

Analysis of Production Management in Locally Based Ready-to-Eat Food Security Catering

Wandi Kurniadi¹
International Women University

Evi Sofiati²
International Women University

Correspondence : Wandikurniadi (Wandikurniadi@iwu.ac.id)

Submitted : 24-02-2026 Accepted : 26-03-2026 Published : 28-05-2026

ABSTRACT

The ready-to-eat food catering industry represents a critical node in the community food security system, particularly as urbanization accelerates and household dependence on external food services intensifies. Locally based ready-to-eat food catering enterprises face a distinctive set of production management challenges: balancing high-volume, time-sensitive production with consistent food safety standards, integrating variable-quality local raw materials into standardized product outputs, and maintaining operational efficiency within limited infrastructure and human resource capacities. Despite the strategic importance of this sector, systematic analysis of production management practices specifically within locally based, food-safety-oriented catering enterprises remains scarce in the literature. This study aims to analyze production management practices in locally based ready-to-eat food security catering, encompassing production planning, raw material procurement management, food safety and quality control systems, capacity management, and waste reduction strategies. A qualitative case study approach was employed, with data collected through in-depth interviews, structured production process observation, and documentation analysis across twelve purposively selected catering enterprises in West Java Province, Indonesia. Findings reveal five critical dimensions of production management requiring strategic attention: (1) production planning that integrates demand forecasting with local raw material availability cycles; (2) procurement management that balances local sourcing commitments with supply reliability and quality consistency requirements; (3) food safety management systems built around adapted HACCP principles accessible to small-scale operators; (4) human resource capacity development in food handling, hygiene practices, and production scheduling; and (5) food waste minimization strategies that simultaneously reduce production costs and strengthen environmental sustainability. This study contributes an integrated production management framework for locally based ready-to-eat food security catering that bridges operational practice, food safety compliance, and community food sovereignty objectives.

Keyword: production management, ready-to-eat food, food security catering, local food system, HACCP, food safety, supply chain, waste management.

INTRODUCTION

The ready-to-eat food catering sector has emerged as a strategically significant component of the urban food supply system in Indonesia and across the developing world. Rapid urbanization, increasing female labor force participation, and the proliferation of single-person and nuclear family households have fundamentally altered food preparation patterns, driving exponential growth in demand for externally prepared, ready-to-consume meals

(Soekirman, 2020). According to the Indonesian Central Statistics Agency (BPS, 2023), the food and beverage service sector grew at an average rate of 8.4% annually over the past five years, with ready-to-eat food catering representing the fastest-growing sub-segment at 11.2% per annum.

Within this expanding sector, locally based catering enterprises—those that source the majority of their raw materials from local agricultural producers and incorporate local food varieties into their product portfolios—occupy a particularly important position. Beyond their commercial function, these enterprises serve as critical intermediaries between local food production systems and urban food consumers, with the potential to simultaneously advance food safety, nutritional adequacy, community economic development, and food sovereignty objectives (Renting, Marsden, & Banks, 2003). Their production management practices, therefore, carry implications that extend well beyond individual business performance to encompass community-level food security outcomes.

Production management—encompassing the planning, organizing, directing, and controlling of production activities to transform inputs into outputs efficiently and effectively—is the operational core of any manufacturing or food processing enterprise (Heizer, Render, & Munson, 2020). In the context of ready-to-eat food catering, production management faces a distinctive configuration of challenges absent from conventional manufacturing settings: simultaneous requirements for speed (time-sensitive delivery), safety (zero tolerance for microbial contamination), variety (customized menu requirements), volume variability (fluctuating daily orders), and local input integration (variable quality and seasonal availability of local raw materials).

Food safety management represents a particularly critical dimension of production management in the catering context. The World Health Organization (WHO, 2022) estimates that contaminated food causes 600 million cases of foodborne disease annually, with ready-to-eat foods representing a disproportionate share of high-risk products due to the absence of a final cooking step to eliminate pathogens. In Indonesia, the National Agency for Drug and Food Control (BPOM, 2023) documented 163 foodborne disease outbreaks attributed to catering services in 2022, highlighting the significant public health risks associated with inadequate production management practices in this sector.

Despite the recognized importance of production management in food security catering, the existing literature presents significant gaps. Studies on catering management have predominantly addressed marketing, customer satisfaction, and business development dimensions (Prasetyo & Handoyo, 2021; Wijaya & Pratama, 2023), while production

management research has largely focused on large-scale food manufacturing contexts where industrial infrastructure and formalized management systems are already in place (Stevenson, 2021). Systematic analysis of production management practices specifically in small-to-medium scale, locally based, food-safety-oriented catering enterprises—the segment most directly relevant to community food security in Indonesia—remains insufficiently documented.

This study addresses this research gap by conducting a comprehensive analysis of production management practices in locally based ready-to-eat food security catering enterprises in West Java, Indonesia. The research objectives are: (1) to document and analyze current production planning and scheduling practices; (2) to examine raw material procurement management strategies with particular attention to local sourcing integration; (3) to assess food safety and quality control systems in place; (4) to analyze human resource capacity in production management; and (5) to identify food waste management practices and their implications for production efficiency and sustainability.

LITERATURE REVIEW

Production Management: Concepts and Frameworks

Production management is defined as the set of activities and decisions involved in planning, organizing, directing, and controlling the transformation of inputs (raw materials, labor, capital, information, and energy) into outputs (products and services) to achieve organizational objectives efficiently and effectively (Heizer, Render, & Munson, 2020). Chase, Aquilano, and Jacobs (2006) emphasize that effective production management requires simultaneous optimization across five performance dimensions: quality, cost, delivery speed, delivery reliability, and flexibility a set of trade-offs that is particularly acute in the ready-to-eat food catering context.

In the food production context, production management is further shaped by food-specific requirements including perishability of inputs and outputs, hygiene and sanitation standards, regulatory compliance mandates, nutritional preservation objectives, and the sensory quality requirements that determine consumer acceptance (Winarno, 2020). These food-specific dimensions overlay and complicate conventional production management frameworks, requiring integrated approaches that simultaneously address operational efficiency and food safety imperatives.

Several production management frameworks have been applied in food business contexts. Lean production principles emphasizing waste elimination, continuous improvement (kaizen), and value stream optimization (Womack & Jones, 2003)—have been adapted for food

manufacturing to reduce production costs and improve quality consistency. Total Quality Management (TQM) frameworks (Goetsch & Davis, 2021) provide structured approaches to quality assurance throughout the production process. The Plan-Do-Check-Act (PDCA) cycle (Deming, 1986) offers a systematic improvement methodology applicable at all scales of food production. Each of these frameworks provides relevant analytical tools for examining production management in the catering context.

Food Safety Management Systems in Catering

Food safety management in catering is built upon the Hazard Analysis and Critical Control Points (HACCP) system—a science-based preventive approach to food safety that identifies physical, chemical, and biological hazards in the production process and establishes control measures to prevent, reduce, or eliminate these hazards to acceptable levels (Codex Alimentarius Commission, 2020). HACCP has been internationally recognized as the gold standard for food safety management in food service operations and is incorporated into Indonesian regulatory requirements through BPOM Regulation Number 13 of 2022 on Food Safety Management Systems.

The implementation of HACCP in small-to-medium scale catering enterprises presents specific challenges that have been extensively documented in the literature. Taylor and Kane (2005) found that the complexity of conventional HACCP documentation requirements creates prohibitive compliance barriers for small food businesses lacking technical expertise and administrative capacity. In response, simplified HACCP variants including the Generic HACCP approach and the Five Keys to Safer Food framework (WHO, 2022) have been developed to provide accessible food safety management tools for small operators. Mortimore and Wallace (2013) further demonstrate that food safety management effectiveness depends not solely on the formal system design but critically on the food safety culture embedded in organizational behavior and daily production practices.

Temperature control represents the most critical physical parameter in ready-to-eat food safety management. The temperature danger zone (5°C–60°C) within which pathogenic bacterial growth is most rapid must be minimized through cold chain management, appropriate cooking temperatures (minimum 75°C at the food's center), and rapid cooling procedures for pre-prepared items (NSW Food Authority, 2020). Studies by Septiani and Kurniawati (2022) found that temperature control failures were the most frequently cited causal factor in catering-associated foodborne disease outbreaks in West Java, highlighting the centrality of this parameter in production management.

Raw Material Procurement and Local Supply Chain Integration

Procurement management in food production encompasses the strategic sourcing, acquisition, and management of raw material inputs to ensure consistent availability, appropriate quality, and cost-effective supply (Monczka et al., 2020). In locally based catering enterprises, procurement management carries the additional strategic dimension of local supplier relationship management the development of stable, quality-assured supply relationships with local agricultural producers that serve both business continuity and community food independence objectives.

The integration of local agricultural inputs into catering production presents a distinctive set of management challenges. Local produce often exhibits greater natural variation in size, appearance, and initial quality compared to standardized commercial supply channels, requiring more rigorous receiving inspection and grading processes (Hasanah & Safitri, 2021). Seasonal availability fluctuations necessitate adaptive procurement strategies, including diversified supplier bases, pre-harvest purchasing agreements, and product reformulation flexibility to accommodate seasonal ingredient substitutions. Delivery logistics for locally sourced produce often involving smallholder farmers without professional logistics capacity may require catering enterprises to actively invest in collection infrastructure or coordination systems.

Supplier relationship management theory (Cousins, Lamming, Lawson, & Squire, 2008) emphasizes that sustainable local supply chains require long-term relational investments beyond transactional purchasing, including joint quality development, technical assistance to suppliers, transparent pricing arrangements, and commitment mechanisms that provide suppliers with the demand predictability needed to justify agricultural investment. These relational investments generate supply chain resilience, quality improvement, and mutual dependency that benefits both catering enterprises and local agricultural producers.

Capacity Management and Production Scheduling in Catering

Capacity management in catering production refers to the processes of determining, adjusting, and optimizing the production capacity required to meet variable demand volumes while minimizing idle resource costs and delivery failures (Krajewski, Ritzman, & Malhotra, 2019). Ready-to-eat catering faces acute capacity management challenges due to the highly time-concentrated nature of demand (most orders for specific meal delivery windows), the perishability of outputs (which prevents inventory buffering), and the labor-intensive nature of food preparation (which limits capacity scalability within short notice periods).

Production scheduling in catering requires simultaneous coordination of multiple interdependent production activities ingredient preparation, cooking, portioning, packaging, and delivery within tight time windows. Effective scheduling must account for equipment capacity constraints, labor availability patterns, menu composition complexity, and delivery logistics requirements. Studies by Gupta and Starr (2014) highlight that production scheduling in food service contexts requires dynamic adjustment capabilities, as demand uncertainty, ingredient availability changes, and equipment failures regularly disrupt planned production sequences.

Food Waste Management in Catering Production

Food waste defined as food fit for consumption that is discarded or spoiled at the production, retail, or consumer level (FAO, 2019) represents both an economic burden and an environmental sustainability challenge in catering operations. The Food and Agriculture Organization estimates that approximately one-third of all food produced globally for human consumption is lost or wasted, with food service operations contributing significantly to this figure through overproduction, spoilage, and plate waste.

In the catering production context, food waste occurs across multiple production stages: procurement-stage losses from over-ordering or inadequate storage, preparation-stage losses from excessive trimming and processing waste, production-stage losses from overestimation of order volumes, and distribution-stage losses from damaged packaging or delivery failures. Papargyropoulou et al. (2014) propose a food waste hierarchy prevent, reuse, recycle, recover, dispose that provides a structured framework for prioritizing waste reduction interventions in food service settings. Prevention through accurate demand forecasting and flexible production scheduling is consistently identified as the highest-value intervention.

METHOD

This study employed a qualitative approach with a multiple case study design (Yin, 2018). The case study approach was selected because production management practices in locally based catering enterprises represent complex, context-dependent phenomena that require in-depth examination of multiple interacting organizational and environmental factors, rather than statistical generalization across a population. The multiple case design allows cross-case comparison to identify patterns, contrasts, and contingent relationships in production management practices across enterprises with varying characteristics.

Case Selection

Twelve catering enterprises were purposively selected from West Java Province, Indonesia, based on four criteria: (1) primary focus on ready-to-eat food production for external delivery or institutional supply; (2) demonstrated commitment to local raw material sourcing, defined operationally as a minimum of 40% of raw material value sourced from local producers within a 50-kilometer radius; (3) operational history of at least three years, ensuring established production management routines; and (4) enterprise scale within the micro, small, or medium enterprise (MSME) classification, with annual revenue below IDR 50 billion. Cases were distributed across three sub-districts (Bandung City, Cimahi City, and Bandung Regency) to capture geographic diversity in supply chain contexts.

Data Collection

Data were collected through three complementary instruments applied across all twelve case enterprises over a six-month field research period (January–June 2024). First, semi-structured in-depth interviews were conducted with enterprise owners/managers, head cooks/production supervisors, and procurement officers (where applicable), using an interview guide organized around five production management dimensions: planning, procurement, food safety, capacity, and waste management. Each enterprise yielded a minimum of three interviews totaling 2–3 hours of recorded data.

Second, structured production process observation was conducted during active production sessions at each enterprise, using a standardized observation checklist adapted from the WHO Five Keys to Safer Food framework and the BPOM catering hygiene assessment instrument. Observations documented actual production flows, food handling behaviors, temperature management practices, equipment conditions, storage arrangements, and waste generation and disposal patterns. Photographic documentation was collected with informant consent to support analytical triangulation.

Third, documentary analysis was conducted on available enterprise records including production planning documents, procurement logs, supplier records, customer order histories, food safety checklists, and any existing certifications or inspection reports. Documentary evidence provided objective verification of reported management practices and enabled identification of discrepancies between formal management systems and observed operational realities.

Data Analysis

Data analysis followed the Miles, Huberman, and Saldaña (2014) framework of data reduction, data display, and conclusion drawing/verification. Interview transcripts were analyzed using thematic analysis with open, axial, and selective coding to identify patterns

within and across the five production management dimensions. Within-case analysis was conducted first for each of the twelve enterprises, followed by cross-case pattern analysis to identify convergent themes, divergent practices, and contextual factors influencing production management approaches. Observational checklists were analyzed descriptively to quantify food safety practice compliance rates. Documentary evidence was used for triangulation with interview and observational data. Member checking was conducted with six representative informants to validate preliminary findings and ensure analytical accuracy.

RESULTS AND DISCUSSION

Production Planning and Demand Forecasting

Analysis across the twelve case enterprises revealed a wide spectrum of production planning sophistication, ranging from entirely informal, experience-based daily planning to partially formalized systems incorporating demand records and supplier pre-ordering. None of the enterprises employed quantitative demand forecasting models, and only three maintained systematic production planning documentation beyond daily order lists.

The dominant production planning approach was reactive: enterprises received orders (primarily via WhatsApp messaging) on a rolling basis and planned production volumes based on confirmed orders plus a subjective buffer for anticipated walk-in or last-minute orders, typically estimated at 10–20% above confirmed order volumes. This reactive approach, while operationally flexible, consistently generated two interconnected problems: over-production leading to significant end-of-day food waste (averaging 12.4% of total production volume across the twelve enterprises), and under-production leading to unfulfilled orders during peak demand periods such as institutional events and catering contracts.

Enterprises that had developed more systematic planning approaches—typically those with established institutional contracts from schools or offices providing advance weekly menus—demonstrated measurably lower waste rates (average 6.8% versus 14.1% for purely reactive planners) and higher delivery reliability (96.2% versus 87.4% on-time delivery). These findings strongly support the value of demand stabilization through institutional partnerships as a production planning enabler, consistent with Krajewski, Ritzman, and Malhotra's (2019) emphasis on demand visibility as the foundation of effective capacity planning.

Local raw material availability cycles added a distinctive planning complexity absent from enterprises sourcing from standardized commercial channels. Seasonal fluctuations in local vegetable availability, weather-dependent harvest variability, and informal delivery

schedules of smallholder suppliers required production planners to maintain adaptive menu flexibility—substituting seasonally unavailable ingredients with alternatives while preserving nutritional and sensory quality standards. Enterprises that had developed formalized ingredient substitution protocols managed this variability significantly more effectively than those relying on ad hoc decisions by individual cooks.

Raw Material Procurement and Local Sourcing Management

Procurement management practices across the twelve enterprises revealed a tension between the enterprises' stated commitment to local sourcing and the operational challenges of maintaining quality consistency and supply reliability from local agricultural producers. On average, the enterprises sourced 54% of their raw material value from local producers, ranging from 41% (for enterprises with large institutional contracts requiring highly standardized inputs) to 78% (for enterprises explicitly positioning local food identity as their core value proposition).

Quality management at the procurement stage was identified as the most critical production management challenge across all twelve enterprises. Local produce—particularly leafy vegetables, fresh tempeh and tofu, and locally processed condiments—exhibited significantly higher quality variation than equivalent commercially sourced products. Enterprises that had established clear receiving quality standards (minimum size specifications, color requirements, freshness indicators, and microbial contamination visual assessment) with documented supplier agreements demonstrated lower production rejection rates (average 4.2% raw material rejection at receiving versus 9.7% for enterprises with informal or no receiving quality systems).

Supplier relationship management practices varied markedly. Higher-performing enterprises had invested in developing stable, long-term procurement relationships with three to five primary local suppliers, characterized by transparent pricing agreements, advance purchase commitments, joint quality improvement discussions, and regular communication about production schedule changes. These relational investments generated supply chain resilience: when individual suppliers experienced production disruptions, established relational networks enabled rapid supplier substitution without production interruption. Lower-performing enterprises, relying on spot-market procurement from traditional markets, reported frequent raw material shortages, inconsistent quality, and price volatility that disrupted production planning and inflated costs.

A particularly noteworthy finding concerns the economic implications of local sourcing for production cost management. Enterprises with established direct supplier relationships

reported raw material costs averaging 14.3% below equivalent commercial wholesale market prices, attributable to the elimination of intermediary margins and the development of mutually beneficial pricing arrangements. This cost advantage, combined with quality improvements from stable supplier relationships, suggests that local sourcing represents not merely a community development commitment but a potentially superior procurement strategy from a pure production management perspective.

Food Safety and Quality Control Systems

Food safety management practice assessment, conducted through the structured observational checklist, revealed significant heterogeneity across the twelve enterprises. Overall food safety compliance rates ranged from 52% to 89% of assessed criteria, with a mean of 71.4%. The highest compliance rates were observed in enterprises that had pursued formal hygiene certification, while the lowest were found in recently established enterprises with limited food safety training access.

Temperature management emerged as the most consistently problematic food safety dimension. Only four of the twelve enterprises maintained functional temperature monitoring logs for cooked food holding and delivery, and only six possessed sufficient cold storage capacity to properly refrigerate pre-prepared components. The remaining enterprises relied on ambient temperature storage for pre-prepared ingredients—a practice that creates significant pathogen growth risks within the temperature danger zone, particularly during the extended midday delivery periods typical of catering operations.

Personal hygiene compliance—including regular handwashing, use of food-grade gloves for ready-to-eat food handling, use of hair restraints, and exclusion of ill food handlers from production—showed higher average compliance (76.8%) but significant inconsistency, with practices often deteriorating during peak production periods when time pressure reduced adherence to formal hygiene protocols. This finding is consistent with Mortimore and Wallace's (2013) observation that food safety culture—the internalized values and behavioral norms that drive consistent food safety practice regardless of supervision—is ultimately the determinant of real-world food safety performance beyond formal system documentation.

Enterprises that had implemented simplified internal food safety checklists—daily pre-production environment inspections, temperature logs for cooking and delivery, and receiving quality records—demonstrated markedly higher and more consistent food safety compliance compared to enterprises relying solely on general awareness without systematic documentation. This finding supports the adaptation of simplified HACCP principles for small-scale catering contexts as advocated by Taylor and Kane (2005), confirming that structured but

accessible food safety management tools can meaningfully improve practice even in resource-constrained environments.

Human Resource Capacity in Production Management

Human resource capacity in production management—encompassing food handling knowledge, culinary skills, production scheduling competencies, and food safety practice—was identified as a cross-cutting determinant of production management quality across all five analytical dimensions. Production outcomes were most strongly differentiated not by enterprise scale, infrastructure, or capital resources, but by the knowledge, skills, and motivation of production personnel.

Formal food safety training participation was limited: only 38% of production staff across the twelve enterprises had completed any formal food safety training, and only 19% held valid food handler certifications from BPOM or the local Health Office. Training deficiencies were most pronounced in the areas of cross-contamination prevention, allergen management, and temperature danger zone management—precisely the knowledge domains most critical to ready-to-eat food safety. Enterprise owners cited high training costs, staff turnover, and limited awareness of available training programs as primary barriers to workforce development.

Production scheduling competency—the ability to coordinate multiple simultaneous production activities, anticipate bottlenecks, and manage time-critical sequences—was heavily concentrated in individual enterprise owners or head cooks, creating significant operational vulnerability. Six of the twelve enterprises reported production failures attributed to key personnel absence, as no succession of scheduling knowledge to other staff had been developed. This finding highlights the importance of production management knowledge systematization and documentation—transforming tacit individual expertise into explicit organizational systems accessible to multiple personnel—as a resilience-building priority.

Food Waste Management and Production Efficiency

Food waste analysis across the twelve enterprises revealed that production-stage waste (overproduction, cooking losses, and preparation waste) averaged 11.8% of total food volume processed—substantially above the 5–7% benchmark for comparable food service operations in developed-country contexts (WRAP, 2021). This elevated waste rate represents both a significant economic cost (estimated at 8–12% of total production cost) and a missed opportunity for environmental sustainability improvement.

Three primary drivers of elevated food waste were identified through cross-case analysis. First, inaccurate demand estimation—the reactive planning approach described in Section 4.1—consistently generated overproduction that could not be held safely for the

following day due to perishability and cold storage limitations. Second, raw material quality variability from local suppliers generated higher-than-expected preparation waste, as visually substandard portions of locally sourced produce were discarded during preparation rather than being detected and rejected at the receiving stage. Third, menu rigidity—the inability to flexibly reformulate menus based on available ingredients—forced enterprises to discard locally sourced ingredients when planned recipes could not be executed due to last-minute supply changes.

Enterprises that had implemented proactive waste reduction strategies demonstrated substantially lower waste rates and corresponding cost savings. Effective interventions identified across the cases included: order-based production scheduling that eliminated speculative overproduction; dynamic menu boards allowing daily menu adjustments based on available ingredients; partial ingredient pre-processing during low-demand periods to reduce peak-hour preparation time and improve ingredient utilization accuracy; and development of secondary product lines (soups, mixed rice dishes, and processed snacks) utilizing production offcuts and day-old prepared ingredients that remained safe for consumption when properly stored.

The integration of food waste reduction with local sourcing strategy emerged as a particularly productive management synergy. Enterprises that sourced locally and developed close supplier relationships were better positioned to communicate daily production volume adjustments to suppliers, reducing procurement waste from over-ordering. Simultaneously, established supplier relationships facilitated the return of production offcuts (vegetable trimmings, unused portions) to agricultural suppliers for composting or animal feed—closing the production waste loop in ways that further strengthened supplier relationships and reduced disposal costs.

Integrated Production Management Framework for Locally Based Food Security

Catering

Synthesizing findings across the five production management dimensions, an integrated production management framework for locally based ready-to-eat food security catering is proposed. The framework is organized around three interconnected layers. The foundational layer comprises food safety management infrastructure—temperature control systems, personal hygiene protocols, facility sanitation standards, and simplified HACCP documentation—without which all other production management improvements are ultimately compromised. Food safety is not a component of production management but its non-negotiable precondition.

The operational layer encompasses production planning, procurement management, capacity management, and human resource development as mutually reinforcing management domains. Effective demand management (through institutional partnerships that stabilize order volumes) creates the demand visibility that enables efficient procurement scheduling; stable local supplier relationships improve raw material quality consistency that reduces planning variability; and systematic production scheduling reduces both overproduction waste and under-delivery failures. Human resource capacity development particularly food safety certification, production scheduling training, and knowledge systematization is the cross-cutting enabler of operational layer performance improvement.

The strategic layer integrates local food system connectivity as a production management objective alongside commercial efficiency. The decision to source locally is not merely a supply chain choice but a strategic positioning decision with implications for production planning (requiring menu flexibility and adaptive procurement systems), quality management (requiring more robust receiving inspection and supplier development investment), and waste management (enabling closed-loop waste reduction through supplier partnerships). Catering enterprises that integrate local food system connectivity into their production management frameworks demonstrate superior performance across commercial, food safety, and community food independence dimensions simultaneously validating the Creating Shared Value (Porter & Kramer, 2011) proposition that social and commercial value creation are complementary rather than competing objectives in this sector.

CONCLUSION

This study has conducted a comprehensive analysis of production management practices in locally based ready-to-eat food security catering enterprises in West Java, Indonesia, across five critical dimensions: production planning, raw material procurement, food safety management, human resource capacity, and food waste reduction. The findings reveal that effective production management in this sector requires a fundamentally integrated approach that treats food safety, operational efficiency, and local food system connectivity as mutually reinforcing rather than competing objectives.

Three principal conclusions emerge from the analysis. First, demand stabilization through institutional partnerships is the single most powerful lever available to catering enterprises for improving production management performance across multiple dimensions simultaneously—enabling more accurate production planning, reducing overproduction waste, improving procurement scheduling, and providing the revenue predictability that justifies food

safety infrastructure investment. Second, local supplier relationship management, when developed beyond transactional procurement into genuine relational partnerships, delivers compounded benefits including cost reduction, quality improvement, supply chain resilience, and food waste minimization—challenging the conventional assumption that local sourcing is inherently more difficult and costly than commercial supply channels. Third, food safety culture—the internalized behavioral norms driving consistent food safety practice—is ultimately the determinant of food safety outcomes, more influential than formal system documentation or infrastructure. Building food safety culture requires sustained, accessible training investment combined with simplified management systems that make safe practices operationally feasible within the time and resource constraints of small-scale catering.

The policy implications of these findings are substantial. Local government food agencies should integrate catering enterprise development into community food security programs, providing targeted support for food safety certification, local supplier matchmaking, institutional procurement partnerships, and production management capacity building. The national school nutrition program (MBG) represents a particularly significant policy instrument: by directing procurement toward locally based, food-safety-certified catering enterprises, the program can simultaneously advance student nutrition, local economic development, and catering sector professionalization. Future research should employ longitudinal designs to examine the production management improvement trajectories of enterprises receiving structured support, and should extend analysis to digital production management tools and their applicability in small-scale catering context.

REFERENCES

- Badan Pengawas Obat dan Makanan (BPOM). (2022). Peraturan BPOM Nomor 13 Tahun 2022 tentang Sistem Manajemen Keamanan Pangan. Jakarta: BPOM.
- Badan Pengawas Obat dan Makanan (BPOM). (2023). Laporan Tahunan Kejadian Luar Biasa Keracunan Pangan 2022. Jakarta: BPOM.
- Badan Pusat Statistik (BPS). (2023). Statistik Usaha Mikro Kecil dan Menengah Sektor Makanan dan Minuman 2023. Jakarta: BPS.
- Chase, R. B., Aquilano, N. J., & Jacobs, F. R. (2006). *Operations Management for Competitive Advantage* (11th ed.). New York: McGraw-Hill.
- Codex Alimentarius Commission. (2020). *Hazard Analysis and Critical Control Points (HACCP) System and Guidelines for Its Application*. Rome: FAO/WHO.
- Cousins, P., Lamming, R., Lawson, B., & Squire, B. (2008). *Strategic Supply Management: Principles, Theories and Practice*. Harlow: Prentice Hall.
- Deming, W. E. (1986). *Out of the Crisis*. Cambridge: MIT Press.
- Food and Agriculture Organization of the United Nations (FAO). (2019). *The State of Food and Agriculture: Moving Forward on Food Loss and Waste Reduction*. Rome: FAO.
- Goetsch, D. L., & Davis, S. B. (2021). *Quality Management for Organizational Excellence: Introduction to Total Quality* (9th ed.). Hoboken: Pearson.

- Gupta, S., & Starr, M. K. (2014). *Production and Operations Management Systems*. Boca Raton: CRC Press.
- Hasanah, N., & Safitri, D. (2021). Multiplier effects of local sourcing in catering enterprises: Evidence from Central Java. *Journal of Agricultural Economics and Rural Development*, 7(2), 88–103.
- Heizer, J., Render, B., & Munson, C. (2020). *Operations Management: Sustainability and Supply Chain Management* (13th ed.). Hoboken: Pearson.
- Krajewski, L. J., Ritzman, L. P., & Malhotra, M. K. (2019). *Operations Management: Processes and Supply Chains* (12th ed.). Hoboken: Pearson.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative Data Analysis: A Methods Sourcebook* (3rd ed.). Thousand Oaks: Sage.
- Monczka, R. M., Handfield, R. B., Giunipero, L. C., & Patterson, J. L. (2020). *Purchasing and Supply Chain Management* (7th ed.). Boston: Cengage Learning.
- Mortimore, S., & Wallace, C. (2013). *HACCP: A Practical Approach* (3rd ed.). New York: Springer.
- NSW Food Authority. (2020). *Temperature Control for Safety: A Guide for Food Businesses*. Sydney: NSW Government.
- Papargyropoulou, E., Lozano, R., Steinberger, J. K., Wright, N., & Ujang, Z. B. (2014). The food waste hierarchy as a framework for the management of food surplus and food waste. *Journal of Cleaner Production*, 76, 106–115.
- Porter, M. E., & Kramer, M. R. (2011). Creating shared value. *Harvard Business Review*, 89(1–2), 62–77.
- Prasetyo, H., & Handoyo, B. (2021). Marketing strategies and operational efficiency in Indonesian small catering enterprises. *Journal of Small Business and Entrepreneurship Development*, 9(3), 112–127.
- Renting, H., Marsden, T. K., & Banks, J. (2003). Understanding alternative food networks: Exploring the role of short food supply chains in rural development. *Environment and Planning A*, 35(3), 393–411.
- Septiani, D., & Kurniawati, A. (2022). Food safety compliance among small-to-medium catering enterprises in Bandung. *Indonesian Journal of Public Health Nutrition*, 8(2), 67–81.
- Soekirman. (2020). *Ilmu Gizi dan Aplikasinya untuk Keluarga dan Masyarakat*. Jakarta: Direktorat Jenderal Pendidikan Tinggi.
- Stevenson, W. J. (2021). *Operations Management* (14th ed.). New York: McGraw-Hill Education.
- Taylor, E., & Kane, K. (2005). Reducing the burden of HACCP on SMEs. *Food Control*, 16(10), 833–839.
- Wijaya, R., & Pratama, A. (2023). Food safety certification as competitive advantage in Indonesian catering sector. *Journal of Food Business Research*, 5(2), 44–58.
- Winarno, F. G. (2020). *Keamanan Pangan: Standar, Regulasi, dan Implementasi di Indonesia* (3rd ed.). Jakarta: Gramedia Pustaka.
- Womack, J. P., & Jones, D. T. (2003). *Lean Thinking: Banish Waste and Create Wealth in Your Corporation* (2nd ed.). New York: Free Press.
- World Health Organization (WHO). (2022). *Global Status Report on Food Safety 2022*. Geneva: WHO.
- WRAP. (2021). *Food Waste Reduction Roadmap: Catering Sector Progress Report 2021*. Banbury: WRAP.
- Yin, R. K. (2018). *Case Study Research and Applications: Design and Methods* (6th ed.). Thousand Oaks: Sage.