2026

Keywords:
Neuromarketing, Packaging, branding, rural agricultural products, agricultural commodities, consumer attention, perceived quality, consumer trust, market dynamics, value addition

Rural agricultural products often possess strong intrinsic value but remain disadvantaged in competitive markets due to weak branding, limited packaging differentiation, and low consumer visibility. Within agricultural commodity markets, these products are often weakly differentiated, making packaging and branding important mechanisms for signalling quality, origin, trustworthiness and market value. Packaging therefore functions not only as a protective or logistical tool, but also as a sensory, informational and symbolic interface through which consumers infer product quality, safety, authenticity and trustworthiness. The study examines how neuromarketing can inform packaging and branding strategies for rural agricultural products by synthesising evidence from consumer neuroscience, food packaging, rural marketing, agricultural product branding, Micro Small and Medium Enterprises (MSMEs) food-product marketing and sustainability labelling. Sources were identified through academic database searches and manual reference checks, with the final narrative synthesis including 17 sources published between 2015 and 2026. The review shows that packaging cues, such as colour, typography, transparency, product imagery, ingredient display, certification labels, origin claims and cultural symbols can shape consumer attention, perceived quality, trust, authenticity, perceived value and purchase intention. Neuromarketing methods, including eye-tracking, Electroencephalogram (EEG), FaceReader and other biometric approaches, provide useful insight into implicit consumer responses that may not be captured through self-reported preferences alone. However, direct neuromarketing evidence on rural agricultural products, smallholder-linked brands and Global South rural markets remains limited, with most evidence drawn from general food packaging, organic products, nutritional labelling and laboratory-based food-choice studies. This review contributes to the existing body of literature on rural agricultural marketing and neuromarketing by proposing a conceptual framework that links packaging and branding cues to neuromarketing responses, psychological evaluations, and behavioural outcomes. It concludes that ethical, context-sensitive, and low-cost neuromarketing approaches can support rural producers by improving product visibility, consumer trust, and market competitiveness. By strengthening market access, value addition, and income-generating opportunities for rural producers and smallholder-linked enterprises, these approaches may contribute to sustainable rural livelihoods, inclusive economic development, and the broader sustainability of agri-food systems.

Cite this article: Olaitan Ayomide Shemfe (2026). Optimising Packaging and Branding of Rural Agricultural Products Through Neuromarketing: A Narrative Review of Consumer Attention, Trust and Perceived Quality. The Journal of Sustainable Development, Law and Policy. Vol. 18:2. 199-223. DOI: 10.4314/jsdlp.v18i2.9.



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Publisher: Institute for Oil, Energy, Environment and Sustainable Development (OGES Institute), Afe Babalola University, Ado Ekiti, Nigeria.

1. INTRODUCTION

Rural agricultural products occupy an important position in food systems, livelihoods and local economic development, yet they often enter markets with weaker branding, limited packaging differentiation and lower consumer visibility than established commercial food brands¹. Many rural agricultural products are traded within food and agricultural commodity markets, their competitiveness depends not only on production quality, but also on how effectively packaging and branding differentiate them and communicate value to consumers. In many rural and smallholder-linked contexts, producers compete not only on the basis of product quality but also on their ability to communicate that quality to consumers². This communication increasingly occurs through packaging, labels, visual design, product information, certification marks, origin cues and brand narratives. Packaging is therefore no longer only a protective or logistical tool; it functions as a marketing, informational and symbolic interface between producers and consumers³.

This is especially important for rural agricultural products, because consumers may not always have direct knowledge of the producer, production process, product freshness, safety, authenticity or quality⁴. In such situations, consumers rely on visible and interpretable cues. These include colour, package shape, transparency, label placement, certification logos, nutritional information, eco-labels, local-origin claims, cultural symbols, brand name and product imagery⁵. Evidence from food

¹ C Docherty, 'Branding Agricultural Commodities: The Development Case for Adding Value Through Branding' (Topic Brief for New Business Models for Sustainable Trading Relationships Project 2012); SS Uplaonkar and Z Bahar, 'The Role of Branding in Agricultural Products: From Farm to Shelf' (2025) 14(8) *International Journal of Latest Technology in Engineering, Management & Applied Science* 57 <https://doi.org/10.51583/IJLTEMAS.2025.1408000008>.

² Uplaonkar and Bahar (n 1).

³ M Wszółek and A Gąsiorowska, 'Designing for People and Place: A Case Study of Packaging Development for Local Winemakers in Lower Silesia' (2026) *Wine Economics and Policy* <https://doi.org/10.36253/wep-19773>.

⁴ Uplaonkar and Bahar (n 1).

⁵ OA Shemfe and I Mbukanma, 'Exploring Neuromarketing Strategies Towards Boosting Consumer Engagement with Rural Agricultural Products: A Systematic Review' (2025) 2(1)

packaging and consumer-behaviour studies suggests that these cues influence attention, expectations, perceived quality, trust, perceived value and purchase intention. For example, studies on apple juice packaging show that brand and package information can shape sensory expectations and perceptions of naturalness, healthiness and price, while consumers visually attend to nutritional data, brand name and product-type information when evaluating labels ⁶.

At the same time, neuromarketing and consumer neuroscience have emerged as important approaches for understanding consumer responses beyond self-reported preferences. Traditional marketing research often depends on questionnaires, interviews and stated intentions. While useful, these methods may not fully capture automatic, emotional, unconscious or visually driven responses that occur during product evaluation ⁷. Neuromarketing methods, such as eye-tracking, electroencephalogram (EEG), facial-expression analysis, galvanic skin response and other biometric measures can provide additional insight into what consumers notice, how they emotionally respond, how much cognitive effort is involved and how such responses relate to preference and purchase intention ⁸. The consumer neuroscience literature on branding and packaging has grown rapidly, but it remains fragmented across disciplines, methods and product categories.⁹ describe this field as multidisciplinary and fragmented, while also showing that consumer neuroscience research on branding and packaging can be organised around mental processes,

Interdisciplinary Journal of Management Sciences a02 <https://doi.org/10.38140/ijms-2025.vol2.1.02>.

⁶ K Włodarska, K Pawlak-Lemańska, T Górecki and E Sikorska, 'Factors Influencing Consumers' Perceptions of Food: A Study of Apple Juice Using Sensory and Visual Attention Methods' (2019) 8(11) *Foods* 545 <https://doi.org/10.3390/foods8110545>.

⁷ M Schmidt, 'Unobtrusive Marketing Research Methods: An Overview' (2012) 1(2) *Engineering Management Research* 172 <https://doi.org/10.5539/emr.v1n2p172>.

⁸ S Kaheh, M Ramirez, J Wong and K George, 'Neuromarketing Using EEG Signals and Eye-Tracking' in *2021 IEEE International Conference on Electronics, Computing and Communication Technologies (CONECCT)* (IEEE 2021) 1.

⁹ VJ Cerro Rodríguez, A Antonovica and DL Sutil Martín, 'Consumer Neuroscience on Branding and Packaging: A Review and Future Research Agenda' (2023) 47(6) *International Journal of Consumer Studies* 2790 <https://doi.org/10.1111/ijcs.12936>.

such as attention and memory, emotions and motivation, and reward and decision-making systems.

Despite this growth, the direct application of neuromarketing to rural agricultural products remains limited. Existing neuromarketing studies are concentrated mainly in general packaged foods, snacks, beverages, nutritional labels, organic products, front-of-pack labels and laboratory-based food-choice experiments. Rural agricultural products, smallholder-linked brands, local agri-food enterprises, farmer-group products and Global South rural markets are far less visible in this literature¹⁰. This creates a significant conceptual and practical gap. Although packaging and branding are widely recognised as important for consumer decision-making, there is limited integrated understanding of how neuromarketing-informed packaging strategies can enhance consumer attention, perceived quality, trust, authenticity and purchase intention for rural agricultural products. This gap is especially relevant to agricultural commodity markets, where weak product differentiation can limit consumer recognition, perceived value and rural producer competitiveness.

This review responds to that gap by synthesising evidence from consumer neuroscience, neuromarketing, food packaging, sensory marketing, agricultural product packaging, rural consumer behaviour, Micro Small and Medium Enterprises (MSMEs) branding and sustainability labelling. The review does not assume that neuromarketing has already been widely applied to rural agricultural product branding. Rather, it argues that related evidence from food packaging and consumer neuroscience can be integrated with the rural agri-food marketing literature to develop a research agenda for the competitiveness of rural agricultural products. This integrative approach is appropriate because the field is emerging and the relevant evidence is scattered across different research traditions.

Accordingly, this review contributes to the existing body of literature on neuromarketing, food packaging, and rural agricultural marketing by consolidating fragmented evidence into a conceptual framework for

¹⁰ E Kiryluk-Dryjska and A Rani, 'Neuroeconomic Studies in Agriculture and Food Economics: A Systematic Review of Literature' (2023) 2023(4) *Roczniki (Annals)* <https://doi.org/10.22004/ag.econ.340081>; Shemfe and Mbukanma (n 5).

understanding how packaging cues shape consumer attention, perceived quality, trust, and purchase intention for rural agricultural products. The framework also provides a foundation for future research and practical strategies to improve the market competitiveness of rural agricultural products. The central argument is that packaging and branding cues influence consumer attention and interpretation, which in turn shape perceived quality, trust, authenticity, brand attitude and purchase intention. For rural agricultural products, these processes are particularly important because packaging can help compensate for weak brand recognition, limited market visibility and consumer uncertainty. However, the review also recognises that neuromarketing evidence must be applied ethically and in a developmentally appropriate manner. The aim should not be manipulative persuasion, but rather the design of packaging and branding strategies that help rural producers communicate genuine quality, origin, safety, sustainability and cultural value more effectively.

The remainder of this article is organised into six sections. Section 2 outlines the methodology adopted for the review, including the review approach, search strategy, selection criteria and evidence organisation. Section 3 presents and discusses the findings from the literature, focusing on the role of packaging and branding cues in shaping consumer attention, perceived quality, trust and purchase intentions. Section 4 proposes a conceptual framework linking packaging and branding cues to neuromarketing responses and behavioural outcomes in rural agricultural product markets. Section 5 identifies key research gaps and future research directions. Section 6 discusses the practical implications for rural producers, cooperatives, MSMEs and development practitioners. Finally, Section 7 concludes the article by summarising the main findings and contributions and highlighting opportunities for future neuromarketing research in rural agricultural marketing.

2. METHODOLOGY

2.1 Review approach

This article adopts an integrative narrative review approach. A narrative review is appropriate because the literature relevant to the topic is interdisciplinary and unevenly distributed across several domains,

including neuromarketing, consumer neuroscience, food packaging, rural marketing, agricultural product branding, sustainability labelling and MSME product competitiveness. Unlike systematic reviews, which follow predefined and highly structured protocols, a narrative review allows for interpretive integration of diverse sources and emphasises depth of analysis, conceptual synthesis and contextual understanding rather than exhaustive evidence retrieval¹¹. The purpose of this approach is to synthesise related streams of scholarly works and develop a coherent conceptual framework for future research.

2.2 Search strategy, selection criteria and evidence organisation

Sources were identified through searches in academic databases such as Scopus, Web of Science and Google Scholar, complemented by manual checks of reference lists and authoritative texts. Search terms included combinations of keywords, such as “neuromarketing”, “consumer neuroscience”, “food packaging”, “agricultural product branding”, “rural marketing”, “MSME food products”, “sustainability labelling”, “eco-labelling”, “consumer attention”, “eye-tracking”, “EEG”, “FaceReader”, “perceived quality”, “consumer trust”, “authenticity”, “purchase intention” and “rural agricultural products”.

The final narrative synthesis included 17 core empirical, review, and conceptual sources published between 2015 and 2026 that were directly analysed in the findings and discussion sections. These sources were selected because they provided evidence relevant to neuromarketing, consumer neuroscience, food packaging, agricultural product branding, rural marketing, MSME food-product marketing, sustainability labelling, consumer attention, perceived quality, trust, authenticity, and purchase intention. Additional methodological, background, and contextual references were retained to support the study's introduction, review approach, and conceptual framing. Inclusion criteria were publication between 2015 and 2026; relevance to neuromarketing, consumer neuroscience, food packaging, agricultural product branding, rural

¹¹ BN Green, CD Johnson and A Adams, ‘Writing Narrative Literature Reviews for Peer-Reviewed Journals: Secrets of the Trade’ (2006) 5(3) *Journal of Chiropractic Medicine* 101 [https://doi.org/10.1016/S0899-3467\(07\)60142-6](https://doi.org/10.1016/S0899-3467(07)60142-6).

marketing, MSME food-product marketing, sustainability labelling, consumer attention, perceived quality, trust, authenticity, or purchase intention; and contribution to understanding packaging or branding cues in food, agricultural, local, organic, rural or small-enterprise product contexts. Exclusion criteria were sources unrelated to food or agricultural product packaging; studies focused only on general advertising without packaging or branding relevance; sources lacking conceptual relevance to consumer attention, perceived quality, trust or product evaluation; and publications that did not contribute to the review's focus on rural agricultural product visibility, competitiveness and consumer response.

Additional background and methodological references were retained to support the introduction, review approach and conceptual framing. The evidence was organised into four categories. The first category consisted of direct neuromarketing studies using methods, such as eye-tracking, EEG, FaceReader or biometric measures in food packaging and food-choice contexts¹². The second category consisted of neuromarketing-adjacent studies that used visual attention, sensory evaluation or implicit/explicit consumer-response methods without necessarily focusing on rural products¹³. The third category consisted of packaging

¹² J Berčík, J Gálová, A Rusková, K Predanócyová, E Horská and F Tkáč, 'The Influence of Front-of-Pack Labelling on Consumer Decision-Making: A Comprehensive Study Using Electroencephalography and FaceReader' (2024) 75(8) *International Journal of Food Sciences and Nutrition* 911 <https://doi.org/10.1080/09637486.2024.2420269>; C Georgakarakou, K Risikos, G Tsourvakas and I Yfantidou, 'What Features of Green Products Packaging Are More Eye Catching? An Eye-Tracking Exploratory Study About Organic Agricultural Products' (2020) 14(2) *International Journal of Technology Marketing* 93 <https://doi.org/10.1504/IJTMKT.2020.110124>; A Mehta, L Serventi, L Kumar and DD Torrico, 'Exploring the Effects of Packaging on Consumer Experience and Purchase Behaviour: Insights from Eye Tracking and Facial Expressions on Orange Juice' (2024) 59(11) *International Journal of Food Science and Technology* 8445 <https://doi.org/10.1111/ijfs.16885>; HM Šola, JG Kljusurić and I Rončević, 'The Impact of Bio-Label on the Decision-Making Behavior' (2022) 6 *Frontiers in Sustainable Food Systems* 1002521 <https://doi.org/10.3389/fsufs.2022.1002521>.

¹³ Z Guo, Z Cao, Y Mao, M Mustafa, Y Luo and Y Ning, 'Seeing Through Packaging: Eye-Tracking Evidence on How Product Visual Strategy and Unit Size Shape Visual Attention and Consumer Evaluation' (2026) 19(2) *Journal of Eye Movement Research* 30 <https://doi.org/10.3390/jemr19020030>; BM Inguscio, G Carcatera, P Cherubino, D Rossi, G Madini, L Fraccascia, F Babiloni and G Cartocci, 'Neuroscience Meets Food Choice: Implicit and Explicit Consumer Responses to Plant-Based vs Animal-Based Foods' (2025)

and branding studies in agricultural, local, organic, MSME or rural food contexts ¹⁴. The fourth category consisted of broader theoretical and review literature that supported the conceptual framing of consumer attention, perceived quality, trust, branding and packaging ¹⁵. This distinction is important because direct neuromarketing evidence on rural agricultural products is still scarce. Therefore, the review carefully avoids presenting all packaging studies as neuromarketing studies. Instead, it uses direct neuromarketing evidence to explain mechanisms of attention, emotion and cognitive response, while using rural and agricultural packaging studies to contextualise the relevance of these mechanisms for smallholder-linked and rural agri-food products.

3. FINDINGS AND DISCUSSION

3.1 Conceptualising Neuromarketing in Packaging and Branding

Neuromarketing refers to the application of neuroscience and psychophysiological methods to understand consumer behaviour, especially responses that may not be fully accessible through conscious self-report ¹⁶. In packaging and branding research, neuromarketing is useful, because consumer decisions often occur quickly, visually and

Current Research in Food Science 101288 <https://doi.org/10.1016/j.crfs.2025.101288>; M Retamosa, I Aliagas and A Millán, 'Displaying Ingredients on Healthy Snack Packaging: A Study on Visual Attention, Choice, and Purchase Intention' (2024) 39(4) *Journal of Sensory Studies* e12944 <https://doi.org/10.1111/joss.12944>.

¹⁴ S Choubey and MK Meet, 'Impact of Packaging and Promotional Activities on the Buying Behavior of Rural Consumers' (2015) 3(1) *International Journal of Research in Management & Social Science* 83; HT Nguyen and HT Le, 'The Effect of Agricultural Product Eco-Labeling on Green Purchase Intention' (2020) 10(12) *Management Science Letters* 2813 <https://doi.org/10.5267/j.msl.2020.4.028>; CE Wilfred and TV Onyekusiobi, 'Influences of Packaging on Consumers' Choice of Agricultural Products in Enugu, Nigeria' (2017) 5(5) *Turkish Journal of Agriculture - Food Science and Technology* 484 <https://doi.org/10.24925/turjaf.v5i5.484-487.1023>; AK Wijaya, HD Wahyudi, E Siswanto and M Munir, 'The Influence of Product Quality, Packaging, and Brand Image on Purchase Decisions: The Mediating Role of Perceived Value in MSME Bakery Context' (2026) 7(1) *Journal of Social Work and Science Education* 590 <https://doi.org/10.52690/jswse.v7i1.1357>.

¹⁵ Cerro Rodríguez, Antonovica and Sutil Martín (n 9).

¹⁶ G Mishra and M Shukla, 'Neuro Marketing: A Tool to Understand Consumer Psychology' (2020) 5(6) *International Journal of Technical Research & Science* 8 <https://doi.org/10.30780/IJTRS.V05.I06.002>.

emotionally. In retail environments, consumers may evaluate products within seconds, relying on visual salience, familiarity, perceived quality and trust cues. Packaging therefore becomes a critical stimulus that can activate attention, memory, emotion and preference ¹⁷.

Consumer neuroscience research on branding and packaging has shown that packaging can influence several mental processes relevant to consumer decision-making. ¹⁸emphasise that packaging and branding research from a consumer neuroscience perspective can be organised around attention and memory, emotions and motivation, and reward and decision-making systems. Their review is particularly important for the present study, because it confirms that the field is growing but fragmented, and that future research needs to connect neuroscience tools more clearly to branding and packaging problems.

In food contexts, neuromarketing methods are especially useful, because food choice involves both rational and affective processes. Consumers may report that they value price, nutrition or health, but their visual attention and emotional responses may reveal different patterns. For example, a consumer may state that price is important, yet eye-tracking may show that nutritional information, product images or origin logos receive more attention during evaluation. Similarly, facial-expression analysis or EEG may reveal emotional or cognitive responses that differ from questionnaire responses. This gap between explicit and implicit response is one reason why neuromarketing can enrich food packaging research ¹⁹.

The relevance of neuromarketing to rural agricultural products lies in its ability to identify which packaging and branding cues consumers actually notice and how these cues influence perceptions. Rural producers may invest in packaging elements that they assume are important, but without evidence on consumer attention and interpretation, such investments may not translate into stronger market performance. Neuromarketing-

¹⁷Wszolek and Gąsiorowska (n 3). Wszolek, Mariusz, and Agata Gąsiorowska. "Designing for People and Place a Case Study of Packaging Development for Local Winemakers in Lower Silesia.

¹⁸ Ibid 2790-2815.

¹⁹ Berčík and others (n 12); Mehta and others (n 12).

informed research can help determine whether consumers attend more to product images, transparent windows, certification marks, origin labels, nutritional information, cultural symbols, freshness claims or farmer-story branding. This knowledge can support more effective and affordable packaging design for small producers.

3.2 Packaging as an Extrinsic Quality Cue

Food quality is evaluated through both intrinsic and extrinsic cues. Intrinsic cues refer to the physical characteristics of the product itself, such as taste, texture, colour, aroma and freshness. Extrinsic cues refer to information surrounding the product, such as packaging, brand name, label, price, origin, certification and marketing communication ²⁰. In many purchasing situations, especially before consumption, consumers cannot directly assess intrinsic quality. They therefore rely on extrinsic cues to form expectations.

This is particularly relevant to rural agricultural products. A consumer purchasing packaged honey, dried fruit, organic vegetables, grains, juice, herbs or traditional food products may not know the producer personally or be able to assess product quality before purchase. Packaging becomes a proxy for professionalism, safety, freshness and trustworthiness. Poor packaging may cause consumers to underestimate product quality even when the product itself is good. Conversely, clear, attractive and informative packaging can enhance perceived value and encourage purchase.

The study by ²¹, on apple juice demonstrates how packaging and brand information shape consumer perception. The study found that brand and package information had a large effect on sensory expectations, and that consumers focused on nutritional data, brand name and product-type information when viewing labels. It also showed that local producer juices were perceived as more natural, healthy and expensive than reconstituted juices from concentrate. This finding is important for rural agricultural

²⁰ M Lawley, D Birch and D Hamblin, 'An Exploratory Study into the Role and Interplay of Intrinsic and Extrinsic Cues in Australian Consumers' Evaluations of Fish' (2012) 20(4) *Australasian Marketing Journal* 260 <https://doi.org/10.1016/j.ausmj.2012.05.014>.

²¹ Włodarska and others (n 6).

products, because it suggests that localness and product information can enhance perceived quality when communicated effectively through packaging.

Similarly, ²² found a direct relationship between packaging and consumers' choice of agricultural products, as well as between packaging and perceived quality. This is one of the most directly relevant studies for the present review, because it focuses explicitly on agricultural products in a Nigerian urban consumer context. It supports the argument that packaging matters not only for processed commercial foods but also for agricultural products that may traditionally be sold with minimal branding.

The MSME bakery study by ²³ further reinforces this argument. In that study, product quality, product packaging and perceived value significantly and positively affected purchase decisions. Product quality and packaging also significantly affected perceived value, while brand image did not have a significant effect. This is highly relevant for small rural or MSME producers because it suggests that tangible cues, such as product quality and packaging may be more immediately influential than symbolic brand image in contexts where brands are still developing. Taken together, these studies suggest that packaging functions as a quality signal. For rural agricultural products, packaging can communicate that a product is safe, fresh, authentic, carefully produced and worthy of consumer trust. However, the design of such packaging must be informed by evidence about what consumers actually notice and value.

3.3 Packaging Cues and Consumer Attention

Attention is one of the strongest areas of evidence in neuromarketing and food packaging research. Eye-tracking studies provide objective information about where consumers look, how long they look, which package areas attract early attention, and which cues sustain visual engagement. This is important, because attention often precedes

²² Wilfred and Onyeakusiobi (n 14).

²³ Wijaya and others (n 14).

evaluation. A packaging cue that is not noticed cannot influence perceived quality or purchase intention.

Several studies support the role of packaging cues in visual attention.²⁴ examined which packaging features of organic agricultural products are most eye-catching using an eye-tracking exploratory design. The study focused on packaging elements, such as eco-labels, product images, package shape and colour, and investigated how these features affected consumers' eye reactions, perceptions, attitudes and buying behaviour. The study is relevant to rural agricultural product branding because it shows that packaging features are not merely decorative; they can influence what consumers visually notice and how they evaluate green or organic agricultural products.²⁵ studied the impact of a bio-label on decision-making behaviour using webcam-based eye-tracking and emotional response measures. Their study manipulated packaging colour and bio-label placement and found that both mattered for eye-tracking metrics. This supports the argument that sustainability-related labels are not only informational cues but also visual stimuli whose placement and design influence consumer attention.

The study by ²⁶ On front-of-pack labelling, eye-tracking, FaceReader, and EEG were used to examine consumer decision-making. It found differences between implicit and explicit feedback when assessing the effect of Nutri-Score and other factors on healthier food choices. This is important because it shows that consumers stated views may not fully align with their implicit responses. For rural agricultural product packaging, this suggests that surveys alone may be insufficient to determine effective packaging design.

²⁷ provide further evidence through their study of orange juice packaging using eye-tracking and facial expressions. Their findings show that physical packaging features significantly affected attention during initial interaction, while implicit emotions offered deeper insight into consumer preferences. They also found that nutritional information received

²⁴ Georgakarakou and others (n 12).

²⁵ Šola, Kljusurić and Rončević (n 12).

²⁶ Ibid 911-928.

²⁷ Ibid 8445-8460.

maximum visual attention during evaluation, while the New Zealand-made logo strongly drove purchase intention. Importantly, the packaging that attracted the most attention was not necessarily the one with the highest liking score. This finding is highly relevant because it warns against assuming that attention alone guarantees preference or purchase.

²⁸studied ingredient display on healthy snack packaging using eye-tracking and questionnaires. Their results showed that the central area of the packaging where ingredients were displayed attracted more attention, and that fixation duration was related to product choice. This supports the idea that ingredient visibility and central placement can influence attention and purchase-related outcomes.

The recent eye-tracking study by²⁹ on transparent windows and product images provides further evidence that visual strategies shape attention and evaluation. Transparent-window packaging attracted attention more rapidly and sustained longer fixations than product-image packaging. These attention differences were associated with higher expected tastiness, expected quality and purchase intention. This finding has strong implications for rural agricultural products, because transparent packaging may help communicate freshness, authenticity and product integrity, especially where consumers may distrust unknown brands.

Across these studies, the evidence suggests that packaging cues, such as colour, label placement, transparency, ingredient display, product imagery, nutritional information and certification logos influence visual attention. However, attention is not the final outcome. The meaning consumers attach to what they see determines whether attention becomes trust, perceived quality or purchase intention.

3.4 Packaging, Perceived Quality and Product Expectations

Perceived quality refers to consumers' judgement of a product's excellence or superiority based on available cues. In food markets, perceived quality is shaped before consumption through packaging, branding, price, labels,

²⁸ Retamosa, Aliagas and Millán (n 13).

²⁹ Guo and others (n 13).

origin and product appearance. For rural agricultural products, perceived quality is especially important because products may compete against established brands that already enjoy consumer familiarity. Evidence from the reviewed studies shows that packaging can generate expectations about taste, freshness, healthiness, naturalness and value. ³⁰found that packaging and brand information generated high sensory expectations for apple juice and influenced how consumers perceived product categories. Local producer juices were perceived as more natural, healthy and expensive, suggesting that local identity can enhance quality expectations when communicated effectively.

The MSME bakery study also shows that packaging influences perceived value, which then mediates purchase decisions. This is useful for rural agricultural product branding because perceived value may be a more realistic short-term outcome than strong brand loyalty. Small producers may not immediately build powerful brands, but they can improve packaging to increase perceived value and consumer willingness to buy ³¹. The Nigerian agricultural product study directly links packaging with perceived quality. This supports the claim that agricultural products are not exempt from packaging effects. Even when products are basic or locally sourced, consumers use packaging as a cue to judge quality ³².

Neuromarketing studies add another layer by showing how attention and implicit response contribute to quality expectations. ³³found that transparent windows increased expected tastiness, expected quality and purchase intention. This suggests that visual access to the product can reduce uncertainty and strengthen expectations. In rural agricultural markets, this has practical significance. Many smallholder-linked products are sold with minimal packaging, handwritten labels or inconsistent branding³⁴. Such presentation may unintentionally signal low quality, even

³⁰ Ibid Page 545.

³¹ Ibid Page 590-606.

³² Ibid Page 484-487.

³³ Ibid Page 30.

³⁴ IS Putri, NR Wijaya, RN Widiastutik and RA Wiguna, 'Innovative Branding Support for Organic-Fertilizer MSME: Exploring Karangwaru Sragen's Local Potential' (2025) 7(1) *Darmabakti Cendekia: Journal of Community Service and Engagements* 173 <https://doi.org/10.20473/dc.V7.I1.2025.173-181>.

when the product itself is fresh or superior. Improving packaging does not mean making rural products appear artificial or overly commercial. Rather, it means designing packaging that communicates genuine product strengths: freshness, origin, naturalness, cultural identity, production method and safety.

3.5 Trust, Authenticity and Certification Cues

Trust is central to food purchasing, because consumers are vulnerable to uncertainty about safety, origin, production methods and quality ³⁵. Trust becomes even more important for rural agricultural products because consumers may not know the producer or may be unfamiliar with the product's origin. Packaging and branding can help build trust through certification marks, origin labels, traceability information, local identity, sustainability claims, Halal logos, eco-labels and transparent product information.

The evidence base suggests that trust is strongly supported by related packaging and labelling studies, although it is less directly measured in neuromarketing research. The Selangor local food study by ³⁶ found that the Halal logo was the most important product attribute for consumers, followed by price, size and quantity, and packaging. This finding is important, because it shows that trust-related cues can outweigh purely aesthetic features. In contexts where religious, ethical or safety assurance matters, certification marks can serve as powerful trust signals ³⁷.

The Vietnam study on agricultural product eco-labelling found that eco-label knowledge, consumer trust, perceived value, environmental concern and consumer attitudes were related to green purchase intention. This is directly relevant because it focuses on agricultural products and shows

³⁵ R Ladwein and AM Sánchez Romero, 'The Role of Trust in the Relationship Between Consumers, Producers and Retailers of Organic Food: A Sector-Based Approach' (2021) 60 *Journal of Retailing and Consumer Services* 102508 <https://doi.org/10.1016/j.jretconser.2021.102508>.

³⁶ SN Shamri, NA Mohd Suhaimi and A Alwi, 'The Factors Affecting the Consumer Buying Behaviour Towards Local Brand of Food Product in Selangor' (2021) 12(1S) *Journal of Agrobiotechnology* 40 <https://doi.org/10.37231/jab.2021.12.1S.269>.

³⁷ *ibid.*

that eco-labels can transmit environmental and trust-related messages³⁸.³⁹study on bio-labels also contributes to this discussion by showing that bio-label placement and packaging colour affect visual attention. While this study focuses more on decision-making and visual/emotional response than trust itself, it supports the idea that sustainability and bio-production cues must be visually accessible to influence consumers.

Trust is also connected to authenticity. Rural agricultural products often possess authenticity advantages because they may be associated with local production, traditional knowledge, community identity or natural methods. However, authenticity must be communicated credibly. Packaging that uses local-origin claims, producer stories, cultural symbols or transparent product information may help consumers interpret the product as genuine rather than generic. At the same time, trust cues must be used carefully. If rural packaging imitates commercial brands too closely, it may lose its local authenticity. If it relies only on rustic imagery without quality information, it may appear informal or unsafe. Effective packaging must balance authenticity with professionalism. This is where neuromarketing-informed design can be useful: it can help identify which trust cues attract attention and how consumers interpret them.

3.6 Rural, Local and MSME Agri-Food Contexts

The rural and MSME literature provides the contextual foundation for applying neuromarketing insights to agricultural products. These studies show that packaging, affordability, local identity and product information matter in rural and local food markets, even though most of them do not use neuromarketing methods.⁴⁰study on rural consumers highlights the importance of packaging and promotional activities in rural buying behaviour. The study notes that companies increasingly use smaller packaging and redesign products to meet rural consumers' affordability and expectations. Although the study is not specific to agricultural products or neuromarketing, it is useful for showing that rural consumers

³⁸ Nguyen and Le (n 14).

³⁹ Šola, Kljusurić and Rončević (n 12).

⁴⁰ Choubey and Meet (n 14).

are responsive to packaging strategy and that rural markets require context-sensitive design.

The Ahmedabad packaged-food study similarly focuses on rural consumer behaviour and packaged food. It positions rural marketing as important for inclusive development and examines factors influencing packaged-food purchasing in rural areas. This supports the broader argument that rural consumers are not passive or unsophisticated buyers; they evaluate packaged products through multiple criteria, including price, quality, brand, health and convenience⁴¹. The Ciburial Village study provides a more direct link to farmer-group agricultural products. It examines local agricultural product packaging innovation as a strategy to improve branding and sustainable competitive advantage for farmer community products in West Bandung Regency. The study reports that packaging innovation improved brand awareness and product competitiveness. This is highly relevant, because it shows how packaging innovation can support farmer-group products and rural economic development⁴².

The MSME bakery study also contributes to the small-enterprise context. It shows that MSME food products may benefit from packaging improvements, because consumers prioritise tangible cues such as product quality and packaging design. This is relevant to rural producers because many smallholder-linked enterprises face similar challenges of limited brand recognition and resource constraints⁴³. Together, these studies show that rural, local and MSME agri-food products face a branding challenge. They may have strong product value but weak market communication. Neuromarketing does not replace traditional rural marketing or

⁴¹ S Bhatt and A Bhatt, 'Consumer Behavior Towards Packaged Food in Rural Areas: An Empirical Study in Ahmedabad District, Gujarat' (2015) 14(1) *IUP Journal of Marketing Management* 7.

<https://www.proquest.com/openview/8b0b503a74b08badc56e3289e32c2a32/1?pq-origsite=gscholar&cbl=54464> Accessed 5 January 2025

⁴² F Reyta, S Purnama and B Foster, 'Local Agricultural Product Packaging Innovation as an Effort to Improve Branding and Sustainable Excellence of Farmer Community Products in Ciburial Village, West Bandung Regency' (2024) 6(1) *Britain International of Humanities and Social Sciences (BIOHS) Journal* 1 <https://doi.org/10.33258/biohs.v6i1.1059>.

⁴³ Ibid Page 590-606.

development approaches, but it can strengthen them by identifying how consumers visually and emotionally respond to packaging cues.

3.7 Neuromarketing Contribution Beyond Conventional Consumer Research

The key contribution of neuromarketing is that it can reveal consumer responses that may not be captured through self-report alone. Several studies in the evidence base show differences between implicit and explicit responses. ⁴⁴used questionnaires, interviews, eye-tracking, FaceReader and EEG to study front-of-pack labelling and found significant differences between implicit and explicit feedback. ⁴⁵similarly found that consumers may not visually attend to attributes they report as important, and that the packaging attracting maximum attention is not necessarily the one with the highest liking score. This is important because it shows that consumer decision-making is not linear. Attention, emotion, liking and purchase intention may diverge.

⁴⁶study on plant-based and animal-based foods further demonstrates the value of combining EEG with self-reported measures. Their findings show that cognitive workload and approach-withdrawal responses can help explain food acceptance, familiarity, neophobia and purchase intention. Although the study does not focus on rural agricultural products, it shows how neuroscience can reveal cognitive and motivational dimensions of food choice. ⁴⁷study is especially useful for positioning neuromarketing in the agri-food sector. It argues that neuromarketing remains limited in the Indian agri-food context and examines non-invasive approaches such as EEG, eye-tracking, facial-expression analysis and galvanic skin response in food-related consumer decisions. This supports the claim that

⁴⁴ Ibid Page 911-928.

⁴⁵ Ibid Page 8445-8460.

⁴⁶ Inguscio and others (n 13).

⁴⁷ S Rathour, PS Badal, V Kamalvanshi, S Kushwaha, E Kemboi, BM Mannepalli and P Deep, 'From Brainwaves to Buying Behavior: Applications of Non-Invasive Neuromarketing Approaches to Food Choice' (2025) 31(6) *Journal of Scientific Research and Reports* 195 <https://dx.doi.org/10.9734/jsrr/2025/v31i63121>.

neuromarketing in agri-food markets, particularly in Global South contexts, is still emerging.

These studies justify the use of neuromarketing as a complementary approach rather than a replacement for conventional consumer research. For rural agricultural products, the best approach may be mixed methods: qualitative research to understand cultural meanings and producer realities, surveys to measure consumer attitudes, and neuromarketing tools to test packaging prototypes and attention patterns.

4. PROPOSED CONCEPTUAL FRAMEWORK

The evidence reviewed suggests a conceptual pathway linking packaging and branding cues to consumer outcomes. At the first stage, packaging and branding cues act as external stimuli. These may include colour, transparency, product imagery, ingredient display, nutritional information, origin labels, eco-labels, Halal logos, certification marks, cultural symbols, package size, material and brand name.

At the second stage, these cues trigger neuromarketing and consumer-response processes. These include visual attention, emotional response, cognitive workload, memory activation, approach motivation and perceived familiarity. Eye-tracking can measure where consumers look and how long they attend to specific cues. EEG can provide insight into cognitive effort, approach-withdrawal tendencies or attentional engagement. Facial-expression analysis can capture emotional response. Self-report can then be used to connect these implicit responses to conscious evaluation.

At the third stage, consumers form evaluative judgements. These include perceived quality, perceived value, trust, authenticity, naturalness, safety, healthiness, sustainability and local identity. For rural agricultural products, this stage is especially important, because packaging may help consumers interpret the product as credible, fresh, locally rooted and worth purchasing.

At the fourth stage, these evaluations influence brand-related and behavioural outcomes. These include brand attitude, brand recognition,

consumer engagement, willingness to pay, purchase intention and repeat purchase. In rural product contexts, improved packaging may also support market access, competitiveness and value addition.

The framework can be summarised as follows:

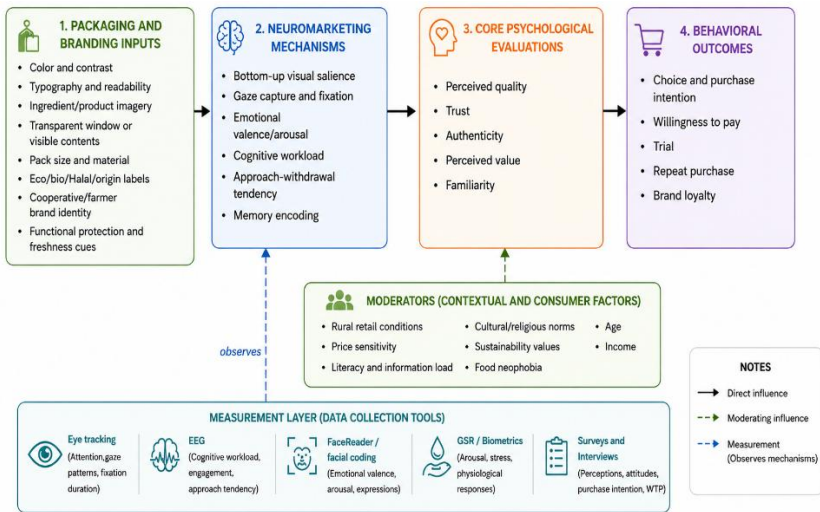


Figure 1. Proposed conceptual framework linking packaging and branding cues to consumer responses and behavioural outcomes in rural agricultural product markets.

Note. The framework illustrates how packaging and branding inputs may influence consumer behaviour through neuromarketing mechanisms and psychological evaluations. Packaging cues, such as colour, typography, imagery, transparency, certification labels and farmer-brand identity may shape visual attention, emotional response, cognitive workload and memory encoding. These responses may then influence perceived quality, trust, authenticity, perceived value and familiarity, which in turn affect purchase intention, willingness to pay, trial, repeat purchase and brand loyalty. Contextual and consumer factors, including rural retail

conditions, price sensitivity, literacy, cultural norms, sustainability values, food neophobia, age and income, may moderate these relationships.

The framework recognises that packaging cues do not operate in isolation. Their effects depend on how consumers interpret visual, informational and symbolic cues within specific cultural and market contexts. For example, a transparent window may increase trust when product appearance signals freshness and quality but may reduce appeal where visible product variation is interpreted negatively. Similarly, cultural symbols, certification logos and local-origin claims may strengthen authenticity and trust only when consumers recognise and believe in these cues.

5. RESEARCH GAPS AND FUTURE DIRECTIONS

The first major gap is the limited number of direct neuromarketing studies on rural agricultural products. Most neuromarketing evidence comes from general food packaging, snacks, beverages, nutritional labels, organic products or laboratory-based food-choice studies. Agricultural product studies exist, but many rely on surveys rather than implicit or biometric methods. This creates an opportunity for future research to test rural agricultural product packaging using eye-tracking, EEG, facial-expression analysis and mixed-method designs.

The second gap is the limited African and Global South evidence. Some studies from Nigeria, Vietnam, Indonesia, Malaysia and India provide useful contextual support, but there remains limited research on rural agricultural product packaging in South Africa and other African markets. This is important because consumer trust, cultural symbolism, local identity, informal market structures and certification systems may differ significantly across regions.

The third gap concerns trust. Trust is frequently discussed in relation to certification, eco-labels, Halal logos, local branding and perceived value, but it is less often directly measured using neuromarketing methods. Future research should examine how trust cues are visually processed and

whether they influence emotional response, cognitive effort and purchase intention.

The fourth gap is the overreliance on self-reported surveys in rural and agricultural product studies. Surveys are useful, but they may not fully capture automatic attention and emotional responses. Combining surveys with eye-tracking or experimental packaging tests could provide richer evidence.

The fifth gap is the limited integration of cultural and symbolic packaging cues. Rural agricultural products often carry cultural meaning, local identity and traditional value. Yet many packaging studies focus on generic design elements such as colour, label position or nutritional information. Future research should examine how cultural symbols, indigenous names, farmer stories, local landscapes and traditional design elements influence attention, authenticity and trust.

The sixth gap concerns affordability and feasibility. Many neuromarketing tools are expensive and laboratory based. Future research should explore low-cost and field-adapted methods, such as webcam-based eye-tracking, mobile eye-tracking, simple A/B packaging experiments and consumer co-design workshops. This would make neuromarketing more accessible to rural producers, cooperatives and MSMEs.

Finally, ethical issues require attention. Neuromarketing should not be used to manipulate vulnerable consumers or exaggerate product claims. In rural agricultural product contexts, it should support truthful communication, fair market access, producer visibility and consumer understanding. Ethical neuromarketing should help producers communicate real quality, origin, sustainability and cultural value.

6. PRACTICAL IMPLICATIONS

The review has several practical implications for rural producers, cooperatives, farmer groups, MSMEs, development agencies and marketers. First, rural agricultural products should not rely only on product quality. Quality must be made visible through packaging. Clear

labels, readable information, attractive design and credible cues can help consumers recognise value.

Second, packaging design should prioritise attention and clarity. Important information, such as product name, origin, ingredients, certification and freshness claims should be placed where consumers are likely to look. Evidence from eye-tracking studies suggests that central areas, front-of-pack labels, transparent windows and visually salient cues can attract attention ⁴⁸.

Third, trust cues should be credible and recognisable. Halal logos, eco-labels, bio-labels, local-origin marks and certification symbols can influence consumer decisions, but only if consumers understand and trust them ⁴⁹.

Fourth, rural authenticity should be communicated without sacrificing professionalism. Packaging should avoid appearing unsafe or informal, but it should also not erase the rural identity that gives the product distinctiveness. Farmer stories, local names, cultural motifs and origin information can strengthen authenticity when used carefully.

Fifth, transparent packaging may be useful for products where visual inspection enhances trust, freshness and quality expectations. However, transparency should be used strategically, because it exposes product variation. If product appearance is inconsistent, transparency may reduce perceived quality.

Sixth, development programmes supporting smallholder market access should include packaging and branding training. Many agricultural development initiatives focus on production, but market competitiveness also depends on how products are presented. Packaging innovation can improve brand awareness and competitive advantage among farmer-group products, as shown in the Ciburial Village study ⁵⁰.

⁴⁸ Ibid, Page 30; Ibid 12944.

⁴⁹ Ibid, Page 2813-2820; *ibid*, Page 40-50; *Ibid.*, 1002521.

⁵⁰ Reyta, Purnama and Foster (n 42).

7. CONCLUSION

This review has shown that neuromarketing offers a promising but still underdeveloped pathway for improving packaging and branding strategies for rural agricultural products. The strongest existing evidence indicates that packaging cues influence visual attention, product expectations, perceived quality, emotional response and purchase intention. Eye-tracking, EEG, FaceReader and related methods provide useful tools for understanding how consumers respond to food packaging beyond self-reported preferences. However, direct neuromarketing research on rural agricultural products, smallholder-linked brands and Global South rural markets, however, remains limited. Most existing evidence is concentrated in general food packaging, nutritional labelling, organic products, beverages, snacks and laboratory-based consumer studies. Rural and agricultural product studies confirm that packaging matters for perceived quality, trust and consumer choice, but they often rely on conventional survey methods. This highlights the need for an integrative research agenda that connects consumer neuroscience with rural agri-food branding in ways that are empirically grounded, ethically responsible and contextually relevant.

The review contributes to the existing body of literature on rural agricultural marketing, packaging, branding, and neuromarketing by positioning packaging as a sensory, cognitive, and symbolic cue through which rural agricultural products can communicate quality, trust, authenticity, and value. It further contributes to the conceptual development of the field by proposing a framework linking packaging and branding cues to neuromarketing responses, perceived quality, trust, authenticity, brand attitude, and purchase intention. This framework can guide future empirical research, packaging prototype testing, and practical branding interventions for rural producers, farmer groups, cooperatives, and MSME agri-food enterprises. For rural producers, the message is clear: packaging is not a superficial add-on, but a critical part of how consumers interpret, trust and value a product. For researchers, the opportunity is to develop neuromarketing studies that are not only methodologically rigorous, but also sensitive to rural realities, cultural meanings, affordability constraints and producer capacities. For policymakers and

development practitioners, the implication is that rural market access should include support for packaging, branding and consumer perception research, rather than focusing only on production and distribution.

Beyond marketing performance, the findings have important sustainable development implications. By improving product visibility, perceived value, consumer trust and market competitiveness, effective packaging and branding strategies can support greater market access and value addition for rural producers, farmer groups, cooperatives and MSMEs. This may contribute to sustainable rural livelihoods, income generation, local economic development and more inclusive agri-food systems. In this way, neuromarketing-informed packaging and branding interventions have the potential to support broader sustainable development objectives, particularly those related to poverty reduction, decent work, responsible production and sustainable rural development.

Overall, neuromarketing should not be treated as a replacement for rural development or agricultural marketing, but as a complementary tool for strengthening rural product visibility, trust and competitiveness. Future research should therefore prioritise ethical, context-sensitive and low-cost neuromarketing approaches, including field-adapted eye-tracking, prototype testing, consumer co-design and mixed-method studies. Such approaches can help ensure that neuromarketing serves developmental purposes by enabling rural agricultural products to communicate genuine quality, origin, sustainability and cultural value more effectively in increasingly competitive food markets.