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Branding and Rebranding of Agri-Food Products: A Theoretical Framework Linking Product Quality, Consumer Trust, Brand Value, and the Sustainable Development Goals (SDGs)

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ABSTRACT

Agri-food products are differentiated not only by technical characteristics but also by how quality, origin, processing, packaging, traceability, and sustainability attributes are communicated to consumers. This study develops a theoretical framework for branding and rebranding in agri-food systems by integrating product characteristics, perceived quality, consumer trust, brand lifecycle, risk, and brand value. A conceptual approach based on analysis, synthesis, forecasting, and framework development was employed. The framework positions the agri-food brand as an interface between measurable product attributes and consumer perception, while identifying pathways for modernization, rebranding, and multidimensional performance evaluation. The proposed framework also connects product innovation, responsible production, sustainability communication, and market value with Sustainable Development Goals (SDGs).

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1. INTRODUCTION

Agricultural and food products are evaluated not only through intrinsic characteristics such as composition, sensory properties, nutritional value, safety, processing quality, and shelf stability, but also through extrinsic signals such as packaging, labeling, certification, origin, and brand reputation. This interaction between technical product characteristics and consumer perception makes branding particularly relevant to agriculture and food engineering. Engineering and technological decisions concerning raw-material selection, formulation, processing, preservation, packaging, storage, traceability, and product modernization ultimately influence the characteristics experienced by consumers. Branding provides a mechanism through which these characteristics can be communicated, remembered, and associated with a specific product identity. Awareness, product-related perceptions, and brand-equity dimensions are interconnected with consumers' evaluations of food products [1]. Awareness, perceived quality, and brand trust can contribute to purchase-related responses [2]. The relationship between food quality and branding is especially important because many relevant product characteristics cannot be completely evaluated before purchase. Consumers may therefore depend on labels, packaging, certification, previous experience, origin information, and brand reputation to reduce uncertainty. Front-of-pack nutritional information and packaging characteristics can influence consumers' evaluation of healthy food products [3], while sustainability-related labels can affect consumer interpretation and choice when their meaning is sufficiently clear [4, 5]. Branding in an agri-food context should consequently be understood as more than visual identity or advertising. It is a system linking the characteristics of the underlying food or agricultural product with consumer knowledge, trust, expectations, and market positioning.

For agricultural commodities, branding also provides a pathway for moving from undifferentiated commodity competition toward product differentiation. Regional agricultural products, specialty crops, premium fruits, cereals, beverages, dairy products, fermented foods, functional foods, and processed agricultural products can be differentiated through combinations of origin, production practices, processing quality, sensory characteristics, certification, traceability, and consistency. Perceived quality and brand trust are relevant components of consumer response [2]. Origin-related signals can also influence product trust and purchase-oriented responses in agricultural-food markets [6]. Food-product branding is similarly connected with technological innovation. Changes in formulation, ingredients, processing methods, nutritional characteristics, packaging, and product functionality can modify the value proposition underlying a brand. Ingredient-related branding and organic-label strategies can transfer value from specific product attributes to broader brand perceptions, illustrating how product characteristics and brand management can become interconnected [7]. A technically improved product may fail to generate corresponding market value if consumers cannot recognize or understand the improvement. Conversely, strong communication cannot sustainably compensate for inconsistent product quality. This interaction becomes particularly important during rebranding. Rebranding is often interpreted narrowly as a change in name, logo, package appearance, or visual identity. A more comprehensive interpretation treats rebranding as the modernization of the relationship among the product, its positioning, its consumers, and the organization responsible for producing it. Existing brand equity may either be preserved or altered during changes in brand identity, making the management of perceived quality, associations, awareness, and loyalty important during the transition [8].

For agri-food products, rebranding may accompany substantial changes in the underlying product. These changes may include reformulation, reduction of undesirable ingredients, incorporation of functional components, modification of processing technologies, adoption of more sustainable production practices, introduction of traceability systems, redesign of packaging, extension of shelf life, or repositioning toward new consumer segments. Thus, rebranding may represent not only a marketing intervention but also the market-facing expression of technological and product modernization. Sustainability further increases the complexity of this relationship. Agricultural production and food processing increasingly communicate environmental and social attributes through labels and packaging. Packaging itself can influence consumer evaluation of the food product, as sustainability-oriented packaging has been shown to shape perceptions of product quality and naturalness [9]. Nevertheless, sustainability communication does not automatically produce consumer understanding. The effectiveness of sustainability-related food labels depends strongly on their format, clarity, familiarity, and cognitive accessibility [4, 5]. Therefore, the brand must function as a credible communication system capable of connecting technical improvements in production with consumer-perceived value.

Brandology can be conceptualized as a scientific framework integrating brands, branding, and rebranding through methodological, cognitive, regulatory, optimization, predictive, preventive, psychological, and system-forming functions. The framework also incorporates a brand lifecycle consisting of origin, development, maturity, aging, modernization, post-rebranding development, and eventual market withdrawal or transformation. These concepts provide a useful starting point for a sector-specific theoretical framework. However, a general theory of branding requires adaptation before it can adequately describe agri-food products. Food brands are inseparable from biological raw materials, processing conditions, quality variation, perishability, sensory characteristics, safety requirements, origin, and consumer expectations concerning health and sustainability. The present study therefore reformulates the general principles of brandology within an agri-food context. This perspective also provides a connection with the Sustainable Development Goals (SDGs). In particular, the integration of product innovation, processing improvement, traceability, sustainability communication, and responsible production is relevant to SDG 9 (Industry, Innovation and Infrastructure) and SDG 12 (Responsible Consumption and Production). The framework does not treat branding as a direct mechanism for achieving these goals; rather, it provides a conceptual structure through which technological and sustainability-related improvements in agri-food products can be communicated, evaluated, and translated into market value.

The objective of this study is to develop a theoretical framework for branding and rebranding of agri-food products by integrating product characteristics, product quality, consumer perception, brand trust, brand lifecycle, rebranding decisions, risk, and brand-performance evaluation. The study further seeks to clarify how technical changes in agricultural and food products can be translated into brand value and how branding and rebranding can be evaluated systematically. The novelty of the study lies in positioning the agri-food brand as an interface between the technical characteristics of the underlying product and the market perception of that product. Rather than treating branding as an activity separated from agriculture and food engineering, the proposed framework connects product development, processing, quality assurance, packaging, traceability, sustainability communication, consumer trust, and brand management within a common conceptual structure.

2. LITERATURE REVIEW

2.1. Branding in Agri-Food Systems

Branding in agri-food systems differs from branding in sectors where the product is primarily durable or service-based. Agricultural and food products are characterized by biological variability, perishability, sensory attributes, safety requirements, and processing-dependent quality. The brand therefore operates in close connection with the quality and consistency of the physical product. Brand equity in food markets can incorporate awareness, associations, perceived quality, value, and loyalty. Consumer exposure and awareness can influence perceived product characteristics and quality evaluations [1]. In agricultural-product markets, awareness and perceived quality similarly interact with brand trust and purchase intention [2]. Branding should not be separated conceptually from product quality. A strong agri-food brand consequently requires consistency between what is communicated and what the product actually delivers. Attributes communicated through branding may include sensory quality, nutrition, freshness, safety, origin, production method, functionality, environmental performance, or convenience. If the experienced product repeatedly confirms these communicated attributes, brand trust can develop. If the product contradicts its market positioning, branding may instead increase the visibility of inconsistency. The proposed framework therefore treats branding as a process that translates agricultural and food-product characteristics into recognizable consumer meanings rather than merely creating a name or visual identity.

2.2. Product Quality, Perceived Quality, and Brand Trust

An important distinction must be made between technical product quality and perceived quality. Technical quality can be evaluated through measurable characteristics such as chemical composition, microbiological safety, physical properties, processing stability, nutritional composition, sensory attributes, and shelf life. Perceived quality represents the consumer's interpretation of the product based on available information and experience. The two forms of quality are related but not identical. Consumers do not routinely have access to laboratory measurements when making purchase decisions. Instead, they infer quality from a combination of experience and external signals such as packaging, labels, certification, origin, price, brand familiarity, and reputation. Certification can contribute to consumer confidence, although its effectiveness depends on the degree of trust consumers place in the broader food system and in the actors responsible for certification [10]. Packaging and labeling can also function as important trust-related signals because they connect the physical food product with consumer-facing information. Consumers form trust-related judgments by interpreting individual and combined elements of food labels, indicating that labeling functions not only as an information source but also as a communication mechanism between consumers and food-system actors [11]. Research on regional agricultural products further demonstrates the relevance of perceived quality and brand trust in shaping consumer responses [2]. In branded food products, brand awareness can serve as a cue for quality inference and can influence the level of risk perceived by consumers when evaluating alternative products [12]. Front-of-package information has also been shown to influence trust, perceived healthiness, and food preference under particular conditions [3]. Thus, packaging is not merely a protective engineering component; it also acts as an information interface between product quality and consumer perception. Within the proposed framework, consumer trust develops when product performance repeatedly confirms the expectations communicated through branding. Evidence from organic food products further

indicates that perceived quality and trust contribute to perceived value and subsequent purchase intention [13]. Evidence from the food sector also indicates that brand equity and brand reputation are closely associated with the development of brand trust, reinforcing the importance of consistent quality and favorable brand associations in maintaining consumer confidence [14]. Brand trust is therefore treated as an intermediate mechanism connecting the underlying agri-food product with long-term brand value.

2.3. Sustainability, Green Packaging, and Brand Communication

Sustainability attributes increasingly contribute to how agri-food products are differentiated and communicated to consumers. Environmental information may be expressed through packaging materials, eco-labels, sustainability ratings, production claims, or other product-related signals. However, consumers do not necessarily interpret these signals independently from their overall perceptions of the food product. Sustainability labels can influence product perceptions and purchase intention and may also generate halo effects in the evaluation of other product characteristics [15]. Green packaging and environmental branding further extend this relationship by connecting physical packaging decisions with brand communication. Evidence from the food and beverage sector indicates that green packaging, green branding, and eco-labeling can influence consumer perceptions and responses, although the effects of these signals may differ according to how consumers interpret them [16]. Sustainability communication should remain consistent with the actual environmental characteristics of the product, packaging, and production system. Within the proposed agri-food brandology framework, sustainability is therefore treated not merely as a promotional claim but as a product and brand attribute that requires technical credibility, understandable communication, and consistency between the communicated message and actual performance. Sustainability communication should remain consistent with the actual environmental characteristics of the product, packaging, and production system. Sustainability claims should therefore be supported by credible production, processing, packaging, or supply-chain practices. Within the proposed agri-food brandology framework, sustainability is treated not merely as a promotional claim but as a product and brand attribute whose value depends on technical credibility, understandable communication, and consistency between communicated claims and actual performance.

2.4. Origin, Authenticity, and Differentiation of Agricultural Products

Agricultural products are often differentiated by environmental and territorial characteristics that cannot be separated from their production systems. Soil, climate, cultivar, farming practices, harvesting methods, local processing traditions, and geographical origin can contribute to product differentiation. Origin-related information can therefore function as both a quality signal and a component of brand identity. Recent evidence concerning geographical indications shows that consumers' perceptions of origin-related signals can be associated with product trust and purchase-oriented responses, with quality-related and cultural aspects of trust playing important roles [6]. This relationship is especially relevant for commodities that might otherwise compete primarily on price. For geographical-indication agricultural products, attachment to the place of origin and the quality of the consumption experience have been associated with consumers' intention to repurchase, demonstrating that territorial identity can contribute to continued market relationships [17]. Regional rice products, specialty coffee, cocoa products, tea products, fruits, spices, fermented foods, and other differentiated agricultural products can therefore use origin, traceability, quality

consistency, and production practices as foundations for market positioning without relying solely on visual branding. Within an agri-food brandology framework, origin-based differentiation is therefore interpreted as a process in which objectively or socially meaningful characteristics of agricultural production are translated into consumer-recognizable identity.

2.5. Packaging, Labeling, and Quality Communication

Packaging simultaneously performs engineering and communication functions. Its engineering functions include containment, protection, preservation, transportation, convenience, and extension of product stability. Its communication functions include product identification, nutritional information, preparation instructions, certification, traceability, environmental claims, and visual positioning. Because consumers often make food choices under limited time and information, packaging can reduce the information gap between producer and consumer. Packaging characteristics can also influence how consumers evaluate the quality of the food itself; sustainable packaging, for example, has been associated with more favorable perceptions of product quality and naturalness [9]. However, more information does not necessarily produce better understanding. Research on sustainability labels indicates that consumer interpretation depends on label design, familiarity, and clarity [4]. The form in which environmental information is presented can affect consumer responses and sustainability judgments [5]. Branding must not merely increase the amount of information on food packaging. It must organize technical and product-related information into signals that consumers can interpret correctly. In this framework, effective packaging communication is therefore treated as part of brand design rather than as a separate promotional activity.

2.6. Product Innovation and Brand Value

Food-product innovation can occur through changes in raw materials, formulation, processing, preservation, fortification, functionality, packaging, portioning, convenience, or sustainability characteristics. Such innovations modify the technical product and can consequently alter its brand meaning. Research comparing product-innovation and ingredient-branding strategies in food products demonstrates that changes in tangible product attributes can interact with existing brand equity [7]. This relationship illustrates why engineering innovation and branding should be coordinated. A technological improvement creates potential value, but that value must be understood by consumers. For example, improvements in processing efficiency may be important to manufacturers but largely invisible to consumers unless they generate recognizable outcomes such as improved quality, longer shelf life, enhanced nutrition, greater convenience, improved safety, or reduced environmental impact. The proposed framework therefore distinguishes between technical innovation value and communicated brand value. Successful agri-food branding requires a credible connection between the two.

2.7. Rebranding and Product Modernization

The theoretical framework defines rebranding as an intensive, time-limited form of brand change that can involve visual identity, positioning, organizational practices, and broader modernization. This concept is particularly relevant to agri-food products because changes in brand positioning are frequently associated with modifications in the underlying product. Rebranding may become appropriate when an agri-food product undergoes substantial reformulation, changes its ingredient composition, adopts new processing technologies, introduces improved packaging, modifies nutritional positioning, adopts traceability or

sustainability systems, or enters a new market segment. Rebranding must nevertheless be managed carefully because an existing brand contains accumulated awareness, associations, perceived quality, and loyalty. Research examining brand-equity transfer during rebranding indicates that existing equity can remain influential after a new identity is introduced [8]. Rebranding therefore creates both opportunity and risk. For food products, the central question is not simply whether the visual identity should change, but whether the brand promise remains aligned with the modernized product. This provides the basis for incorporating rebranding into a broader agri-food product lifecycle.

2.8. From Product Characteristics to Agri-Food Brand Value

The theory identifies an important conceptual problem: how the characteristics of an underlying product are transformed into consumer demand and how product modernization subsequently affects the brand. This problem is particularly relevant to agriculture and food engineering. The proposed theoretical relationship can be described as a sequence. Agricultural raw materials and processing conditions determine measurable product characteristics. These characteristics influence experienced quality. Packaging, labeling, certification, origin information, and other communication tools make selected attributes visible to consumers. Consumer interpretation contributes to perceived quality and trust. Repeated positive experiences can strengthen loyalty and, over time, contribute to brand value. This sequence also works in reverse when product quality deteriorates. Inconsistent sensory properties, safety problems, misleading claims, or failure to maintain expected quality can weaken trust even when visual branding remains unchanged. Agri-food brand value is therefore not independent of the technical performance of the product. This integrated perspective forms the conceptual basis for the agri-food brandology framework developed in the following sections.

3. METHOD

3.1. Research Design

This study employed a conceptual and theoretical research design to adapt and further develop the scientific theory of brands, branding, and rebranding for the specific context of agricultural and food products. The study did not involve a new consumer survey, laboratory experiment, or intervention. Instead, it developed a structured theoretical interpretation of relationships among product characteristics, product quality, consumer perception, brand trust, branding, rebranding, risk, and brand value. The conceptual framework was developed using scientific methodology, analysis, synthesis, forecasting, and operations-research principles to organize the relationships among agri-food product characteristics, branding, rebranding, risk, and brand value.

3.2. Conceptual Analysis

Conceptual analysis was conducted by identifying the principal constructs contained in the general theory of brandology and determining their relevance to agri-food systems. The principal constructs included the definition and functions of brands, branding and rebranding, brand lifecycle, brand positioning, risk, organizational and product modernization, consumer loyalty, and criteria for performance evaluation. These concepts were then interpreted in relation to characteristics specific to agricultural and food products, including product quality, processing, sensory attributes, packaging, origin, traceability, labeling, sustainability communication, and product innovation. The purpose of this procedure was not to replace

the theoretical concepts but to establish a sector-specific relationship between the general brandology framework and agri-food product systems.

3.3. Literature-Based Theoretical Integration

Literature was used to support relationships that connect the brandology concepts with agri-food applications. The literature considered themes including food-brand equity, perceived quality, agricultural-product branding, brand trust, geographical origin, packaging and labeling, product innovation, sustainability communication, and rebranding [1-8]. The literature was used as a theoretical evidence base rather than as data for a formal meta-analysis or systematic review. Accordingly, the study does not report pooled effects, bibliometric indicators, or quantitative synthesis.

3.4. Framework Development

Framework development followed a progressive conceptual sequence. First, characteristics of the underlying agricultural or food product were identified as the technical foundation of the brand. Second, mechanisms through which these characteristics become visible or meaningful to consumers were considered, including product experience, packaging, labels, origin information, certification, traceability, and sustainability communication. Third, perceived quality and consumer trust were positioned as intermediate constructs linking product performance with longer-term brand outcomes. The framework then incorporated brand formation, growth, maturity, modernization, rebranding, and withdrawal as lifecycle stages. The framework incorporated brand formation, development, maturity, modernization, rebranding, and withdrawal as lifecycle stages. Finally, multidimensional criteria were considered for evaluating branding and rebranding performance, including product-quality consistency, consumer trust, market response, communication effectiveness, loyalty, risk, and economic performance. Multidimensional criteria were also considered for evaluating branding and rebranding performance, including product-quality consistency, consumer trust, market response, communication effectiveness, loyalty, risk, economic performance, complaints, and organizational value.

3.5. Scope and Analytical Boundaries

The framework is intended for agricultural products, processed foods, food ingredients, and food-producing enterprises in which the brand remains meaningfully connected with the characteristics of the underlying product. The study does not evaluate individual commercial brands and intentionally avoids using named companies or products as empirical cases. Examples such as regional agricultural products, specialty crops, premium fruits, processed foods, fermented products, functional foods, dairy products, and sustainably produced foods are used only as generic illustrations of possible applications. They are not empirical observations and are not used to establish comparative performance. The resulting framework should therefore be interpreted as a theoretical and practice-oriented model that can guide future empirical testing, product-brand analysis, and branding or rebranding decisions in agri-food systems.

4. RESULTS AND DISCUSSION

4.1. Conceptual Foundations of Agri-Food Brandology

Branding in agri-food systems should be understood as a multidimensional process connecting the technical characteristics of an agricultural or food product with consumer

perception, market positioning, and long-term brand value. The proposed concept of agri-food brandology extends the general theory of brands, branding, and rebranding by placing the underlying agricultural or food product at the center of brand formation. In this framework, the brand is not treated merely as a name, logo, or visual identity. Instead, it represents a structured mental and market representation of the product that develops through repeated interaction among product quality, consumer experience, communication, trust, and market performance. This interpretation is consistent with the theoretical proposition that a brand functions as a mental representation through which consumers evaluate the advantages and disadvantages associated with a particular product. For agri-food products, this relationship is particularly important because the physical product remains fundamental to brand credibility. Attributes such as taste, aroma, texture, freshness, nutritional quality, safety, origin, processing conditions, packaging performance, and shelf stability can contribute directly to consumer expectations. Branding therefore becomes effective when these underlying product attributes are translated into recognizable and credible consumer signals. The proposed framework distinguishes five interconnected dimensions of agri-food brand development: technical product characteristics, communicated product attributes, perceived quality, consumer trust, and brand value. These dimensions are summarized in **Table 1**. The framework emphasizes that brand value cannot be sustainably separated from product performance. Attractive communication may stimulate initial interest, but long-term brand development depends on whether the underlying product repeatedly satisfies the expectations created by branding.

Table 1. Core dimensions of the proposed agri-food brandology framework.

DIMENSION	MAIN FOCUS	TYPICAL AGRI-FOOD ELEMENTS	ROLE IN BRAND DEVELOPMENT
Technical product characteristics	Measurable properties of the product	Composition, safety, sensory properties, shelf life, processing quality	Provide the material basis of the brand
Communicated product attributes	Information transmitted to consumers	Packaging, labeling, origin, certification, traceability, sustainability claims	Translate technical characteristics into understandable signals
Perceived quality	Consumer interpretation of product performance	Taste expectations, health perception, authenticity, reliability	Shapes product evaluation
Consumer trust	Confidence that expectations will be fulfilled	Quality consistency, transparency, traceability, credible claims	Supports repeat purchase and loyalty
Brand value	Accumulated market and organizational value	Loyalty, differentiation, recognition, market response	Represents the long-term outcome of successful brand management

The overall conceptual relationship among these dimensions is illustrated in **Figure 1**. The framework begins with measurable technical characteristics of the agricultural or food product, including composition, sensory properties, safety, processing technology, shelf stability, sustainability attributes, and origin. These characteristics are communicated through packaging, labeling, certification, traceability, positioning, and other product-information systems. Consumer interpretation of these signals contributes to perceived quality, authenticity, health and nutritional perception, trust, satisfaction, and loyalty. Over time, these responses influence market recognition, repeat purchase, economic performance, and long-term brand value. The framework also recognizes feedback from

market outcomes to subsequent product and brand improvement. **Figure 1** emphasizes that agri-food branding should be interpreted as a dynamic system rather than a one-directional promotional process. Market and consumer responses provide feedback that can stimulate reformulation, process improvement, packaging modification, communication adjustment, or broader brand modernization. Thus, brand management remains continuously connected with the technical development of the underlying agricultural or food product.



Figure 1. Proposed agri-food brandology framework linking technical product characteristics, communicated attributes, consumer perception and trust, and brand-value outcomes.

4.2. Functions and Roles of Agri-Food Branding

The proposed agri-food brandology framework includes methodological, cognitive, regulatory, optimization, predictive, preventive, psychological, knowledge-socialization, and system-forming functions. These functions can be adapted to the agri-food sector:

- (i) The methodological function provides concepts and analytical tools for examining relationships among product quality, consumer perception, branding, and rebranding. The cognitive function supports the identification of how consumers interpret product characteristics and how such interpretations influence trust and loyalty. The regulatory function contributes to the development of practical procedures for brand analysis, positioning, and rebranding.
- (ii) The optimization function is especially important for food and agricultural enterprises because branding decisions must balance product quality, processing cost, packaging, communication, sustainability, and market expectations. The predictive function concerns the identification of possible future changes in consumer preferences, product positioning, and brand performance. The preventive function focuses on reducing the risk of brand deterioration resulting from inconsistent product quality, misleading claims, poor communication, or unsuccessful product modernization.
- (iii) The psychological function concerns the formation of consumer perceptions and expectations, whereas the system-forming function emphasizes the relationship between branding and other activities of the enterprise, including production, product development, quality control, packaging, logistics, marketing, and innovation. Food and service quality, brand awareness, and brand associations can contribute to brand reputation and subsequently to brand trust [14].

Thus, agri-food branding should not be managed as an isolated promotional activity. It functions as an integrative mechanism connecting technical and commercial dimensions of the product.

4.3. Agri-Food Brand Life Cycle

The theory proposes a brand life cycle consisting of origin, development, maturity, aging, modernization, post-rebranding development, and eventual withdrawal or transformation.

The proposed agri-food interpretation of this life cycle is illustrated in **Figure 2**. The life cycle begins when a recognizable agricultural or food product enters the market and develops an identifiable relationship between product characteristics and consumer expectations. During the development and maturity stages, quality consistency, trust, and market recognition become increasingly important. Aging may emerge when product formulation, packaging, technology, or positioning no longer corresponds with changing market requirements. Modernization or rebranding can then renew the relationship between the product and its consumers, while persistent loss of relevance may eventually result in withdrawal, replacement, or transformation.

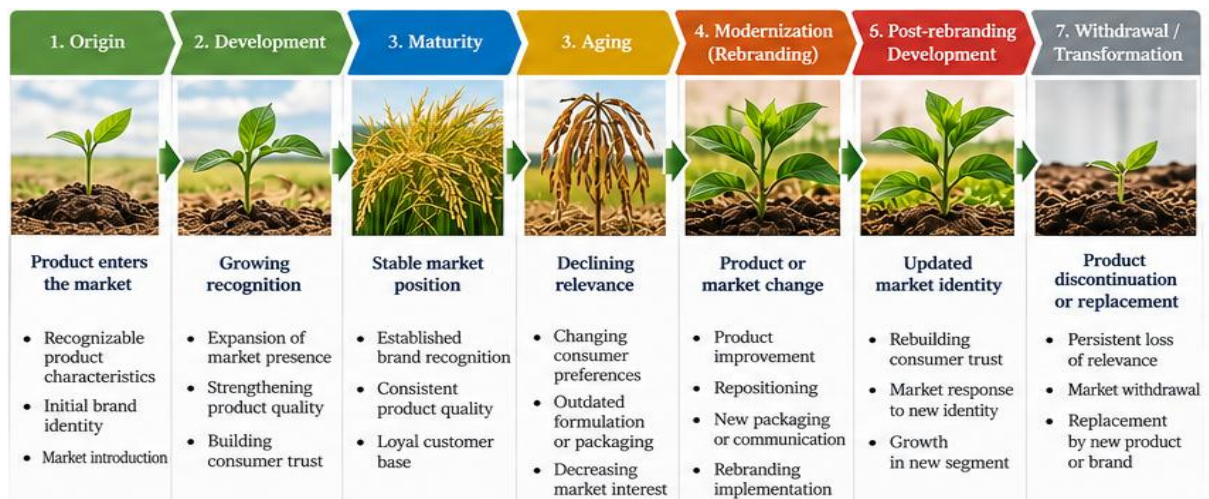


Figure 2. Proposed life cycle of an agri-food brand from market introduction to development, maturity, aging, modernization or rebranding, post-rebranding development, and withdrawal or transformation.

This sequence is particularly applicable to agri-food products because changes in product quality, processing technology, packaging, consumer preferences, and market expectations can directly affect brand relevance.

- (i) The origin stage begins when a product with recognizable quality characteristics enters the market and becomes associated with a particular identity. For an agricultural or food product, this identity may initially emerge from sensory properties, origin, production method, quality consistency, or technological differentiation.
- (ii) The development stage occurs when repeated product performance strengthens consumer recognition and trust. Packaging, labeling, product availability, and communication can reinforce this process, but they must remain consistent with the actual product.
- (iii) At the maturity stage, the brand has established recognition and relatively stable consumer expectations. Brand management becomes increasingly concerned with maintaining product consistency, protecting trust, and preventing quality deterioration.
- (iv) The aging stage may occur when the product, packaging, formulation, processing method, or market positioning becomes less aligned with changing consumer preferences or technological standards. Product modernization or rebranding may then become necessary.

Table 2 summarizes the proposed agri-food interpretation of the brand life cycle. Rebranding should not be interpreted as an isolated visual redesign. Instead, it can represent one stage in the broader evolution of the product and its market identity.

Table 2. Agri-food interpretation of the brand life cycle.

STAGE	MAIN CONDITION	TYPICAL AGRI-FOOD ISSUE	MANAGEMENT PRIORITY
Origin	Product enters the market	Establishing recognizable quality and identity	Product differentiation
Development	Growing recognition	Maintaining consistency and communicating attributes	Trust formation
Maturity	Stable market position	Protecting quality and loyalty	Brand maintenance
Aging	Declining relevance	Outdated formulation, packaging, positioning, or technology	Diagnosis
Modernization	Product or market change	Reformulation, packaging redesign, processing improvement	Rebranding
Post-rebranding development	Updated market identity	Rebuilding or transferring trust	Performance monitoring
Withdrawal or transformation	Persistent loss of relevance	Product discontinuation or replacement	Strategic transition

4.4. Linking Product Characteristics to Consumer Perception

One of the central theoretical problems identified is how product characteristics are transformed into consumer purchasing decisions and how modernization of the product affects the brand. In agri-food systems, this transformation can be interpreted through three stages. First, production and processing determine the measurable characteristics of the product. Second, these characteristics are communicated through direct experience and external signals. Third, consumers interpret these signals and develop perceptions of quality, value, authenticity, healthfulness, or sustainability. This distinction is important because not all technically significant improvements are automatically visible to consumers. A more efficient drying process, improved formulation, reduced oxidation, enhanced shelf stability, or better packaging barrier properties may improve product performance but may have limited brand impact unless consumers perceive the resulting benefit. Branding therefore performs a translation function. It converts selected technical and product-related improvements into market-relevant meanings. However, this translation must remain credible. If communicated attributes are not supported by actual product performance, trust may deteriorate. The proposed relationship can therefore be expressed conceptually as follows: technical product characteristics form the basis of experienced quality; packaging, labeling, origin information, certification, and product communication make selected attributes visible; perceived quality and trust develop from repeated confirmation of these expectations; and accumulated trust contributes to brand value.

4.5. Rebranding as Product and Market Modernization

The framework treats rebranding as an intensive and time-limited form of brand modernization that may involve changes in trademark, visual identity, positioning, organizational practices, and broader development strategies. For agri-food products, rebranding may be particularly appropriate when the underlying product changes substantially. Such changes may include reformulation, ingredient substitution, modification

of nutritional composition, introduction of functional ingredients, changes in processing technology, adoption of sustainable production practices, packaging redesign, implementation of traceability systems, or entry into a new consumer segment. A distinction should therefore be made between cosmetic rebranding and substantive rebranding. Cosmetic rebranding primarily changes visual or communication elements without major changes in the product. Substantive rebranding accompanies meaningful changes in product characteristics, quality, technology, positioning, or value proposition. Substantive rebranding is particularly relevant to agri-food systems because technological innovation can directly trigger a need to reposition the product. When a food product changes significantly, the existing brand identity may no longer communicate its updated characteristics accurately. However, rebranding also creates risk. Existing consumers may associate the previous identity with familiarity and quality. Excessive or poorly explained changes can weaken recognition and trust. Rebranding should therefore preserve valuable existing associations while clearly communicating the benefits of product modernization.

4.6. Risk in Agri-Food Branding and Rebranding

The theory distinguishes subjective and objective risks associated with branding and rebranding. Subjective risks arise from insufficient competence, poor decisions, or inappropriate implementation, whereas objective risks arise from the complexity of brands and market environments. In agri-food systems, these risks can be expanded to include product-related dimensions. Examples include inconsistent quality, safety problems, unstable raw-material characteristics, supply-chain disruptions, unclear origin claims, misleading sustainability communication, packaging failures, or product reformulation that is not accepted by consumers. Rebranding risk is particularly important because changes may affect both the physical product and consumer expectations. A technically successful reformulation may still fail commercially if consumers perceive deterioration in taste or authenticity. Conversely, a successful visual redesign may provide only temporary benefits if product quality remains inconsistent. The main risk categories are summarized in **Table 3**. Risk reduction therefore requires coordination among production, quality assurance, product development, packaging, communication, and brand management.

4.7. Criteria for Evaluating Agri-Food Brand Performance

Agri-food branding and rebranding can be evaluated using a broad set of criteria, including market performance, communication effectiveness, economic performance, product quality, complaints, consumer response, and organizational value. For agri-food applications, these criteria can be reorganized into five principal groups: product, consumer, market, communication, and economic performance. Product-related indicators may include quality consistency, defect rates, product returns, complaints, safety performance, and compliance with technical specifications. Consumer-related indicators may include perceived quality, trust, loyalty, satisfaction, and acceptance of product changes. Market indicators may include market share, repeat purchase, distribution coverage, and demand stability. Communication indicators may include awareness and understanding of product attributes. Economic indicators may include revenue, contribution margin, brand-related investment efficiency, and return on rebranding expenditure. The criteria are summarized in **Table 4**. No single indicator should be considered sufficient. A branding or rebranding program can perform well financially in the short term while simultaneously weakening trust or product perception. Conversely, investment in quality improvement may initially increase cost but contribute to

long-term brand value. Therefore, multidimensional evaluation is more appropriate than relying exclusively on sales or visual-recognition measures.

Table 3. Major risk categories in agri-food branding and rebranding.

RISK CATEGORY	EXAMPLE	POTENTIAL CONSEQUENCE
Product-quality risk	Inconsistent sensory or physical properties	Declining trust
Safety risk	Contamination or safety failure	Severe reputational damage
Communication risk	Claims are unclear or poorly understood	Consumer confusion
Authenticity risk	Origin or quality claims are perceived as unreliable	Loss of credibility
Rebranding risk	New identity weakens existing recognition	Reduced loyalty
Innovation risk	Reformulated product is poorly accepted	Negative market response
Sustainability-claim risk	Environmental claims are unsupported or unclear	Reduced trust
Supply-consistency risk	Product characteristics fluctuate between batches or seasons	Weakening of brand reliability

Table 4. Proposed criteria for evaluating agri-food branding and rebranding performance.

EVALUATION DIMENSION	POSSIBLE INDICATORS
Product performance	Quality consistency, defects, complaints, product returns, compliance
Consumer response	Perceived quality, trust, satisfaction, loyalty, acceptance
Market performance	Market share, demand, repeat purchase, distribution
Communication performance	Awareness, understanding of claims, recognition
Economic performance	Revenue, profitability, investment efficiency, brand-related value
Innovation performance	Acceptance of reformulation, new packaging, or processing improvement
Sustainability performance	Credibility and recognition of environmental or social attributes

4.8. Proposed Framework for Branding and Rebranding Decisions

The theory describes sequential stages for forming a branding system or rebranding project, beginning with strategic objectives and continuing through criteria development, implementation, and performance monitoring. For agri-food systems, these stages can be reorganized into a practice-oriented decision framework that links product diagnosis, consumer value, communication, consistency monitoring, modernization or rebranding, and performance evaluation. **Figure 3** illustrates the proposed decision framework as a continuous process linking product diagnosis, consumer-value definition, brand communication, consistency monitoring, modernization or rebranding decisions, and multidimensional performance evaluation. For agri-food systems, this sequence can be simplified into a practice-oriented framework consisting of six stages.

- (i) First, the technical product basis should be identified. This includes the characteristics that objectively differentiate the product, such as quality, composition, processing technology, origin, safety, functionality, or sustainability attributes.
- (ii) Second, the consumer-relevant value proposition should be determined. Only technically meaningful attributes that can provide recognizable consumer value should become central brand claims.
- (iii) Third, the communication system should be developed. Packaging, labeling, certification, traceability information, product description, and other communication tools should convey the selected attributes accurately.

- (iv) Fourth, brand consistency should be monitored by comparing communicated expectations with actual product performance.
- (v) Fifth, the need for product modernization or rebranding should be assessed when changes in technology, consumer preferences, regulations, sustainability expectations, or market positioning reduce alignment between the product and its current brand identity.
- (vi) Sixth, the results should be evaluated using product, consumer, market, communication, economic, and sustainability indicators.

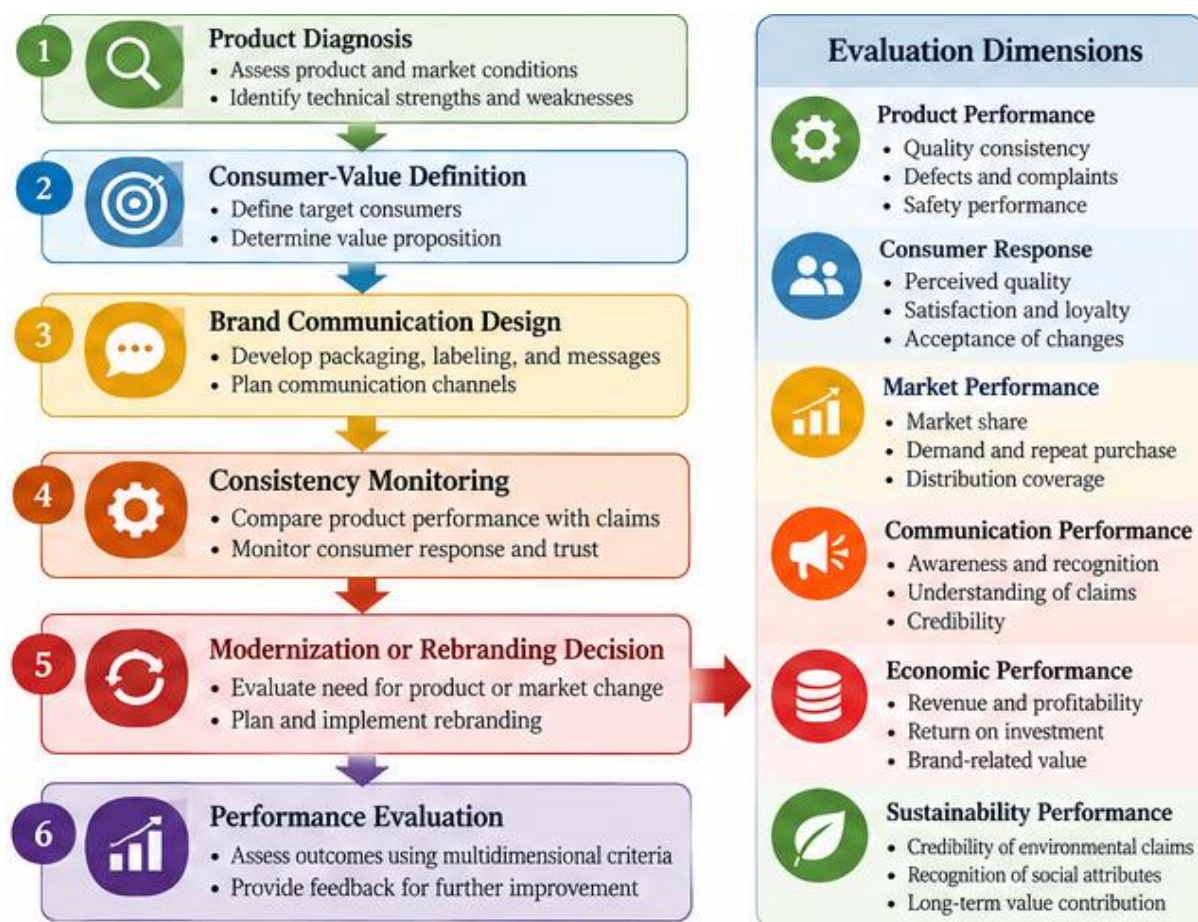


Figure 3. Decision framework for agri-food branding, rebranding, and multidimensional performance evaluation.

This proposed framework is summarized in **Table 5**. The framework positions branding as an extension of product development rather than as an activity conducted only after product development is completed. For agri-food enterprises, this integration can improve alignment among engineering decisions, consumer communication, and market strategy.

4.9. Practical Implications for Agriculture and Food Engineering

The proposed framework has several implications for agriculture and food engineering. First, product-development decisions should consider not only technical performance but also whether the resulting advantages can be meaningfully communicated to consumers. Second, quality consistency becomes a branding issue as well as an engineering issue. Variability in raw materials, processing, storage, or distribution can weaken consumer trust

even when branding activities remain unchanged. Third, packaging should be considered both as a protective engineering system and as a communication interface. Packaging performance, labeling, traceability, quality information, and sustainability communication can jointly influence how consumers interpret the product. Recent evidence from agricultural products further indicates that technology-enabled traceability can strengthen product trust when combined with a credible green brand image, illustrating how technological transparency can become part of brand-value creation [18]. Fourth, technological modernization may create a need for brand modernization. Changes in formulation, processing, preservation, packaging, or sustainability performance can justify repositioning if the existing brand identity no longer reflects the product accurately. Finally, branding can support the differentiation of agricultural products that would otherwise compete primarily as commodities. However, differentiation should remain anchored in demonstrable product characteristics, quality consistency, origin, processing, or other credible attributes. The practical contribution of agri-food brandology is therefore to provide a common conceptual language linking engineering, product quality, consumer perception, and market value.

Table 5. Practice-oriented framework for agri-food branding and rebranding.

STAGE	MAIN QUESTION	MAIN OUTPUT
Product diagnosis	What objectively differentiates the product?	Technical value proposition
Consumer-value definition	Which attributes are meaningful to consumers?	Market value proposition
Brand communication	How should these attributes be communicated?	Packaging and communication system
Consistency monitoring	Does product performance confirm the brand promise?	Trust and quality assessment
Modernization/rebranding decision	Has the product or market changed sufficiently to require repositioning?	Rebranding decision
Performance evaluation	Did branding or rebranding improve relevant outcomes?	Multidimensional evaluation

4.10. Relevance to the Sustainable Development Goals

The proposed agri-food brandology framework also has relevance to the SDGs because branding and rebranding can serve as mechanisms for communicating and supporting technological, production, and sustainability improvements in agri-food systems. The framework is particularly relevant to SDG 9 (Industry, Innovation and Infrastructure) because product modernization, processing innovation, packaging improvement, traceability, and technological upgrading can become part of the value proposition communicated through the brand. Branding can therefore help translate engineering innovation into recognizable consumer and market value. The framework is also relevant to SDG 12 (Responsible Consumption and Production). Sustainability-oriented packaging, responsible sourcing, traceability, credible environmental claims, and transparent product information can support more responsible production and consumption when these attributes are technically valid and clearly communicated. In this context, branding does not itself achieve the SDGs but can provide a communication and management interface linking product innovation, responsible production practices, consumer understanding, and long-term brand value. More broadly, agri-food branding can contribute to SDGs when market differentiation remains anchored in measurable improvements in product quality, processing, packaging, traceability, resource use, and environmental performance rather than relying solely on promotional claims.

4.11. Limitations and Future Research

This study is conceptual and does not provide empirical validation of the proposed relationships. The framework should therefore be interpreted as a theoretical structure for future testing rather than as evidence that all proposed relationships operate identically across agri-food sectors. Future studies can test the framework using consumer surveys, sensory evaluation, market data, experimental packaging studies, product-reformulation studies, traceability systems, or longitudinal observations of branding and rebranding processes. Additional research is also needed to determine how the relative importance of product quality, origin, sustainability, packaging, trust, and brand familiarity differs among commodity foods, processed products, functional foods, premium agricultural products, and regionally differentiated products.

5. CONCLUSION

This study develops an agri-food brandology framework linking product characteristics, perceived quality, consumer trust, rebranding, and long-term brand value. The framework emphasizes that brand credibility depends on the actual performance of the underlying product, including quality, processing, packaging, origin, traceability, sustainability, and innovation. Rebranding is viewed as a form of product and market modernization when technologies, formulations, packaging, or consumer expectations change. The framework also integrates product, consumer, market, communication, economic, innovation, and sustainability indicators. Its application is relevant to SDGs by connecting innovation, responsible production, sustainability communication, and market value within agri-food systems.

6. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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