CHAPTER 15

PRODUCT MANAGEMENT, BRANDING, AND PRICING STRATEGIES

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ABSTRACT

An enterprise's offering is neither its physical output alone nor a marketing promise detached from delivery. Product management establishes which benefits will be designed, tested, maintained and withdrawn; branding organizes the meanings and expectations attached to those benefits; pricing determines the conditions under which value is exchanged and economic returns can sustain its provision. This chapter develops a theoretically critical and practically usable account of these interdependent decisions. Drawing on a purposive synthesis of foundational marketing economics, consumer research, service design, innovation management, pricing science and authoritative regulatory documents, it examines twelve domains from product architecture and portfolios to revenue management, business-to-business contracts, post-purchase service, consumer protection and algorithmic offers. Rwanda's business-establishment evidence and specialty-coffee institutions provide a contextual foundation, while comparative international scholarship tests the limits of transferring practices developed for large, data-rich enterprises. A fully disclosed hypothetical Rwandan packaged-food case contrasts cost-plus and customer-value pricing through contribution, break-even, elasticity and stress testing. Original instruments comprise a product-to-customer-value chain, product-portfolio decision matrix, launch-gate protocol, pricing model and accountable-price review. The central argument is that responsible product performance depends on credible alignment among experienced customer benefit, operational capability, brand claims, contractual rights, affordable access and sufficient contribution to sustain the enterprise. No causal effect is attributed to the constructed case, and the integrated decision model is offered as an analytical synthesis rather than a validated prediction.

Keywords: product management; service design; product portfolio; brand equity; brand credibility; new-product development; price elasticity; value-based pricing; revenue management; Rwanda.

LEARNING OUTCOMES AND CONCEPTUAL ROADMAP

By completing the chapter, readers should be able to (LO1) distinguish products, services and solutions and specify their core, actual and augmented benefits; (LO2) evaluate product portfolios and life-cycle narratives without treating descriptive stages as deterministic forecasts; (LO3) design evidence-informed product concepts, prototypes and launch gates; (LO4) diagnose brand identity, equity and credibility through meaningful measures and potential sources of bias; (LO5) compute and critically compare cost-plus, contribution-based, value-based, competitive and capacity-sensitive prices; (LO6) assess pricing in consumer, business-to-business and public-procurement settings with full lifecycle costs and contractual risks; (LO7) construct a defensible post-purchase, product-claims and dynamic-pricing governance arrangement; and (LO8) integrate Rwandan and international evidence in a cross-functional product-and-price recommendation with transparent assumptions and sensitivity tests.

The argument progresses from the nature of the market offering (15.1), its portfolio and life-cycle implications (15.2), user-centred design (15.3), brand credibility (15.4) and disciplined innovation (15.5) to the economic logic of price (15.6), pricing methods (15.7), perishable capacity (15.8), organizational purchasing (15.9), service

and recovery (15.10), ethical and statutory constraints (15.11), and digitally mediated offerings (15.12). Sections 15.13–15.17 develop a documented Rwandan application, an auditable teaching case, interfunctional and philosophical synthesis, an assessment package, and references. Chapters 13–14 own market orientation and customer-intelligence methodology; Chapter 16 owns communications, selling and channels; Chapter 23 develops cost-accounting architecture. This chapter owns the decisions that translate evidence about a market into a trustworthy offering and a defensible price.

15.0 INTRODUCTION: WHEN AN ATTRACTIVE PRODUCT DESTROYS VALUE

Suppose an enterprise in Kigali has developed a shelf-stable, nutritionally formulated breakfast product. A local retailer praises its packaging; consumer testing suggests that preparation time matters; the production supervisor wants standardized ingredients; the marketing team proposes a premium brand; and the owner considers pricing each pack by adding 30 per cent to estimated full cost. The apparent simplicity disappears as soon as the enterprise faces actual decisions. The total cost depends on volume; the chosen price changes that volume; the product's claimed health benefits require evidence; returns and complaints may consume the margin; and an identity designed for affluent urban shoppers may exclude households for whom affordability is most consequential. A successful product concept can fail commercially or ethically when its design, representation and price are decided independently. The firm described here is entirely hypothetical.

Product management is the continuing coordination of an offering's purpose, requirements, development, commercial performance, risk, evolution and eventual retirement. Branding concerns the distinctive identifying and interpretive associations that enable audiences to recognize an offering, form expectations and judge its credibility. Pricing is the structured determination of monetary consideration and associated conditions of exchange. These activities overlap but are analytically different. Quality can be engineered without being recognized; a recognized brand can make promises the organization fails to satisfy; a price can cover unit manufacturing cost while failing to recover the cost of customer service, working capital or legally required remediation. Conversely, a low price may improve accessibility but make continued supply impossible (Zeithaml, 1988; Keller, 1993; Anderson et al., 2006).

The underlying problem combines knowledge, coordination and legitimacy. The epistemic question asks how a company can establish what benefit people experience rather than merely what they say they prefer. The economic question asks which design and price sustain a feasible production and service system. The normative question asks what claims and terms of exchange are justified when consumers have unequal knowledge, incomes and bargaining power. A price that maximizes a short-run spreadsheet objective may reduce trust or transfer risk to vulnerable buyers. A supposedly ethical price, however, is not sustainable unless the enterprise can reliably finance the service and compensate its contributors. Product and pricing governance must therefore be assessed jointly, using explicitly stated criteria rather than one unexamined maximand (Kahneman et al., 1986; Bolton et al., 2003).

15.0.1 Evidence design, source hierarchy and limits

This chapter uses a targeted, critical synthesis of secondary literature and primary institutional documents rather than a registered systematic review, original consumer survey or enterprise field experiment. Source identification combined the author–title searches for seminal contributions on perceived value, brand equity, signaling, service blueprinting, product development, fair prices and revenue management with topical retrievals for Rwanda's business enterprise survey, specialty coffee, competition and consumer-protection legislation, data privacy, and international responsible-pricing guidance. The documentary reference date for this manuscript is 1 November 2026. Sources were selected for explanatory distinctiveness, bibliographic traceability, institutional authority, relevance to an approved chapter topic and ability to support a bounded claim. No comprehensive database screening, invented PRISMA counts or pooled effect sizes are represented.

The evidence hierarchy is deliberately discriminating. Foundational theory proposes mechanisms conditional on assumptions; an experiment or observational study supports only the inference warranted by its research design; an official law describes operative rules within a defined jurisdiction and period; an official statistical

release describes its population and definitions; and an agency's report of an industry promotion establishes that the activity was reported, not that it caused subsequent earnings. All monetary figures and demand observations in the Kigali teaching case are constructed assumptions. Their arithmetic is reproducible, but no conclusion about actual consumer willingness to pay, production costs or profitability of an identified Rwandan enterprise follows from them. This distinction is a methodological obligation, not a qualification to be removed during typesetting.

15.0.2 Intellectual genealogy and the unit of analysis

The intellectual genealogy runs from classical utility and price theory to marketing's distinction between tangible goods and services, information economics, strategic brand management, customer-experience research and platform-mediated product systems. Early product classification tended to organize goods by physical attributes and distribution; later frameworks differentiated functional benefits, symbolic meaning, service processes and relationship-specific solutions. Nelson's (1970) distinction between qualities observable before purchase and those learned through use shows why information affects product choice. Zeithaml (1988) explains why perceived quality, sacrifices and value cannot be reduced to factory specifications. Vargo and Lusch (2004) sharpened attention to service and value co-creation, although their emphasis does not remove the need to account for material constraints, ownership rights or unequal power.

The appropriate unit of analysis changes with the decision. A stock-keeping unit (SKU) describes a distinct inventory specification; a product line describes related variants; a brand can cover many lines; a service blueprint describes an experience across interactions; a price quote applies to a particular customer, quantity, channel, period and contractual condition; and a portfolio includes interdependent offerings competing for scarce resources. Mixing these units generates familiar managerial errors, such as reporting average product margin across incompatible services or inferring brand equity merely from company revenue. The chapter therefore asks of each model: what does it measure, for whom, under what boundary conditions, and with which counterfactual?

15.1 DEFINING PRODUCTS, SERVICES AND SOLUTIONS

15.1.1 From core benefit to augmented offering

A product is an organized set of attributes and promised benefits that can be offered for consideration, whether physical, digital, experiential or hybrid. The core benefit is the problem solved or outcome sought: nourishment, dependable movement, timely information or reliable equipment uptime. The actual product consists of tangible and functional specifications, such as ingredients, performance, design, name and packaging. The augmented product includes delivery, guidance, warranty, repairs, financing, training, accessible support and dispute resolution. These layers are useful for design decisions, but the boundaries are not fixed: what was formerly a premium supplement, such as remote support, may become a minimum expectation after competitors normalize it.

A packaged breakfast product can be described by calorific and nutritional specifications, package size and shelf life, yet its use value also depends on preparation time, access to clean water, safe storage, clear instructions and affordability. For a software service, the analogous layers include the core task enabled, the interface and computational functionality, and onboarding, reliability, security patches, portability and continuity commitments. A customer buying a hospital diagnostic device may be acquiring an availability guarantee and operator training, not merely equipment. Product managers should consequently translate the user's desired outcome into measurable performance specifications and explicit service obligations, then identify the resources necessary to deliver each of them (Shostack, 1984; Bitner et al., 2008).

15.1.2 Goods, services, hybrid solutions and the problem of value realization

Goods commonly involve transferable physical objects, whereas services involve performance processes, access or transformation; most enterprise offerings combine both. The older services taxonomy emphasizes intangibility, heterogeneity, inseparability and perishability, but these are tendencies rather than universal

distinctions. Software may be standardized, physical goods may require intensive customization, and capacity in professional services can be reserved or sold in advance. The more important choice is whether quality can be evaluated before purchase, during use or only imperfectly even afterwards. Search, experience and credence characteristics create different information and assurance requirements, making claims, trials, guarantees and independent standards important in distinct ways (Nelson, 1970; Zeithaml, 1988).

The word *solution* is justified only when the enterprise can identify a customer's operational problem, a bundle of complementary resources and a measurable outcome. Selling machinery plus maintenance is not a solution simply because the invoice contains two components. A more defensible specification states the expected uptime, availability of spare parts, response time, qualifications of technicians, data requirements, exclusions and remedy after failure. The solution should also identify which party controls complementary factors outside the seller's reach. This avoids attributing results solely to the seller when the buyer supplies labor, power, security or operating discipline.

15.1.3 Product requirements, evidence and stakeholder consequences

A useful requirements document distinguishes must-have constraints, desirable attributes, compliance requirements and deliberately excluded features. Quality requirements include safety, reliability, accessibility, durability and environmental performance where material. Commercial requirements include target segment, expected quantity, allowable cost envelope, service capacity and price range; governance requirements include product owner, claims approver, recall authority and complaint channel. Requirements should be versioned because changes in ingredients, software model, product promise or operating context can invalidate earlier tests. The document's role is not to predict every user preference but to make trade-offs visible before the firm locks in costly commitments.

The philosophical distinction between *value proposed* and *value realized* matters here. A manufacturer can control certain attributes and make truthful claims about tested performance. It cannot guarantee each consumer's subjective experience. Equally, a consumer's satisfaction does not establish that a product is safe or that its externalities are acceptable. A product evaluation should therefore join validated technical requirements, interpreted user experience and separately assessed societal effects. No single customer-satisfaction score can do all three jobs.

A useful product specification also identifies the distinction between measurable conformity and customer acceptability. Conformity asks whether the product meets a defined requirement, such as a permitted ingredient range or software response-time limit. Acceptability asks whether it performs the intended task adequately in the user's setting. The two are not equivalent: a technically compliant product may be inaccessible to people with disabilities or impractical where electricity, water, language support or spare parts are unreliable. Conversely, popularity cannot establish safety. A rigorous product owner assigns each requirement an evidence type, acceptance threshold, accountable verifier and review date. That practice converts an attractive design narrative into an inspectable decision record.

The same discipline applies to disposal and retirement. A product may generate attractive purchase-period margins while leaving consumers with unsafe waste, stranded data or unrepaired equipment. Lifecycle stewardship requires the enterprise to specify expected useful life, repair or update availability, withdrawal criteria and feasible end-of-life treatment. These considerations become commercial decisions when warranties, return logistics, supplier contracts and future brand trust are incorporated rather than excluded from unit economics. The wider ecological frameworks are developed in Chapter 31, but product managers must supply their technical and contractual inputs.

15.2 PRODUCT PORTFOLIO AND LIFE CYCLE

15.2.1 Portfolio structure, variety and resource allocation

A product portfolio is the collection of offerings competing for shared capital, production capacity, management attention, distribution effort, service resources and reputation. Portfolio analysis asks not only whether a SKU is

profitable in isolation, but also whether it attracts new buyers, protects a complementary service, substitutes for another product or imposes complexity costs. Product-line breadth enables market coverage; excessive variants create inventory, forecasting, training and quality-control burdens. Variety can be sought for its own sake, but observed switching need not indicate dissatisfaction with an existing product (McAlister & Pessemier, 1982).

The Boston Consulting Group's growth–share classification remains a useful conversation starter about growth and relative market position, but its two axes cannot determine cash generation, contribution, customer welfare or resource priority. A high-share product in a weakly protected market may lose money; a low-share specialty service may yield strong contribution and strategic learning. Managers should replace automatic quadrant prescriptions with a multi-criterion portfolio review that includes incremental contribution, strategic fit, cannibalization, lifecycle obligations, operational complexity and potential harm. A product may merit retention even with a low standalone margin if a carefully evidenced complementarity outweighs its avoidable cost.

Table 15.1. Product-portfolio decision matrix (analytical instrument)

Portfolio state	Evidence to examine	Plausible decision	Important counterargument
High contribution, credible differentiation	Contribution by segment; repeat demand; quality incidents	Protect capacity and improve the offer	Competitors may imitate; growth can dilute service
Low contribution, high strategic complementarity	Joint-purchase and incremental-retention evidence	Retain selectively; redesign the bundle	Cross-subsidy may conceal chronic loss
High sales, weak margin and high complexity	SKU-level avoidable costs; working capital; returns	Simplify or reprice	Withdrawal may shift customers to rivals
Emerging offer, uncertain demand	Validated problem; prototype outcomes; staged cost	Pilot with a learning budget	Early sales can understate adoption or overstate novelty
Mature offer, declining need or unacceptable harm	Substitutes; failure rates; regulatory status	Reformulate, migrate, retire or recall	Withdrawal costs and replacement access matter

Note. Original decision matrix synthesizing portfolio economics, product development and responsibility principles. Categories are diagnostic, not externally validated performance classes.

15.2.2 The product life cycle as description, not destiny

Introduction, growth, maturity and decline describe recognizable sales patterns, yet they are not universal stages that every product passes through in order. A single product's trajectory may vary by geography, cohort, channel or technological compatibility; aggregate category growth may hide the decline of individual brands; and regulatory change can alter demand abruptly. Dhalla and Yuspeh (1976) warned against treating an observed sales plateau as sufficient evidence that an offering is inevitably mature or declining. Their criticism remains important in an era of rapidly changing digital interfaces and platform access, where observed sales may reflect changes in ranking, default settings or subscription accounting rather than intrinsic exhaustion.

Lifecycle reasoning becomes useful when it is recast as a set of hypotheses. A decline might be due to substitution, deteriorating quality, changed customer budgets, inappropriate prices, competitor entry or distribution failure. The analyst must distinguish market growth from market share, contribution from sales, and permanent structural change from temporary noise. The operational response depends on the diagnosis: investigate defects where returns rise; repurpose an underused feature where users reveal an unmet need; or retire a hazardous variant regardless of short-run profitability. Exit decisions require plans for service, warranties, safe disposal, remaining inventory and customers dependent on the product.

Innovation-diffusion scholarship provides a different explanatory vocabulary from the descriptive product life cycle. Rogers (2003) examines relative advantage, compatibility, complexity, trialability and observability as

properties affecting adoption within a social system. Bass (1969) formalized a diffusion mechanism in which adoption timing may reflect both influences external to previous purchasers and interactions among adopters. Neither theory establishes that sales will follow a smooth S-curve in a newly observed category. Bass-type forecasts depend on assumptions about market potential, repeated versus first purchases, stable diffusion parameters and the comparability of historical analogues; estimates may be unstable before sufficient adoption has occurred. A Rwandan processor should therefore distinguish trial, first purchase, repeat purchase, stockist orders and actual consumption rather than fit a diffusion curve to a short sales series and call the resulting forecast validated.

This contrast has practical importance for product withdrawal. A life-cycle label describes the shape of an aggregate outcome; a diffusion model proposes mechanisms for adoption; a portfolio model compares resource consequences. A fall in one SKU's sales could reflect substitution toward another variant within the same firm, reduced shelf availability, a defective batch or a shift in household purchasing power. These explanations imply different interventions. Before relaunching or discontinuing the product, the enterprise should reconcile the physical sales ledger, its distribution coverage, customer cohorts, complaints and channel inventory. Only then is the time pattern meaningfully interpretable.

15.2.3 Cannibalization, complementarity and portfolio contribution

If a new variant adds 2,000 sales but diverts 1,400 from an existing product, the relevant *incremental* volume may be only 600 units, before accounting for different contribution rates and any newly acquired customers. A simple calculation is incremental portfolio contribution = new-product contribution minus displaced contribution minus incremental launch and service costs. Because customers may otherwise have purchased from a competitor, cannibalization cannot be identified merely from overlapping purchases; a credible analysis requires a counterfactual, such as matched-region rollouts, comparable customer cohorts or a justified structural model. Premature portfolio cuts can destroy complementarities that are invisible in stand-alone profit reports. Conversely, invoking strategic complementarity without evidence can perpetuate economically unsustainable complexity.

15.3 CUSTOMER-CENTRED PRODUCT DESIGN

15.3.1 Voice of customer without the illusion of representative listening

Customer-centred design begins with tasks, constraints, experiences and unmet outcomes rather than a predetermined list of features. Interviews, ethnographic observation, complaint analysis, usage logs, participatory workshops and research with noncustomers can each contribute, but none automatically yields a representative demand forecast. A sophisticated urban app-user panel may omit households without reliable connectivity; vocal enterprise buyers may not represent workers who use the purchased service; a digital feedback form systematically misses people who cannot reach it. Chapter 14 develops research methods in detail. The product manager’s additional task is to translate credible evidence into implementable requirements, trade-off decisions and validation criteria.

A useful hierarchy separates observed behavior, articulated problem, inferred cause and proposed design response. Suppose customers report that a package is inconvenient. The underlying cause could be portion size, resealing difficulty, storage space or an instruction written in an inaccessible language. Asking whether users ‘like the new design’ before identifying the problem risks confirmation bias. Small prototypes can test competing causal explanations at lower cost than a full launch. The product team should document the inclusion criteria, design assumptions and minimum evidence required to proceed, rather than treating enthusiasm expressed by a few participants as purchase demand.

15.3.2 Prototypes, minimum viable products and testable value

A prototype makes a hypothesis observable: a physical mock-up tests handling and comprehension; a service simulation tests sequencing; an interface prototype tests task completion; a limited offering tests operational and commercial feasibility. A minimum viable product should not mean a knowingly unsafe or unlawful

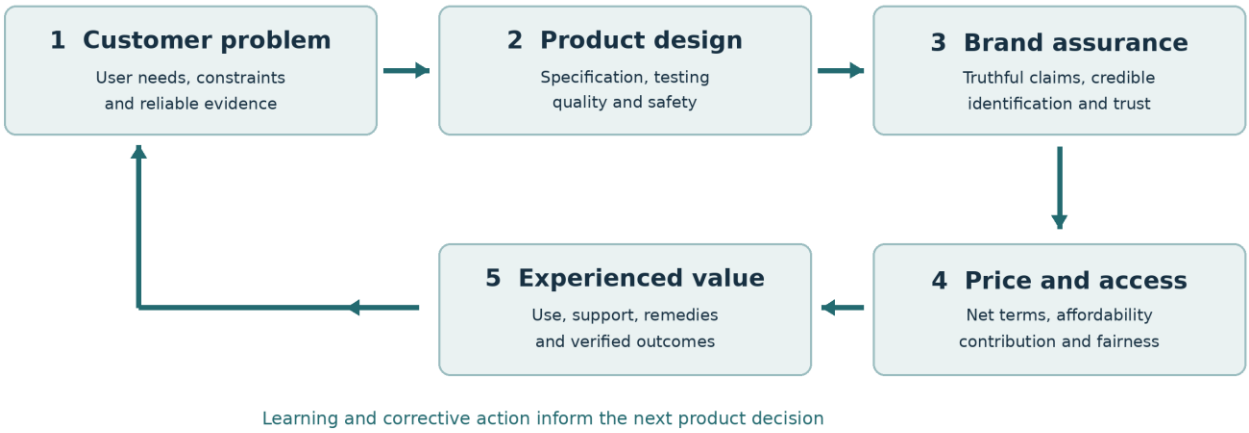
offering. ‘Minimum’ concerns features needed to test a stated proposition while preserving safety, truthful disclosure, data rights and contractual reliability. Early adoption is subject to selection effects: enthusiasts may tolerate deficiencies mainstream customers will reject. Gourville (2006) usefully distinguishes the perceived benefit of an innovation from the behavioral change it asks buyers to make. Better technical specifications do not necessarily overcome habit, learning costs or social norms.

Tests should identify the unit of randomization where feasible, a primary performance measure, a plausible minimum effect, a stopping condition and the likely harms of testing. For a package redesign, relevant outcomes might include comprehension, successful use, wasted contents, repeat demand and objectively measured seal failure. For a subscription tool, decision quality, error rates, perceived control, cancellation difficulty and unexpected charges should be tested separately. Product managers should resist declaring a win from the one metric that improved when other predefined outcomes deteriorated.

15.3.3 Service blueprinting and the cross-functional interface

Shostack (1984) and Bitner et al. (2008) explain service blueprinting as a means of displaying customer actions, visible contact, backstage activities and supporting processes. A useful blueprint marks handoffs and failures that are hidden in a customer-interface screen. In a Kigali packaged-food subscription, visible stages may be selecting an order, receiving confirmation, paying and collecting a package. Backstage tasks include batch traceability, inventory allocation, payment reconciliation, handling damaged units and responding to a complaint. A redesigned interface cannot repair a stock-control error unless the blueprint connects customer promises with physical and financial systems. The design should identify who can stop fulfillment, authorize a remedy and notify affected customers.

Figure 15.1. Product-to-customer value and accountability chain



Note. Original conceptual diagram informed by Zeithaml (1988), Keller (1993), Cooper (1990), and Bitner et al. (2008). Arrows represent proposed dependencies and feedback, not estimated causal coefficients.

Service blueprinting is most valuable when operational failures are converted into explicit test cases. The line of visibility separates what users encounter from backstage activities, while the line of internal interaction shows dependencies that a single function cannot resolve. Each critical handoff should have a trigger, information payload, owner, maximum tolerable delay and escalation path. In a refill or delivery service, a payment confirmation without a corresponding stock reservation is not a minor interface inconsistency: it creates an enforceable promise with no assured fulfillment. Testing should therefore follow a complete transaction from order acceptance to financial settlement and, when necessary, complaint and remedy, including exceptional cases rather than only the ordinary happy path (Bitner et al., 2008).

15.4 BRAND IDENTITY, EQUITY AND TRUST

15.4.1 Brand as an identifying system and a bundle of expectations

A brand identifies a source of offerings and organizes expectations about quality, conduct and experience. Brand identity is the deliberately articulated set of naming, visual, verbal and behavioral commitments; brand image is the set of associations held by audiences; brand positioning is the comparative claim of difference in a particular market. Identity does not guarantee image: consumers can interpret signals differently, and experienced harm can overpower carefully crafted narratives. Brand architecture decides whether the corporate identity, a product-line brand, an endorsed brand or distinct brands best communicates accountability and fit. Portfolio decisions must consider how a failure in one offering affects the credibility of others.

Keller's (1993) customer-based brand-equity model locates value in differential consumer responses associated with brand knowledge, while Aaker (1991) emphasized assets and liabilities linked to names and symbols. Both frameworks illuminate commercially consequential intangibles. Neither should be interpreted as proving that an admired brand is ethically legitimate or that a numerical brand valuation directly measures experienced customer welfare. High recall may result from controversy; willingness to pay may partly reflect market power or scarcity; favorable surveys may omit dissatisfied former users. Triangulation is essential: awareness, consideration, verified repeat purchasing, complaint patterns and willingness to recommend have different inferential properties.

15.4.2 Signaling under uncertainty: when credibility deserves a premium

Where buyers cannot inspect quality fully before purchase, a brand may operate as a signal that reduces expected search and failure costs. Erdem and Swait (1998) develop brand equity as a signaling phenomenon: consistency and perceived credibility can change information costs and choices. Rao and Monroe's (1989) meta-analysis found positive effects of price and brand name on perceived product quality within the examined consumer-product experimental settings, while also finding design sensitivity. The important implication is not that raising price improves objective quality. It is that buyers sometimes use price as a cue when more diagnostic information is incomplete or costly. Such cues can mislead when sellers have incentives to mimic premium positioning.

A credibility premium is defensible where signals are costly to counterfeit or backed by repeatable performance, independent testing, transparent remedies and enforceable commitments. A Rwanda-origin specialty-food brand may gain credible differentiation from traceable sourcing and verifiable quality, but a generic national-origin label does not prove the ingredient, labor or environmental attributes of every package. Nor does a country-of-origin narrative by itself justify the claim that a greater share of the retail price reaches farmers. Such distributive claims require an auditable cost-and-payment chain. Brand trust is built partly by admitting limitations and correcting errors, not simply by maintaining a consistent aesthetic.

Akerlof's (1970) analysis of quality uncertainty identifies an uncomfortable possibility for branding strategy: when inferior quality can imitate superior quality and purchasers cannot reliably discriminate, the market may fail to reward the investments that make good products better. Credible brands, warranties, independent certification and repeat dealings can mitigate this information problem, but they may also advantage incumbents able to finance costly signals. Brand equity must consequently be analyzed as both a possible information-efficiency mechanism and a possible barrier to entry. The empirical question is which association corresponds to dependable delivered quality; the normative question is whether the resulting advantage informs buyers fairly or merely shelters an incumbent from contestable competition.

Origin and sustainability claims pose a special identification challenge. Traceable sourcing may support an assurance claim, but geographical provenance is not a sufficient proxy for safe labor, favorable environmental impact or equitable income distribution. A label whose underlying verification covers only a fraction of the supply chain cannot justifiably imply complete compliance. The product manager should distinguish a verified characteristic, an inference about likely quality and a broader moral claim, retaining the evidence and qualifying

the message accordingly. This distinction is particularly consequential when small suppliers face an uneven burden of proving what larger brands can more easily signal through advertising expenditure.

15.4.3 Measuring brand performance without circular reasoning

A brand scorecard should distinguish exposure, meaning, behavior and business effect. Unaided awareness measures accessibility of the name; association studies reveal attributed characteristics; consideration indicates stated possibility; conversion records purchases among people exposed to an opportunity; retention and complaint resolution indicate experience across time. These indicators are not interchangeable. A correlation between brand preference and margin cannot identify the causal value of branding when stronger firms invest more in branding and simultaneously improve quality, distribution or bargaining power. Incremental effects require credible experiments, natural variation or careful longitudinal estimation with confounding addressed. A brand-health survey should separately report sample coverage, response mode, uncertainty and excluded groups.

The broader moral problem concerns whether differentiation clarifies consumer choice or exploits an information deficit. Brands can lower search costs and reward consistent suppliers, yet also create barriers to entry, obscure common manufacturing sources or capitalize on misleading aspirations. A responsible brand portfolio makes promises that product, operations and after-sales teams are authorized and funded to honor.

Managers should not combine these measures into an opaque composite score before testing whether they actually represent the same construct. Brand awareness can rise while trust falls; premium willingness to pay can increase among continuing purchasers while total access declines; online sentiment may reflect only engaged users. A stronger evaluation links precisely defined brand measures to pre-specified outcomes, records market and channel changes and reports uncertainty. For example, a randomized exposure test can estimate the short-run contribution of a truthful information message to recall or choice, but cannot by itself establish long-run brand equity, customer welfare or product safety. The validity of an instrument must be assessed for the decision it is being asked to support.

15.5 NEW-PRODUCT DEVELOPMENT AND INNOVATION GOVERNANCE

15.5.1 From ideation to launch: experimentation within accountable gates

New-product development coordinates problem discovery, solution concepts, technical design, economic feasibility, validation, launch and post-launch learning. Cooper’s (1990) stage-gate system was influential because it introduced explicit cross-functional decisions about whether to commit further resources. Its enduring contribution is governance of uncertainty, not the proposition that innovation is a linear pipeline in which every concept must wait for a formal committee at each stage. Iterative software development and fast-changing services may cycle rapidly between design and deployment, yet safety, evidence standards and financial responsibility remain essential. Kahn et al. (2012) assess new-product-development practices across strategy, process, research, project climate, metrics and commercialization, reinforcing the need to treat innovation as an organizational system rather than the work of an isolated inventor.

At the discovery gate, a product owner should identify the underserved outcome and sources of evidence. At concept validation, alternative designs should be tested against the current feasible option, not only against an imagined ideal. Feasibility integrates technical performance, supply reliability, relevant permissions, staffing, full delivered costs, privacy and service burden. A controlled pilot evaluates demand and operational failure under realistic use. A launch authorization identifies the decision owner, approved claims, maximum exposure and recall or rollback triggers. Post-launch review separates temporary learning costs from persistent unviability. Gates should be proportionate: a ten-person firm may assign one accountable manager to multiple functions, while independent expert review becomes crucial for safety-critical claims.

Table 15.2. New-product decision-gate protocol

Gate	Decision question	Minimum evidence	Decision and stop rule

Gate	Decision question	Minimum evidence	Decision and stop rule
G0 Problem	Is an important and addressable problem established?	Defined users, unmet outcome, alternative explanations	Reject if problem or intended user is unspecified
G1 Concept	Does the design plausibly outperform the incumbent?	Comparative prototype, usability and safety screen	Revise if user benefit or risk profile fails threshold
G2 Feasibility	Can the full offering be delivered and financed?	Supply, capacity, unit economics, law, service plan	Do not authorize if essential compliance is unresolved
G3 Pilot	Is there evidence of responsible adoption and reliability?	Valid demand signal, defects, returns, complaints, cash effect	Stop or correct on predefined safety or financial triggers
G4 Release	Are accountable approvals and rollback arrangements ready?	Claims register, readiness evidence, sign-offs, remediation	Launch with explicit volume, monitoring and review limits
G5 Review	Should the product scale, change, persist or exit?	Cohort outcomes, incremental contribution and harms	Reallocate with documented counterfactual and obligations

Note. Original governance protocol adapted conceptually from Cooper (1990), Kahn et al. (2012), and responsible service-design principles. Thresholds are enterprise-specific and must be specified before testing.

15.5.2 Innovation selection, real options and organizational learning

Under severe uncertainty, the decision to postpone scale may be valuable even where an expected-value calculation suggests a promising average. Small pilots buy information and limit irreversible losses. That does not justify endless experimentation: delay can sacrifice learning-by-doing, customer trust or seasonal access. A rigorous stage decision compares the expected net value of immediate commitment, the expected value of additional information and the cost of waiting. The relevant investment includes tooling, training, marketing commitments, packaging stock, regulatory validation and working-capital exposure, not only product-development salaries. Because probabilities of disruptive events are often weakly known, scenario analysis and clear stopping rules may be more honest than spurious precision.

Product-development success should not be equated with the percentage of concepts launched. A disciplined firm may reject many ideas early, preserve capital and improve eventual welfare. Nor can a failure rate taken from another sector be imported as the probability of failure for a particular Kigali enterprise. Evaluation must separate the quality of the decision under information available at the time from the ex post outcome. A commercially unsuccessful pilot may still be an effective, ethically managed learning investment if its objectives, costs, safeguards and interpretations were honestly specified.

The value of a pilot can be articulated using expected value of sample information (EVSI). Let V_0 be the greatest expected net value available without further testing, V_1 the expected value of the best action chosen after receiving a proposed signal, and K the full testing and delay cost. The pilot is economically attractive under the model only when $EVSI = V_1 - V_0$ exceeds K, subject to non-negotiable safety and legal constraints. This decision rule does not require pretending that the signal will be perfectly informative. In fact, a small convenience sample may have little capacity to distinguish rival market states. Managers should specify the distribution of likely signals, how each could change the launch decision and which irreversible expenditure is genuinely postponed.

Organizational politics may distort even a technically sound gate. Advocates can select favorable metrics, finance managers may demand certainty incompatible with innovation, and senior executives may interpret

cancellation as reputational failure. An accountable review therefore separates the project sponsor from material risk approval when feasible, preserves negative evidence and records the rejected alternative. For resource-constrained enterprises, proportionality is vital: independent testing can be pooled through industry laboratories or shared associations, while extensive committee structures may impose costs greater than the informational benefit. Such arrangements require effective accountability rather than the ceremonial reproduction of large-company processes.

15.6 ECONOMIC FOUNDATIONS OF PRICING

15.6.1 Price, marginal choice and the financial boundary of the offer

Price communicates an exchange condition and generates revenue, but it is not a direct measure of cost, value or fairness. From the producer's viewpoint, the economically relevant question is whether incremental revenue exceeds the incremental costs and opportunity costs associated with a feasible change in quantity or service level. From the buyer's viewpoint, acquisition entails money, time, effort, risk and possible losses from poor performance. Zeithaml (1988) therefore distinguishes what the consumer receives from the sacrifices perceived. The organizational challenge is to estimate both sides while recognizing that neither willingness to pay nor accounting contribution is a comprehensive welfare measure.

For one homogeneous offering over a specified period, let P denote realized net selling price per unit, $Q(P)$ the quantity sold at that price, v the incremental variable cost per unit, and F the avoidable period fixed costs. Under the deliberately simplifying assumptions of constant unit variable cost, no binding capacity constraint, no stock effects and a stable demand schedule, period operating contribution after these fixed costs is:

Equation 15.1. $\Pi(P) = [P - v]Q(P) - F.$

The equation clarifies why increasing units, price or percentage margin independently does not necessarily maximize profit. A higher price increases contribution per retained unit but may reduce units sold. A larger volume may require overtime, waste, customer support or a capacity expansion that invalidates the constant-v assumption. Accounting cost allocation can be useful for long-run recovery, yet assigning a share of fixed costs to a product does not turn those costs into avoidable marginal costs. Full cost may guide sustainability targets; marginal cost and opportunity cost govern many short-run choices. A price decision should also consider taxes, refunds, payment fees, credit losses and distribution terms using a consistent net-of-tax basis. Detailed cost behavior and absorption procedures belong to Chapter 23.

Three often-confused measures should be defined precisely. Unit contribution is $P - v$. Contribution margin ratio is $(P - v)/P$. Cost markup is $(P - C)/C$, where C is the specified cost base. A 30 per cent markup on a cost of RWF 3,300 produces a price of RWF 4,290; the associated margin on that full-cost base is 990/4,290, or approximately 23.1 per cent, not 30 per cent. In a differentiated, multiproduct firm, incremental product decisions also require consideration of cannibalization, capacity displacement and contract-specific support obligations.

15.6.2 Elasticity, incremental revenue and the limits of local estimates

Own-price elasticity of demand captures the proportional response of quantity to a proportional price change, conditional on other influences. In continuous notation, $\varepsilon = (dQ/dP)(P/Q)$; for ordinary downward-sloping demand it is negative. When two observed or assumed points are compared, an arc calculation avoids privileging one of them as a denominator:

Equation 15.2. $\varepsilon_arc = [(Q_2 - Q_1)/((Q_1 + Q_2)/2)] \div [(P_2 - P_1)/((P_1 + P_2)/2)].$

When demand is differentiable and the simplified cost assumptions hold, the interior first-order condition for a profit-maximizing price can be expressed as the Lerner relation (Lerner, 1934), $(P - v)/P = -1/\varepsilon$, where ε is the local elasticity at the candidate optimum and its magnitude exceeds one. This is a conditional theoretical benchmark, not an instruction to calculate a universal markup from a category average. Heterogeneous customers, multi-product substitution, discrete prices, capacity, market power, dynamic learning and legal

limits complicate the relationship. A two-point arc elasticity cannot be inserted as though it were the exact local slope at a selected price, and an elasticity estimated during a promotion may contain advertising, stock and seasonality effects (Rao & Monroe, 1989; Talluri & van Ryzin, 2004).

Reference prices further complicate demand. Buyers compare quoted terms with past purchases, rival offers, expectations and an inferred 'fair price'. Bolton et al. (2003) show that consumers draw on several such reference points and may misunderstand sellers' full costs. This does not justify manipulating reference anchors. It requires careful distinction between an empirical description of consumer judgments and a normative defense of a pricing practice. A price forecast should also identify the time horizon: a discount may increase first purchases while changing later willingness to pay, perceived credibility and customer composition.

Lerner's (1934) price–cost index provides the theoretical origin of the markup relationship, which is sometimes presented without its restrictive conditions. For a single-product decision, differentiable downward-sloping demand and a constant marginal cost, the first-order condition is obtained from $d[(P - v)Q(P)]/dP = Q(P) + (P - v)Q'(P) = 0$. Dividing by P and substituting $\varepsilon = Q'(P)P/Q(P)$ yields $(P - v)/P = -1/\varepsilon$. The expression is a property of the specified local optimum, not an empirical estimate of market power from a single observed accounting margin. It does not specify an optimum under binding capacity, customer interdependence, uncertain supply or regulatory price ceilings; using it without those conditions can lend false mathematical legitimacy to an inappropriate price.

Identification of elasticity requires more than correlating recent sales and prices. Managers frequently change prices in response to anticipated demand, promotions, inventory pressure or competitive actions. Such simultaneity can bias a naive regression, while a product's posted price may differ from its actual net realized price after discounts and fees. A defensible estimation plan distinguishes randomized price variation, quasi-experimental shocks and observational controls; specifies substitution across the portfolio; and reports confidence or credible intervals rather than one deterministic coefficient. Where experiments would unfairly expose buyers or violate applicable rules, the analyst must consider ethically acceptable alternatives and communicate their inferential limits (see Chapter 4).

15.6.3 Fully worked Rwandan pricing comparison

The following case is a **constructed teaching scenario**, not a report of a market study or of prices and costs at a real company. 'Kigali Nourish' is a hypothetical producer of a 500-gram packaged breakfast mix. It plans for monthly capacity of 12,000 units, with constant assumed incremental cost of RWF 2,800 per unit and period fixed cost of RWF 6,000,000. The variable-cost assumptions comprise ingredients RWF 1,450, packaging 420, direct incremental labor 520, distribution 300, and variable returns/support provision 110. These sum to RWF 2,800. The decision horizon is one month; all prices are net of any tax that might be collected on behalf of government. No claim is made about actual Rwandan nutrition-product price levels, VAT status or market demand.

At planned output, allocated fixed cost per unit is RWF 6,000,000/12,000 = RWF 500, creating a planning full cost of RWF 3,300. A conventional 30 per cent full-cost markup implies **RWF 4,290**. For comparison, a proposed value-based price is RWF 4,900. The enterprise hypothesizes that its differentiated convenience and packaging support a premium over an appropriately comparable alternative. Such a hypothesis would need evidence on buyer alternatives, realized performance and willingness to pay; here it is assumed only to illustrate a calculation. At RWF 4,290, assume 11,200 monthly sales; at RWF 4,900, 9,000. Both are within designed capacity.

Table 15.3. Hypothetical one-month cost-plus and value-price comparison (RWF, excluding applicable taxes)

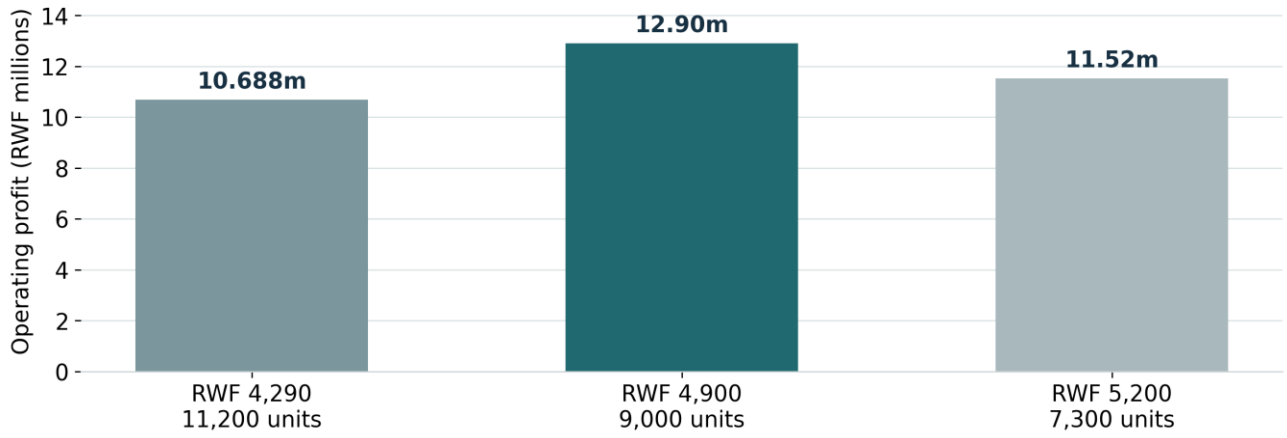
Measure	Cost-plus option	Value-price option	Meaning
Net price per unit	4,290	4,900	Stated assumed offer price

Measure	Cost-plus option	Value-price option	Meaning
Units sold	11,200	9,000	Assumed responses, not observations
Variable cost per unit	2,800	2,800	Same design and service specification
Unit contribution	1,490	2,100	Price minus unit variable cost
Total contribution	16,688,000	18,900,000	Unit contribution × actual units
Period fixed cost	6,000,000	6,000,000	Common assumed period cost
Operating profit	10,688,000	12,900,000	Contribution minus fixed cost
Contribution margin	34.7%	42.9%	Contribution divided by revenue
Break-even volume (ceiling)	4,027	2,858	Fixed cost divided by unit contribution

Note. Entirely illustrative model; quantities, costs and prices are inputs to a teaching exercise, not measurements of Kigali firms. Break-even units use the next higher whole unit. The companion editable workbook reproduces calculations and stress tests.

The value-price scenario yields RWF 2,212,000 more period operating profit under these assumptions even though it sells 2,200 fewer units. The observed-looking precision does not confer empirical validity on the assumed demand levels. The implied arc elasticity between the two scenarios is approximately −1.64: the midpoint relative quantity change is −2,200/10,100 = −21.78 per cent; the midpoint relative price change is 610/4,595 = 13.28 per cent; the ratio is −1.64. The corresponding total-revenue change should be computed explicitly rather than assumed from the elasticity label: at RWF 4,290 revenue is RWF 48,048,000, while at RWF 4,900 revenue is RWF 44,100,000. Thus the value-price option increases assumed contribution and operating profit **despite lower revenue**. This is precisely why revenue growth and profit optimization must not be equated.

Figure 15.2. Hypothetical price–volume and operating-profit comparisons



Note. Original calculations under the hypothetical assumptions in Table 15.3; no observed market response is implied. Units sold appear beneath each price.

Sensitivity is equally important. If sales at the RWF 4,900 price fall 20 per cent below the assumed 9,000 units, operating profit becomes (4,900 − 2,800) × 7,200 − 6,000,000 = **RWF 9,120,000**. If variable cost rises 15 per cent, to RWF 3,220, while volume remains 9,000, profit is also RWF 9,120,000. If both adverse conditions occur, profit is (4,900 − 3,220) × 7,200 − 6,000,000 = **RWF 6,096,000**. The scenarios are not probability-weighted forecasts. They demonstrate that a positive base-case premium can coexist with substantial exposure

to demand error and cost inflation. A separate price of RWF 5,200 at an assumed 7,300 units would yield RWF 11,520,000, less than the RWF 4,900 option. The choice is therefore not simply 'charge more'.

The managerial next step is to **test**, not to declare RWF 4,900 optimal. The firm would need comparable observations on alternative prices, allocation to variants or cohorts where ethically and technically permissible, separate treatment of retailer discounts and returns, and sensitivity to competitors' changes. It must also specify whether the capacity, cash conversion and service promises remain viable after a demand shift. The responsible decision is the price-and-service bundle supported by the best available evidence and legitimate constraints, revised when the evidence changes.

15.7 PRICING APPROACHES: WHAT EACH OPTIMIZES AND CONCEALS

15.7.1 Cost-plus, target-return and contribution-based pricing

Cost-plus pricing adds a specified markup to a defined cost base. Its virtues are administrative transparency, budgeting convenience and a visible path to recovery where product costing is reliable. Its weakness is conceptual: cost does not establish the buyer's valuation or the price a competitor will charge. A fixed percentage may produce too high a price for price-sensitive buyers and too low a price for a specialized offer. When expected units depend on price, allocated fixed cost per unit is endogenous. Cost-plus pricing therefore needs iterative volume assumptions and reconciliation against market evidence; otherwise the enterprise has hidden a demand forecast inside a cost calculation. Hinterhuber (2008) distinguishes cost-based, competition-based and customer-value-based approaches while examining practical barriers to the latter.

Target-return pricing uses an explicit investment or profit objective to derive a provisional price given expected volume and costs. It is useful for disciplined planning but circular if demand is subsequently assumed to hold at the resulting price. Contribution-based pricing compares incremental revenue with avoidable incremental cost for specified orders, subject to opportunity cost, risk, capacity and long-run recovery. A one-off order may rationally be accepted below an allocated full cost while still contributing to fixed-cost recovery, yet repeated acceptance at that level can undermine the enterprise. Governance should therefore distinguish temporary, documented exceptions from a default price architecture.

15.7.2 Customer-value-based and competition-referenced pricing

Value-based pricing starts with a defined buyer alternative and estimates the incremental benefits and sacrifices attributable to the focal offer. In organizational purchasing, one might estimate fewer machine stoppages, lower energy consumption, faster processing, reduced defects and credible cost of switching. The economic value to the customer (EVC) can be expressed in a simplified form as **EVC = reference alternative price + monetary value of incremental benefits − monetary value of incremental disadvantages**, provided all amounts share a unit and time horizon. A defensible value claim specifies the measurement procedure and which benefits the seller can credibly deliver. Anderson et al. (2006) warn that business-market propositions commonly assert superiority without demonstrating it. A seller cannot infer that its feasible price equals the entire quantified customer surplus; competition, bargaining, information, affordability and the customer's rightful share in joint gains constrain capture.

Competition-referenced pricing uses observed rival offers as comparators, which can be essential in markets with transparent substitutes. A published price may nevertheless conceal delivery charges, volume terms, warranty limits, reliability, financing and tax. It should not be assumed to equal the rival's realized transaction price. Managers also need a lawful boundary: coordinating price levels or future movements with competitors can violate competition law, and an algorithm collecting rivals' public prices does not confer an exemption from that law. Price surveillance is an information input, not an authorization for tacit alignment.

Economic value to the customer is an estimate of attributable benefit, not a license to appropriate the buyer's entire surplus. Consider an equipment buyer whose alternative incurs RWF 600,000 in expected annual downtime and whose proposed replacement plausibly reduces that loss by RWF 250,000. A value claim should establish the period, baseline failure probability, number of affected operating hours and degree to which

reduced downtime is actually controlled by the seller. It should discount future benefits where material and compare them with the supplier's incremental services and risks. A vendor quoting the full assumed saving as a premium may leave no buyer incentive for switching and create exposure if the estimate proves optimistic. The defensible contract divides uncertain value through transparent price, service obligations and verifiable remedies.

15.7.3 Bundles, versions, subscriptions and lifecycle price architecture

A bundle combines offerings at a joint price; versioning differentiates functional or service levels; subscriptions charge for continuing access or replenishment. Each can lower transaction costs, accommodate heterogeneous needs or stabilize revenue. The same mechanisms can obscure component prices, lock customers into unwanted services, penalize low-volume buyers and increase the difficulty of cancellation. A bundle should be evaluated against separately available alternatives and its incremental cost, not simply against the arithmetic sum of nominal list prices. A subscription model needs cohort-level measures of contribution after service, cancellations, defaults, refunds and support. Growth in registered accounts is insufficient when many are inactive or loss-making. Customer lifetime value calculations should disclose survival, retention, discounting, gross contribution and customer-acquisition costs rather than treat recurring revenue as permanently guaranteed (Gupta et al., 2004).

Penetration and skimming approaches also require contextual caution. An introductory low price may accelerate trials but establish a difficult reference point or attract customers with weak retention; a high entry price may recover development costs but suppress diffusion and access. Price endings, thresholds and promotions affect perceptions, yet a psychological response found in one category cannot justify a universal ‘9-ending’ rule. Managers should define a price architecture encompassing price book, eligible discounts, channel fees, payment terms, tax treatment, refund policy and approval rights. Consistency of that architecture is often more valuable than chasing a single supposedly optimal number.

A practical subscription analysis must account for customers as time-varying cohorts rather than extrapolate one period's recurring revenue indefinitely. In a simplified constant-contribution, constant-retention model, an initial customer's expected contribution before acquisition cost is $m\Sigma_{t=0}\text{^}T\ [r/(1 + i)]^t$, where m is contribution per active period, r is retention probability, i is the period discount rate and T is the chosen finite horizon. An infinite-horizon expression is inappropriate where the product, regulation or customer population is unstable. It is also invalid to apply a retention rate estimated from surviving accounts without considering censoring and the differing experience of newly recruited users. This is one reason why attractive subscription revenue can coexist with weak lifetime economics (Gupta et al., 2004).

15.8 REVENUE MANAGEMENT, PERISHABLE CAPACITY AND FAIRNESS

15.8.1 Time-sensitive capacity and the allocation problem

Revenue management is particularly relevant when capacity is costly, fixed or perishable over a selling period and demand varies across booking times or customer groups. An unused hotel room-night or airline seat cannot generally be stored and sold in the same form tomorrow. Talluri and van Ryzin (2004) integrate quantity- and price-based approaches to this problem. Their methods distinguish capacity allocation from unrestricted price increases: rejecting a low-fare reservation can be rational when it preserves capacity for a probable later high-value booking, but only if the expected gain exceeds the risk of leaving capacity unsold. A physical inventory of shelf-stable food differs because stock can sometimes be carried, although spoilage and working-capital costs still matter.

Consider an illustrative training venue with 40 seats for one date. Twenty seats can be reserved now at RWF 20,000 each; expected later demand for premium seats at RWF 30,000 is uncertain. If capacity is binding, acceptance today consumes an option that may have value tomorrow. A simplified decision compares RWF 20,000 immediate contribution with the probability-adjusted net contribution from reserving a seat, using a defensible demand distribution and allowing for no-shows, cancellation terms and variable service cost. This is not equivalent to arbitrarily multiplying all quotes by an observed scarcity factor. Rigorous revenue

management specifies the capacity unit, offer class, time horizon, forecast error and protected minimum service obligations.

The decision can be expressed using the opportunity cost of scarce capacity. For a single remaining seat, suppose the later premium sale would provide a contribution of RWF 26,000 and, based on an explicit forecast, has probability 0.60 of materializing. Retaining the seat has expected contribution of RWF 15,600 before risk adjustments. A certain immediate booking yielding RWF 17,000 contribution would therefore dominate reservation under risk-neutral expected value; if the premium-sale probability rises above 17,000/26,000 ≈ 65.4 per cent, the simple ranking reverses. The probabilities and contributions are hypothetical and exclude customer goodwill and cancellation rights. This threshold makes the economic logic auditable and demonstrates why 'premium later' is not a sufficient justification for rejecting today's customer.

Actual capacity-management systems need dynamic controls because one seat or room can be part of a multi-date itinerary, reservations may cancel, and demand distributions change. Overbooking may reduce idle capacity but expose consumers to serious harm when promised service cannot be supplied. The ethically legitimate objective is not expected revenue alone: a policy must define the cost and remedy of involuntary denial, accessibility needs, clear contractual disclosures and the authority to stop automated allocations. A small Rwandan training venue may rationally prefer transparent booking bands and manual review over a sophisticated black-box system whose forecasts cannot be audited.

15.8.2 Segmentation, price differentiation and legitimacy

Price differentiation occurs when buyers pay different net prices for comparable offerings and the differences are not solely explained by differences in incremental cost. Economists distinguish forms associated with individualized prices, quantity menus and identifiable segments, but real markets contain hybrid contracts. Differential pricing can expand access if discounts reach buyers who would otherwise be excluded, and it can redistribute surplus toward sellers or favored segments. Neither welfare consequence follows automatically. Price sensitivity is not a morally sufficient basis for exploitation, particularly when personal information exposes vulnerable circumstances. Legal permissibility also depends on jurisdiction, market power, protected characteristics, consumer disclosures and contract rules.

Haws and Bearden (2006) show how dynamic pricing can produce fairness concerns that affect satisfaction. Kahneman et al. (1986) documented reference-dependent judgments of price and wage fairness; their survey findings describe a social norm in their study settings, not a binding Rwandan legal test. A responsible revenue-management policy uses understandable criteria such as time of booking, refundable flexibility or demonstrable service differences, limits surprise changes, protects essential access where relevant and makes human review available when automated outcomes appear erroneous. Revenue improvement should be audited alongside complaints, cancellation friction, exclusion and reputational effects.

Distributional analysis should distinguish vertical differentiation, in which products have genuinely different service attributes, from charging dissimilar customers different prices for an otherwise equivalent offer. A lower off-peak fare may improve the utilization of genuinely idle capacity and permit access that a uniform high price would exclude. The same policy can disadvantage people who cannot shift work or family responsibilities. Evaluation therefore requires both overall welfare and the incidence of gains and losses across relevant groups. An identical allocation rule may be formally neutral while producing systematically unequal access; conversely, a proportionate concessionary tariff may be fair even when buyers do not pay identical amounts. No general theorem licenses the equation of algorithmic efficiency with distributive justice.

15.8.3 Algorithmic price coordination and the governance boundary

Dynamic pricing software can respond rapidly to capacity, demand and input costs; it can also amplify errors, reproduce discriminatory patterns or facilitate anti-competitive interaction. The OECD (2017) discusses how algorithmic systems complicate the distinction between lawful independent pricing and prohibited coordination. A pricing model should therefore be constrained by competition-law advice, data minimization, audit logs, approval thresholds, override authority and separation from competitors' nonpublic intentions. A

machine-generated recommendation does not displace managerial responsibility for the price actually offered. Sudden surges, opaque personalized differences or erroneous stock signals are governance events as well as technical incidents.

15.9 PRICING IN BUSINESS-TO-BUSINESS AND PUBLIC CONTEXTS

15.9.1 Negotiated contracts and total customer economics

Business-to-business (B2B) pricing often concerns an integrated contract rather than one posted unit. Relevant terms include agreed volume, delivery location, service levels, payment period, currency, price-adjustment formula, acceptance tests, warranty, spare parts, penalties and termination rights. A low nominal price may be expensive once equipment downtime, training and maintenance are included. Conversely, a high-priced offer may deliver a lower total cost of ownership when performance is credible. Shapiro and Jackson (1978) emphasized the need to relate industrial prices to buyer requirements; Anderson et al. (2006) stress documented value differentiation. An enterprise should therefore maintain an itemized economic value model that distinguishes the supplier's verified performance from benefits controlled by the purchaser.

For illustration, suppose machine A costs RWF 9 million and is expected to require RWF 1.8 million annually in upkeep, while machine B costs RWF 11 million but requires RWF 1.1 million. Over three years, without residual value and ignoring discounting, total costs are RWF 14.4 million and RWF 14.3 million respectively. At a 12 per cent annual discount rate, the present-value factor for three end-year equal payments is about 2.4018; total present cost is approximately RWF 13.323 million for A and RWF 13.642 million for B. Under these particular assumptions, A is cheaper in present-value terms despite B's lower undiscounted total cost. The example demonstrates that comparative ranking depends on timing and discount assumptions, not a claim about actual supplier offerings. Reliability, expected failure losses and terminal value would need explicit treatment before procurement approval.

Lifecycle costing must preserve a consistent unit of analysis. A purchaser comparing machines should specify whether maintenance is paid at the beginning or end of each year, whether energy and downtime effects vary with utilization, whether residual values differ and which risks each party bears. If uncertain costs are included as expected values, the analyst must avoid charging the same failure again through a blanket risk premium. Sensitivity to discount rates is not merely a mathematical formality: capital-constrained firms may face a higher financing cost than buyers in well-developed credit markets, but a higher hurdle rate does not automatically justify neglecting future safety or environmental obligations. Contract design should distinguish expected economic costs from mandatory performance standards.

15.9.2 Public procurement, tenders and fairness to competing bidders

Public purchasing creates special constraints because the price decision interacts with transparency, value-for-money evaluation, competition, procedural equality and accountability for public resources. Bid preparation should distinguish a compliant technical offer from the financial offer, identify total cost, avoid contingent promises the enterprise cannot honor and document the authority to approve discounts. In a fixed-price contract, inflation and exchange-rate shocks may fall on the supplier; in an indexed agreement, adjustments need objective, auditable and lawful terms. The relevant procurement rules and standard bidding documents must be verified in the jurisdiction and at the tender date, rather than inferred from general marketing practices. This chapter describes price economics and contractual interfaces, not the detailed Rwanda procurement-law process, which belongs with Chapter 18.

A supplier should not interpret a competitor's tender price as permission to coordinate bids or exchange future pricing intentions. Nor is the 'lowest bid' necessarily the economically least costly solution when lifecycle performance is contractually relevant. Credible procurement evaluation identifies measurable quality outcomes, service obligations, price comparability, delivery and integrity controls. Product managers contribute truthful specifications; finance verifies working-capital and credit exposure; operations confirms deliverability; and governance reviews conflicts of interest. These dependencies make tender pricing a cross-functional assurance activity.

15.9.3 International terms, currency and institutional asymmetry

Cross-border B2B pricing introduces exchange-rate, customs, logistics, destination-standard and legal-enforcement risks. A Rwanda-based processor may invoice a regional distributor in a foreign currency, yet incur labor and packaging costs in Rwandan francs. A quote should specify exchange-rate convention, quote validity, delivery term, quality specification, payment guarantee, dispute forum and the allocation of damage risk. An apparently attractive foreign-currency price may become unprofitable if currency depreciation, transport delays or rejection costs occur. AfCFTA or EAC membership does not mean that every good automatically receives preferential treatment or that labeling, origin documentation and market-access conditions have disappeared. The seller must establish product-specific eligibility and actual destination requirements before adopting a regional price. Chapter 30 handles the detailed trade architecture.

15.10 SERVICE QUALITY AND POST-PURCHASE VALUE

15.10.1 Quality is experienced across the full promise

Post-purchase quality includes whether the offering works, whether failures are handled promptly, whether guarantees are intelligible and whether customers can obtain appropriate support without disproportionate effort. Service quality is commonly assessed through expectations and performance dimensions, but expectations vary by segment, culture, price and prior experience. The attribution problem is substantial: satisfaction may change because promised standards changed, because the customer population changed or because complaints became easier to report. Anderson et al. (1994) and Rust et al. (1995) connect satisfaction or quality investments to economic performance while highlighting the need to analyze costs and benefits rather than assume every additional quality expenditure is justified.

A strong after-sales architecture identifies which promise was made, which evidence demonstrates a breach, who may approve replacement or repair, how the customer can contest a decision and how recurring faults inform product changes. Warranty provisions require a realistic reserve for expected remediation and independent attention to safety. A company cannot ethically advertise an extensive warranty while designing the claim process so that consumers rarely succeed in using it. In digital products, support further includes software updates, access continuity, migration, security correction and clear notification of material functionality changes. In essential goods or services, abrupt withdrawal may create harms beyond a refund.

Service quality has at least two analytically distinct dimensions. Technical quality concerns what the customer receives, while functional quality concerns how the process is performed; corporate image can influence the interpretation of both (Grönroos, 1984). A repaired machine that resumes functioning after repeated delays may meet an eventual technical outcome but still fail the agreed response-time promise. Equally, cordial personnel cannot compensate for unsafe equipment or inaccurate information. This distinction suggests separate indicators for objective outcomes, process reliability and customer experience. Their interpretation should consider expectations and selection: demanding users may complain more precisely, while disadvantaged users may be less able to complain at all.

15.10.2 Complaints as diagnosis, not merely reputation management

Complaint frequency has a denominator problem. Ten complaints among 1,000 deliveries is not equivalent to ten among 10,000, and a reduction in complaints could mean more satisfied buyers or a blocked reporting channel. A useful dashboard separates incidents per completed order, severity, time to acknowledgment, time to remedy, repeat failures, recurrence by production batch and evidence of customer effort. Complaint coding should distinguish product defect, misinformation, delay, payment problem and misuse rather than automatically attribute every dissatisfaction to customer conduct. Managers should protect staff who report defects and preserve the ability to escalate a safety-critical event irrespective of sales targets.

The economics of service recovery require an incremental perspective. If a replacement costs RWF 1,500 and plausibly preserves a recurring customer's contribution, remediation may be economically justified; if the product is unsafe, remediation may be obligatory regardless of financial return. A retention correlation cannot

establish the causal return from a guarantee. Robust evaluation compares treated and untreated cases with attention to severity, customer selection and timing. Ethical remedies should not be withheld merely because predictive models forecast that a particular complainant will not purchase again.

A strong failure-response system treats the complaint as an event in a traceable quality process rather than a reputational nuisance. It records the sold product and batch or software version, relevant contract terms, claimed harm, time to response, corrective action, root-cause hypothesis and final remedy. Patterns should be reviewed across channels because retailers, online platforms and direct purchasers may have different opportunities to report defects. A reduction in visible complaints following an interface change is not evidence of better quality until reporting access is held reasonably comparable. Where a hazard is credible, the firm must separate immediate containment from slower causal analysis, and its governance system must authorize precautionary suspension without waiting for a favorable financial evaluation.

15.11 PRICE AND BRAND ETHICS: FAIRNESS, TRUTH AND VULNERABILITY

15.11.1 Truthful pricing and the problem of manufactured reference points

A transparent price includes material charges and conditions before commitment. False ‘was’ prices, undisclosed compulsory fees, fabricated scarcity, misleading strike-through discounts and subscription terms that are easier to enter than leave can distort consumer choice. A price can be computationally accurate yet misleading if its context omits mandatory charges or if the comparison is not genuine. Fairness additionally concerns whether a sudden increase reflects a real change in cost, scarcity or service, and whether disadvantaged buyers have meaningful alternatives. Behavioral findings on fairness illuminate expectations but are not a substitute for legal duties or explicit ethical argument (Bolton et al., 2003; Haws & Bearden, 2006).

Rwanda’s **Law No. 011/2026 of 26 February 2026 relating to competition and consumer protection**, published in the Official Gazette of 4 March 2026, provides a directly relevant legal framework. Its provisions cover false or misleading representations (Article 26), unfair business practices (Article 28), price display (Article 34), labeling (Article 35), advertising (Articles 36–37), guarantees (Article 39), after-sales services (Article 40), and e-commerce obligations in a separate chapter. These are the subjects of the enacted provisions, not a conclusion that every conceivable pricing tactic is categorically lawful or unlawful. A company planning personalized prices, discount campaigns or online subscriptions must consult the full instrument and any applicable implementing rules at the decision date (Republic of Rwanda, 2026).

15.11.2 Brand claims, sustainability and vulnerable buyers

Claims about nutrition, safety, origin, organic production, recycled content, climate impact and fair payment to producers are factual assertions that require proportionate substantiation. The US Federal Trade Commission’s Green Guides provide one influential comparative framework cautioning against broad, unqualified environmental benefits claims; they are not Rwandan law. The European Union’s Directive (EU) 2024/825 establishes another jurisdiction-specific approach to misleading environmental and durability claims, with implementing measures applicable in Member States from 27 September 2026, following the Directive’s 27 March 2026 transposition deadline. Neither foreign framework should be copied as if universally binding. Their comparative significance is that an attractive environmental narrative cannot be a substitute for evidence, qualification and analysis of trade-offs (Federal Trade Commission, 2012; European Parliament & Council, 2024).

Vulnerability can arise from age, disability, limited literacy, financial distress, dependence on a service or information asymmetry. Responsible product design makes warnings intelligible, provides accessible remedies and avoids using behavioral data to extract the maximum price a vulnerable person might tolerate. At the same time, equitable access does not imply that every price difference is unfair: transparent student discounts, geographic cost differences and volume terms can be justified when evidence, purpose and proportionality are clear. The ethical assessment should ask who benefits, who bears risk, whether consent is meaningful and whether the rule could be explained without deception to those it affects. The criteria should be documented before marketing a controversial differential offer.

15.11.3 A practical ethical authorization test

A proposed product claim or price should pass at least five distinct questions. **Truth:** Is the description correct in ordinary customer understanding, not merely technically defensible under a strained interpretation? **Evidence:** Can the material claim be verified through an appropriate source, test or record? **Fairness:** Do the terms exploit a hidden vulnerability or unjustifiable asymmetry? **Feasibility:** Can the enterprise deliver, support and remediate the offering without shifting undisclosed harm to others? **Accountability:** Is a named decision maker authorized to stop, correct, compensate and disclose? Passing an accounting-profit threshold answers none of these questions by itself. Nor is a favorable intention sufficient if outcomes are not measured. These criteria represent a normative governance instrument, not a claim that a five-item score has been psychometrically validated.

These questions reflect a tension between procedural and substantive legitimacy. A well-documented approval process can still authorize exploitative practices if it treats consumer understanding as irrelevant. Conversely, a manager's favorable ethical intention cannot replace evidence that customers understand recurring charges or that protective controls actually work. The authorization record should therefore identify the affected groups, foreseeable harms, alternative designs, independent objections and revision triggers. Particular caution is warranted where an essential good is sold to buyers lacking meaningful alternatives, because nominal freedom to reject a transaction may coexist with practical dependence. Such analysis is consistent with the chapter's distinction between economic explanation and moral justification; neither may be substituted for the other.

15.12 ARTIFICIAL INTELLIGENCE AND DIGITAL PRODUCT ECOSYSTEMS

15.12.1 Digital products, platforms and changing product boundaries

Digital offerings can be updated continuously, bundled with complementary services and distributed through platforms whose rules determine visibility and access. Their boundaries are consequently more fluid than those of a sealed physical package: a feature can change after purchase, a third-party API can fail, and ranking algorithms can determine which offerings a customer sees. Product analytics may record feature use, error rates and completion times, but digital observations represent people with access and consent under particular platform configurations. A decline in usage may signal poor design, seasonality, a new competing offer or a change in measurement. Platforms also redistribute decision power toward operators who control search ranking, payment rails, customer data and terms of service. Small African suppliers may gain market access while becoming dependent on opaque rules or expensive switching.

Recommendation systems and generative AI can assist product discovery, content drafting, customer support, segmentation and early prototyping. Their usefulness depends on task, training data, validation design and human capability. Brynjolfsson et al. (2025), studying a staggered AI-assistant introduction among customer-support agents, report productivity benefits within the studied setting and heterogeneous effects by experience; that finding should not be converted into a universal claim that AI raises the profitability of product innovation or the accuracy of every recommendation engine. Models can recommend unsafe combinations, create misleading descriptions, reproduce biased exposure and hallucinate warranty promises. Product management must distinguish generated suggestions from approved product facts.

Digital products additionally challenge conventional notions of ownership and product stability. A purchaser may experience a service as a single offering even when it depends on cloud infrastructure, a payment intermediary, training data, an app store and an outsourced identity provider. Changes in any one component can undermine performance without a visible modification by the seller. Product requirements consequently need dependency maps, change-notification rules, continuity alternatives and explicit responsibility for customer-facing failures. The design question is not simply who wrote the software, but who can prevent, detect and remedy an unacceptable change in the delivered service.

15.12.2 Human oversight, privacy and accountable experimentation

The National Institute of Standards and Technology's AI Risk Management Framework and its generative-AI profile offer voluntary governance guidance for identifying, assessing and managing trustworthiness risks (National Institute of Standards and Technology [NIST], 2023, 2024). Their relevance is methodological, not a declaration of Rwandan statutory compliance. Rwanda's Law No. 058/2021 on personal data protection and privacy is directly material where product analytics or individualized offers process personal information (Republic of Rwanda, 2021). A company must identify the lawful basis, purposes, access controls, retention schedule and relevant rights under that law, rather than assume that product-personalization value justifies unrestricted collection.

A proportionate AI product-control register should record the feature owner, intended decision support, affected population, data provenance, model version, benchmark dataset, error types, safety limits, human approvals, logging and withdrawal triggers. Prices and product claims require an approval layer distinct from unconstrained model output. Experiments should test not merely click-through or transaction rates but customer understanding, error severity, disparities among meaningful groups, complaints and reversibility. A human-in-the-loop claim is credible only when the assigned person has time, relevant information and actual authority to reject an automated recommendation.

AI-enabled product tests also raise the problem of evaluation contamination. When a generative system drafts both product claims and the examples against which those claims are assessed, superficial agreement may be mistaken for independent validity. A defensible evaluation keeps verified product specifications separate from generated text, measures error categories and severity, includes representative edge cases and records human disagreement. Product managers should require evidence of calibration and performance drift under changing populations, not merely an attractive average accuracy. Human review must be sampled and audited for actual intervention rather than reported as a procedural checkbox (NIST, 2023, 2024).

15.12.3 Digital trust, security and long-term product accountability

Digital product failure can arise from cyber incidents, inaccessible services, broken third-party integrations or a supplier's abrupt change of terms. Trust is thus tied to availability, secure data handling, promised interoperability and remedies after loss, not only to interface design. New feature releases should consider backward compatibility, non-discriminatory migration, data portability and notice periods. Subscription churn may appear commercially beneficial to a platform if users remain locked into payments; consumer welfare requires independent measures of informed choice and cancellation ease. The more a firm automates individualized offers, the stronger the need to preserve evidence of what was offered, accepted, charged and remedied. These records also support accounting, governance and statutory audit without authorizing unlimited retention of personal data.

15.13 RWANDA-BASED APPLICATION AND INTERNATIONAL COMPARISON

15.13.1 What official Rwanda evidence can and cannot establish

Product strategy in Rwanda must be read against the structure of enterprise activity rather than presumed conditions of large multinational firms. The National Institute of Statistics of Rwanda (NISR) reports an estimated **278,060 business enterprises in 2024** in its Integrated Business Enterprise Survey (IBES), with informality accounting for at least **87 per cent** in the survey's defined business landscape (NISR, 2026). The survey's formal/informal classification and nonagricultural economic scope must be retained when using these figures. They do not show how many enterprises sell breakfast foods, the willingness to pay for a premium brand, or the magnitude of any particular local price elasticity. They do indicate why many firms may lack specialized product teams, sophisticated cost-accounting systems or stable access to capital and external quality services. Those conditions make simple, transparent tools relevant, but they do not excuse unsafe products or unverifiable claims.

The same official release reports that **62.6 per cent of surveyed manufacturing companies** were not using their full production capacity, with cited constraints including demand and input-supply reliability (NISR, 2026). This observation makes product-market fit and reliable sourcing important questions, but it does not establish that pricing is the cause of underutilization. Low utilization may reflect seasonality, production interruptions, infrastructure, input scarcity or measurement assumptions. An enterprise seeking to lower price to 'fill the factory' must therefore establish whether demand is elastic, which costs remain avoidable, whether quality would be compromised, and whether higher volume would absorb working capital more quickly than receipts arrive. The national descriptive statistic does not supply these firm-specific answers.

Rwanda's specialty-coffee industry provides a documented example of product quality, origin association and price differentiation operating together, without permitting simplistic causal inference. The National Agricultural Export Development Board (NAEB) reported that Rwanda exported **23,860 tonnes of green coffee in 2025**, earning over **US$148.6 million**, compared with 17,142 tonnes worth over US$89.8 million in 2024 (NAEB, 2026a). Its account attributes the expansion to several factors, including higher volume, international prices and market-development activities. A researcher cannot isolate the contribution of branding, quality competitions or a particular pricing choice from these aggregate data. The distinction matters because attributing the entire export-revenue increase to a national brand campaign would confound global commodity-price movements, crop supply, market composition and promotional effort.

In a separate account, NAEB reported that the 2026 Best of Rwanda specialty-coffee competition selected **25 coffees from 320 samples**, with winning lots offered for an October 2026 auction (NAEB, 2026b). This is evidence of an organized quality-recognition and market-signaling mechanism. The documented cupping and selection process helps distinguish specialty lots, while a transparent auction creates a context in which buyers can reveal valuations for specific, differentiated lots. However, competition selection does not itself measure the incremental net income received by each grower or guarantee that every coffee sold under a Rwanda-origin description meets an identical quality specification. A complete value-chain study would require farm-gate receipts, processing and export costs, contract terms, quality scores, buyer payments and a suitable nonselected comparator.

15.13.2 Product claims, legal obligations and market institutions

A Rwanda-based processor designing a product brand must connect identity with labeling, product safety, traceability and redress. The 2026 competition and consumer-protection law is particularly relevant to truthfulness of product descriptions, visible price terms, guarantees and after-sales service (Republic of Rwanda, 2026). The Rwanda Standards Board operates product-certification mechanisms, including published directories of certified products (Rwanda Standards Board, n.d.), but the applicability of any standard and the current status of a specific certificate must be verified against the actual product and the latest records. Sector-specific authorization may be needed depending on the item; registration of an enterprise, protection of a trademark and product-market authorization are not interchangeable activities. Because these duties differ by product category, the present case avoids asserting an unverified universal food-label specification and instead incorporates a jurisdiction-specific pre-launch compliance check.

The Rwandan coffee example illuminates an economic issue that cannot be settled by a price premium alone: how value is distributed among farmers, processors, exporters, roasters and retailers. A premium may reflect better quality, scarce supply, international preferences, logistics and negotiating power in different proportions. A responsible brand narrative should not promise fair distribution without chain-level evidence. For smaller suppliers, cooperatives and microenterprises, traceability and independent quality certification can improve trust, yet compliance costs, testing access and documentation may restrict participation. The relevant policy and management question is how assurance arrangements can be both credible and proportionate, not whether formal labels always increase welfare.

15.13.3 Comparative international lessons and transferability

The international evidence offers mechanisms rather than ready-made numerical parameters. The US-based experimental literature on price and quality cues demonstrates why branding and price sometimes influence

perceptions (Rao & Monroe, 1989), but it does not establish Rwandan consumers' elasticities or the affordability of imported quality-signaling techniques. European requirements concerning environmental claims illustrate increasingly explicit expectations of substantiation (European Parliament & Council, 2024), but their jurisdictional reach and implementation obligations must be examined for any specific export product. The established revenue-management techniques used in airlines and hotels are relevant to perishable capacity (Talluri & van Ryzin, 2004), yet a small producer selling stockable food cannot apply airline seat-protection rules without accounting for storage, spoilage, retailer bargaining and credit.

The strongest lesson from comparison is methodological: the enterprise must establish which *mechanism* plausibly transfers. A specialty coffee exporter can learn from markets that reward traceability, but must test whether target buyers recognize its distinguishing characteristics. A service provider can learn from international recovery frameworks, but needs a complaint channel accessible through its customers' actual languages and communication modes. A digital pricing system can improve responsiveness where data and governance capacity are strong, but it may amplify inequity and errors where records are incomplete. Transferability therefore depends on the joint configuration of customer alternatives, infrastructure, institutional enforcement, scale, capital and organizational capabilities, not on the prestige of the foreign comparator.

A more disciplined Rwanda–international comparison distinguishes capabilities that are transferable at modest cost from arrangements that presume specialized staff and extensive transaction histories. Transparent product specifications, batch traceability, clear warranties and a rudimentary contribution model can be implemented with basic records and accountability. Automated individualized demand curves, complex revenue-management software and real-time experimental platforms assume a data infrastructure that may not be available or appropriate. Their transfer should be staged: first establish reliable units and product records, then test basic segmentation and forecasting, and only thereafter consider automation if the incremental value exceeds its full governance and switching costs. This sequencing is a conditional managerial interpretation, not a measured estimate of adoption effects.

15.14 CROSS-FUNCTIONAL INTEGRATION AND A RESEARCH AGENDA

15.14.1 The product–value–viability–accountability configuration

This chapter proposes an integrative analytical configuration with four linked requirements. **Use value** concerns whether the offering solves a relevant problem through characteristics customers can experience. **Economic viability** concerns whether the value offered can be delivered with sustainable contribution, working capital and investment. **Credible identity** concerns whether claims and signals correspond to consistent, substantiated performance. **Accountability** concerns whether the enterprise detects and remedies failures while respecting enforceable rights and justified stakeholder interests. No requirement substitutes for the others. A technically superior product may lack a viable market, an economically attractive price may rely on misleading claims, and a trusted brand may become fragile when its support system is neglected. The configuration synthesizes distinct literatures, not a newly estimated causal model (Zeithaml, 1988; Keller, 1993; Cooper, 1990; Bitner et al., 2008).

Product and pricing decisions are among the clearest illustrations of enterprise interdependence. Research and customer intelligence (Chapter 14) establish the evidentiary warrant for desired outcomes; marketing strategy (Chapter 13) defines meaningful market boundaries and positioning; operations and quality management (Chapters 17 and 20) establish what can be produced or performed reliably; procurement and supply-chain systems (Chapters 18–19) shape input variability, delivery risk and total fulfillment cost. Management accounting (Chapter 23) clarifies cost behavior, while financial management (Chapter 24) assesses cash conversion, capital commitment and investment viability. Governance and law (Chapters 3 and 8) determine authorizations, rights and responsibilities; specialist digital systems and AI (Chapters 28–29) implement but do not legitimate algorithms. Chapter 16 subsequently develops the communications and channels through which the approved product and price reach buyers. The connections are causal hypotheses to be examined in specified settings, not a license to claim that every function has the same influence in every firm.

Table 15.4. Cross-functional product and price assurance register

Decision interface	Required information	Principal decision owner	Failure signal / corrective action
Product and customer intelligence	Tested outcome, segment, counterfactual and exclusions	Product lead with research function	Low use or harms: redesign and retest
Brand and legal claims	Evidence ledger, approvals and expiry/review dates	Brand lead and compliance authority	Unsubstantiated claim: suspend and correct
Operations and supply	Capacity, defects, input variability and traceability	Operations and procurement leads	Failure concentration: stop batch or revise supplier
Finance and pricing	Net realized price, variable costs, cash exposure and scenarios	Finance with commercial owner	Margin or cash stress: reprice, redesign or stage scale
After-sales and remedies	Complaints, warranty liability, accessibility and response time	Service owner and governance	Repeat unresolved incidents: escalate and remedy
Digital features and automation	Data purpose, model performance, audit trail and override	Product/IT owner with risk oversight	Drift, discrimination or error: pause automation

Note. Original managerial instrument. Named roles may be combined in a small enterprise, but accountabilities should not disappear. Related conceptual ownership lies across Chapters 3, 8, 14, 17, 18, 20, 23, 24 and 29.

15.14.2 Competing explanatory interpretations and identification challenges

Three theoretical disagreements remain consequential. First, the economic approach foregrounds price, elasticity and surplus, while consumer-research perspectives emphasize imperfect information, reference points, meaning and habits. A behaviorally informed price model can predict responses more richly, but greater complexity does not guarantee better external validity or moral justification. Second, brand-resource approaches emphasize accumulated intangible assets, whereas signaling interpretations stress credible reduction of information costs. A powerful brand may be partly a consequence of superior product delivery, distribution access or advertising expenditures; causal attribution to 'brand' requires a defensible counterfactual. Third, stage-gate innovation emphasizes organized screening, while iterative approaches privilege rapid learning and flexibility. A rigid gate may suppress experimentation; an ungated process may externalize safety and privacy risks. Appropriate governance depends on the irreversibility, harm potential and uncertainty of the intervention.

Empirical research must identify the level at which the hypothesized relationship operates. A product-level price experiment needs consistent treatment of competitor and channel conditions; a brand study must distinguish exposure from changes in underlying quality; a portfolio model must account for substitution among offerings; and a policy study must separate legal adoption from implementation and enforcement. Research using only purchasers risks excluding people priced out of the market. Using only formal enterprises may systematically underrepresent informal and hybrid operations. These are not peripheral limitations: they can change the direction and welfare interpretation of conclusions, especially in settings where income, network access and enterprise formalization are heterogeneous.

An additional disagreement concerns the meaning of customer value. Conventional economic models often represent a buyer as an individual with a stable willingness-to-pay schedule; service-oriented scholarship emphasizes value realized through use and co-production; critical institutional analysis asks which parties possess the resources and bargaining power to participate. These perspectives cannot be resolved by declaring one vocabulary universally superior. Their productive synthesis begins with a specific claim and its unit: a demand experiment may estimate purchasing response, a process study may describe realized service outcomes, and a contractual audit may establish who captured the monetary returns. The evidence must be joined through

a theory of mechanism rather than averaged across incompatible constructs (Akerlof, 1970; Vargo & Lusch, 2004; Zeithaml, 1988).

15.14.3 Explicit propositions for future empirical work

Proposition P15.1. Conditional on comparable core quality, rival choice and past brand strength, transparent assurance and dependable post-purchase remedies are expected to reduce perceived purchase risk and support more durable price premiums. A suitable test would compare otherwise similar product cohorts with differing independently verified assurance exposure while recording product failures, prior purchasing and promotional intensity.

Proposition P15.2. Enterprises that jointly evaluate cost, demand, capacity and service consequences when changing price are expected to obtain more stable economic returns than otherwise comparable enterprises relying exclusively on constant cost markup. An evaluation must separate the effect of the decision process from the pre-existing scale, skill and data advantages that make sophisticated pricing more likely.

Proposition P15.3. The commercial and welfare effects of algorithmic personalization are expected to vary with data quality, consumer understanding, distributive fairness and effective override capability. A defensible field design would report conversion, realized contribution, errors, complaints and heterogeneous treatment effects, not simply uplift in the average transaction value.

Proposition P15.4. Among financially constrained enterprises, proportionate product assurance coupled with iterative market validation may improve survival of viable innovations compared with unconstrained full launches. The possible countermechanism is that certification and testing costs may prevent entry by capable small suppliers. Research should therefore measure both failure reduction among entrants and exclusion before entry.

Proposition P15.5. Traceability-based differentiation may increase buyers' willingness to pay without proportionately increasing farmers' or small suppliers' net receipts where contractual bargaining power and verification costs are unevenly distributed. Testing requires linked transaction values across successive value-chain stages, a credible comparison group and adjustment for product quality and world-market price changes.

None of these propositions has been independently validated within this chapter. An appropriate research programme would preregister definitional choices where feasible, triangulate field records with customer-level evidence, distinguish outcome periods, disclose missing data and use randomized or credible quasi-experimental comparisons when causal claims are intended. For P15.5, researchers would require chain-level transactions and a distributional model rather than national export receipts alone. For P15.3, a field experiment should incorporate pre-specified accuracy and welfare safeguards, not optimize conversion first and assess harm only afterwards.

15.15 INTEGRATIVE DISCUSSION, CHAPTER SYNTHESIS AND CONCLUSION

The principal insight is that an offering cannot be assessed adequately as an object, a story or a price in isolation. Product design specifies the promise; operational systems give that promise substance; branding makes it recognizable and potentially credible; and pricing allocates part of the jointly created value while affecting demand and access. Product portfolios then determine which promises the enterprise can continue to finance, and after-sales practices determine how it responds when those promises fail. The cycle repeats under technological, institutional and competitive change. A sophisticated technique becomes valuable only when it improves the quality of a decision that remains accountable to evidence and affected people.

The relationship among these lessons is reciprocal. Better customer evidence can justify redesign, which changes unit cost and the feasible price; a better price can sustain product quality, which in turn strengthens brand trust; and effective remedies can reveal weaknesses that neither a sales report nor a technical test detects. Conversely, a misleading claim may inflate immediate demand while eroding later trust and imposing

unrecorded remediation costs. The chapter therefore rejects a simple sequence in which product design ends, branding begins and pricing follows as an isolated calculation.

The analysis establishes three connected lessons for product and price decisions. The first concerns epistemic responsibility: customer outcomes should take precedence over feature accumulation, and observed sales trajectories must be interpreted in relation to substitution, market access and quality rather than assigned automatically to a presumed life-cycle stage. The second concerns economic integration: product portfolios, brand commitments and price schedules must be evaluated using incremental contribution, credible demand responses, capacity, service obligations and working-capital exposure. A margin, a market-share figure or a brand-awareness index is informative only within the decision and measurement framework from which it was produced. The third concerns legitimate authority: differentiated prices and automation can support efficiency, but they remain constrained by truthful communication, accessible redress, fair treatment, lawful information practices and accountable human judgment.

For Rwanda and comparable African settings, the imperative is neither to imitate the most data-intensive pricing practices of global corporations nor to romanticize informal methods. Enterprises need measures proportionate to their scale, access to trustworthy standards, legitimate buyer information, basic unit-economics discipline and protection against the misuse of price and brand claims. The documented growth and differentiation of Rwanda's coffee exports show why quality, origin and market access deserve examination, while also demonstrating how easily aggregate outcomes can be wrongly assigned to branding alone. An intellectually defensible enterprise responds to that uncertainty by testing assumptions, measuring trade-offs, preserving rights and revising decisions. The chapter thus completes the product–brand–price component of marketing and prepares the next chapter's analysis of selling, distribution, communications and digital channel execution.

15.16 KEY TERMINOLOGY, QUESTIONS, APPLICATIONS AND EDUCATOR NOTES

15.16.1 Selected key terms

Table 15.5. Key terminology and conceptual definitions

Term	Conceptual definition and qualification
Augmented product	The assistance, access and assurance accompanying the central offering, including support, delivery, warranties and remedies that shape realized use value.
Brand equity	The incremental response or asset value attributable to brand knowledge, associations or identifiers under an explicitly chosen measurement framework.
Brand credibility	The perceived reliability and truthfulness of a seller's brand-related information and commitments, which must be distinguished from objectively verified product quality.
Cannibalization	The diversion of purchases toward a new offering from another product owned by the same enterprise, measured against a counterfactual without that launch.
Contribution margin	The difference between realized net price and relevant incremental variable cost; the ratio expresses that difference as a proportion of realized price.
Customer economic value	An estimate of the buyer's incremental net benefits relative to a specified feasible alternative over a clearly defined unit and time horizon.
Dynamic pricing	The adjustment of prices over time or across circumstances through pre-specified decision rules, which may be manual or algorithmically implemented.
Own-price elasticity	The proportional change in demand quantity associated with a proportional change in the offering's own price, conditional on other relevant factors.
Price differentiation	Differences in realized net prices across buyers or transactions, whose justification depends on costs, service terms, competitive conditions and applicable law.

Term	Conceptual definition and qualification
Product portfolio	The set of interdependent offers competing for shared enterprise capabilities, investment, attention and customer demand.
Service blueprint	A process representation connecting customer actions, frontstage interaction, backstage operations and supporting systems across service handoffs.
Stage gate	An explicit evidence-and-authority checkpoint governing whether a product concept advances, changes, pauses or exits.
Value proposition	A credible, testable explanation of the benefits and sacrifices of an offering for a defined customer relative to a genuine alternative.
Yield management	Pricing and allocation of capacity that cannot be stored for later sale, taking uncertain future demand and customer obligations into account.

15.16.2 Questions for conceptual understanding and advanced critique

Question 1 (LO1–LO2). For a Rwandan agricultural-input supplier, distinguish the product's core outcome, physical specification and augmented after-sales obligations. Develop two competing explanations for a decline in orders and explain why a product-life-cycle classification alone is insufficient to authorize withdrawal.

Question 2 (LO3–LO4). Compare customer-based brand equity, credible signaling and Akerlof's quality-uncertainty account. Identify what each theory predicts, the data required to distinguish their mechanisms and one circumstance in which a costly signal might worsen rather than improve market access.

Question 3 (LO5). Explain mathematically why a 30 per cent markup is not a 30 per cent contribution margin. Show how a change in price could reduce revenue but increase period operating profit, specifying assumptions about costs, demand and capacity that must hold.

Question 4 (LO6–LO7). Evaluate a proposed personalized price for an essential, time-sensitive service through efficiency, distributional fairness, consumer understanding, privacy and applicable law. Separate empirical predictions about demand from the moral basis for the proposed pricing rule.

Question 5 (LO8). Explain why growth in national coffee export earnings cannot establish that a branding initiative increased farm-level incomes. Propose a comparative empirical design and specify how international prices, product quality, buyer selection and value-chain costs would be addressed.

15.16.3 Applied quantitative exercises

Exercise A (LO5). Using the companion pricing workbook, reproduce Table 15.3, calculate both break-even volumes and the arc elasticity, and reconcile the counterintuitive result that the higher-price option earns lower revenue but greater assumed operating profit. Then test a 10 per cent increase in variable cost and a 15 per cent demand shortfall independently and together. Report the break-even conditions, the worst-case monthly operating profit among the tested scenarios and the economic assumptions most likely to fail in actual use.

Exercise B (LO2, LO5). A hypothetical enterprise introduces a new item selling 1,500 units at contribution RWF 1,200 each. Assume 900 units would otherwise have been sold of an existing product at contribution RWF 1,000 each, while incremental introduction and support cost totals RWF 400,000. Compute incremental portfolio contribution and explain which assumptions would need evidence. *Expected calculation:* RWF 1,800,000 − 900,000 − 400,000 = **RWF 500,000**. Discuss how the result changes if half the displaced purchases would have been lost to a competitor anyway.

Exercise C (LO6). Recalculate the three-year B2B equipment example in Section 15.9 using discount rates of 0, 6 and 18 per cent. Explain whether the ranking of A and B changes and what evidence on maintenance risk,

residual value and delivery would be required for an actual tender. Include an ethical note on unsupported performance claims and the rights of competing bidders.

15.16.4 Integrative case and research assignment

Capstone assignment (LO1–LO8). Prepare a 2,500–3,500-word product and pricing decision memorandum for the entirely hypothetical Kigali Nourish enterprise, with appendices containing a requirements register, product-portfolio assessment, prototype validation plan, brand-claims evidence ledger, three-price scenario model, adverse-sensitivity matrix and post-purchase remedies procedure. Address Rwanda's applicable 2026 competition and consumer-protection framework at a level justified by the primary statutory text. Compare the domestic offer with a plausible EAC market-entry alternative without inventing legal clearance, customer data or transport prices. State what can be concluded now, what requires research and what would trigger a no-launch or recall decision. The recommendation must explicitly reconcile consumer benefit, economic sustainability, affordability, worker/supplier impacts and governance authority.

15.16.5 Educator guidance and assessment rubric

The foundational questions test conceptual distinctions; Exercises A–C test arithmetic and inference; and the capstone tests evidence-based synthesis and judgment. The proposed rubric assigns 20 per cent to problem and product specification, 20 per cent to theory and credible secondary evidence, 25 per cent to transparent and correct economic analysis, 15 per cent to ethical/legal and service-accountability reasoning, 10 per cent to interfunctional integration and 10 per cent to scholarly presentation and reference accuracy. Award no credit for invented empirical company findings presented as observations. A defensible answer may reject the higher-profit base scenario if its demand assumption is too weak or if its promises cannot be reliably delivered; learners should be assessed on reasoned evidence, not agreement with a predetermined price.

15.16.6 Further reading and evidence transparency

A productive reading sequence begins with Zeithaml (1988) for perceived value, Keller (1993) and Erdem and Swait (1998) for brand equity and signaling, Cooper (1990) and Bitner et al. (2008) for development and service design, Hinterhuber (2008) for pricing practice and Talluri and van Ryzin (2004) for revenue management. For context, consult the primary NISR (2026) enterprise survey, NAEB (2026a, 2026b) coffee releases, the 2026 Rwandan consumer-protection statute, and the source-specific EU, FTC and NIST documents rather than relying on undated derivative summaries.

The analytic tables and figures in this chapter are author-developed conceptual or teaching instruments. The Kigali Nourish financial scenarios use disclosed invented values; their arithmetic can be reproduced from Equations 15.1–15.2 and the accompanying model, but the inputs are not measurements of real firms or consumers. The Rwandan institutional and export evidence is documentary and descriptive. Accordingly, the chapter makes no original causal estimate, experimental claim or assertion that its integrated framework has undergone empirical validation.

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