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Policy Compliance, Strategic Decision-Making, And Quality Assurance in Food Safety Management: Evidence-Based Policy Formulation in Marawi City

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Abstract
Food safety is an important public health and governance concern, particularly in local settings where food establishments differ in resources, staffing, and operational capacity. This study assessed policy compliance, strategic decision-making, and quality assurance practices among registered food establishments in Marawi City and used the findings to formulate evidence-based policy recommendations. The study employed a quantitative descriptive survey design. The respondents were 100 owners or managers, supervisors, and food handlers selected through purposive sampling from registered food establishments across seven barangays. Data were gathered using a structured, validated, and pilot-tested questionnaire and analyzed through frequencies, percentages, means, standard deviations, and rankings. The results indicated generally high adherence to food safety and quality assurance policies. Mean scores were 4.47 for policy compliance, 4.25 for organizational and operational practices, and 4.32 for Food Safety Management System implementation and quality assurance. Strategic decision-making received an overall mean of 4.23, while perceived facilitators and barriers received means of 4.50 and 4.22, respectively. Stakeholders rated policy effectiveness at 4.15. Strong practices included sanitation and hygiene, licensing, communication between management and staff, equipment availability, training, and management planning. However, gaps remained in hazard analysis, identification and monitoring of Critical Control Points, corrective-action follow-up, infrastructure, staffing, regulatory coordination, and timely communication. The study concludes that basic compliance is generally strong, but sustained improvement requires more consistent risk-based systems, technical training, coordinated inspection, adequate resources, and systematic monitoring. The findings provide a local evidence base for strengthening food safety governance in Marawi City.

Keywords
food safety management; policy compliance; strategic decision-making; quality assurance; HACCP; Marawi City

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Introduction

Food safety is a public health concern because unsafe food can cause illness, reduce productivity, and weaken public confidence in food businesses. The World Health Organization has emphasized the substantial global burden of foodborne disease and the need for preventive controls throughout the food chain. Food safety therefore requires more than

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responding to incidents after they occur. It depends on routine hygiene, safe storage and preparation, staff competence, monitoring, documentation, and effective regulatory oversight (World Health Organization, 2026; Rathi, 2026).

In the Philippines, Republic Act No. 10611, or the Food Safety Act of 2013, establishes a framework for protecting consumer health through a farm-to-fork approach and shared responsibilities among national agencies and local government units. International approaches such as Hazard Analysis and Critical Control Points (HACCP), the Codex General Principles of Food Hygiene, and ISO 22000 likewise emphasize identifying hazards, establishing controls, monitoring critical points, documenting procedures, and taking corrective action (Republic Act No. 10611, 2013; Codex Alimentarius Commission, 2022; ISO, 2018).

The need for effective local implementation is particularly relevant in Marawi City. The study's background identifies a foodborne illness incident associated with a local street food fair in August 2023, after which health authorities investigated the incident and took public health measures. The event highlighted the importance of safe food handling, regulatory enforcement, and food-handler education in the city's food environment. The local context also includes differences in establishment size, infrastructure, staffing, and business capacity, as well as the continuing effects of post-conflict recovery and urban development (Caye, 2024).

The existence of regulations does not automatically ensure consistent compliance. Food establishments may face constraints such as limited facilities, staffing shortages, workload pressures, inadequate training, irregular inspections, and difficulty accessing updated regulatory information. At the same time, management decisions affect whether food safety is integrated into budgets, work plans, training, supervision, and internal monitoring. Quality assurance practices are also important because they help establishments identify recurring problems and determine whether corrective actions are effective (Astill et al., 2025; Grace, 2015).

Although previous research has examined food-handler practices, food safety culture, and regulatory implementation, the study identifies a need for locally grounded evidence that considers compliance, managerial decision-making, organizational and operational conditions, and stakeholder views together in Marawi City. This study addresses that need by describing current practices among registered food establishments and using the results to develop policy recommendations. Because the design is descriptive and cross-sectional, the study reports respondents' assessments and does not establish causal effects (Rustia et al., 2021; Tiu et al., 2021).

The policy implications of these findings require a distinction between reported adherence and verified performance. Compliance scores obtained through questionnaires describe respondents' perceptions of policies and practices; they cannot substitute for field inspections, review of temperature logs, direct observation, or microbiological assessment. A combined approach would help local authorities identify whether high reported compliance is sustained in daily operations (Babbie, 2020; De Boeck et al., 2019; Rathi, 2026).

Review of Literature

Food safety policy and compliance

Food safety compliance involves applying laws, standards, and procedures in daily operations. The Food Safety Act of 2013 provides the Philippine regulatory foundation,

while Codex guidance and HACCP offer preventive approaches for identifying and controlling biological, chemical, and physical hazards. ISO 22000 further places food safety within an organized management system that includes leadership, risk-based planning, operational controls, performance evaluation, and continual improvement (Awuchi, 2023; Codex Alimentarius Commission, 2022).

The literature reviewed in the thesis indicates that formal policies are effective only when supported by implementation, monitoring, and adequate organizational capacity. Studies of food businesses have identified incomplete documentation, inconsistent sanitation monitoring, insufficient temperature control, and limited employee training as recurring compliance concerns. Research on small and medium-sized enterprises also points to financial constraints, limited access to training, and weak monitoring systems as barriers to full implementation (Grace, 2015; Dassie et al., 2025; Astill et al., 2025). Philippine and Mindanao studies cited in the thesis similarly describe gaps in inspection capacity, infrastructure, and food-handler practices (Caye, 2024; Rustia et al., 2021) (Dassie et al., 2025; Astill et al., 2025; Grace, 2015).

Strategic decision-making and quality assurance

Managerial decisions about priorities, resource allocation, training, equipment, monitoring, and accountability shape food safety performance. Rational and bounded-rationality perspectives help explain how managers evaluate available information and select feasible actions under constraints. Contingency and stakeholder perspectives further emphasize that management approaches must respond to organizational conditions and the expectations of employees, regulators, suppliers, and consumers (Fiedler, 1964; Bryson, 2018; Ajzen, 1991).

Food safety management systems require management commitment and employee participation. Studies reviewed in the thesis associate leadership support, structured planning, and employee training with stronger food safety practices (De Boeck et al., 2019; Dubey et al., 2018). Total Quality Management and ISO quality principles emphasize standard procedures, employee involvement, monitoring, and continual improvement. HACCP complements these approaches by focusing on hazard analysis, critical control points, monitoring, verification, and corrective action. These frameworks suggest that routine compliance should be supported by a functioning quality assurance system, not treated only as a licensing or inspection requirement (De Boeck et al., 2019; Dubey et al., 2018; Thiakthum & Pianthong, 2025).

Organizational, operational, regulatory, and stakeholder factors

Compliance depends on internal and external conditions. Organizational factors include leadership, communication, employee involvement, and accountability. Operational factors include facilities, equipment, staffing, workflow, and recordkeeping. Regulatory factors include clear guidance, predictable inspections, consistent enforcement, and coordination among agencies. De Boeck et al. (2015) and De Boeck et al. (2019) emphasize the role of food safety culture and organizational support, while Astill et al. (2025) discuss infrastructure and staffing constraints in smaller food businesses (De Boeck et al., 2015; De Boeck et al., 2019; Susanto, 2026).

Stakeholder perceptions also matter because managers, food handlers, and regulators may experience policy requirements differently. Managers may focus on documentation and compliance indicators, food handlers on workload and practical feasibility, and regulators on measurable inspection outcomes. Evidence-informed policymaking therefore requires combining measurable compliance information with stakeholder experience and local operating conditions (Head, 2016; Food and Agriculture Organization of the United Nations

& World Health Organization, 2019). This is particularly important in Marawi City, where policy recommendations should be practical and responsive to the city's institutional, operational, and cultural context (Head, 2016; FAO & WHO, 2019).

Recent studies of small food businesses and street-food settings suggest that practical food safety improvements depend on more than awareness alone. Regulatory expectations must be translated into workable checklists, accessible technical assistance, and repeatable corrective-action procedures. Because businesses have different resources and staffing levels, risk-based prioritization is preferable to assuming that all establishments can implement a complex food safety management system at the same pace (Armas et al., 2024; Susanto, 2026; Dassie et al., 2025).

Objectives of the Study

The study aimed to assess policy compliance, strategic decision-making, and quality assurance in food safety management among registered food establishments in Marawi City and to formulate evidence-based recommendations to strengthen local food safety governance.

- Determine the level of adherence to food safety and quality assurance policies among registered food establishments in Marawi City.
- Describe managerial decision-making practices related to the implementation of food safety management and quality assurance.
- Identify organizational, operational, and regulatory factors that facilitate or hinder policy compliance.
- Assess stakeholders' perspectives regarding the effectiveness and implementation of food safety policies.
- Formulate evidence-based policy recommendations from the integrated findings.

Methodology

Research design and study setting

The study used a quantitative descriptive survey design to describe existing food safety compliance, managerial practices, quality assurance mechanisms, and stakeholder perceptions. It was conducted in Marawi City, Lanao del Sur, Philippines, and focused on registered food establishments operating in the city. The study was cross-sectional and captured respondents' assessments at one point in time (Creswell & Creswell, 2018; Babbie, 2020).

Respondents and sampling

The respondents were 100 individuals from registered food establishments, including owners or managers, supervisors or food safety officers, and food handlers or staff directly involved in food safety practices. They were selected from 127 registered food establishments across seven identified barangays. Purposive sampling was used to include individuals with direct responsibilities or experience in food handling, supervision, and compliance. Unregistered or informal vendors and establishments outside Marawi City were excluded (Rustia et al., 2021; Armas et al., 2024).

Research instrument and data collection

Data were collected using a structured questionnaire developed from related literature, previous studies, the Food Safety Act of 2013, HACCP principles, and ISO 22000. The instrument covered sanitary regulations and hygiene, licensing, documentation and

monitoring, FSMS implementation, managerial decision-making, facilitating and hindering factors, and stakeholder perceptions of policy effectiveness. Responses used a five-point Likert scale. The questionnaire underwent expert content validation, revision, and pilot testing. The thesis reports that Cronbach's alpha was used to assess internal consistency and that the resulting coefficients indicated acceptable consistency; specific coefficients are not reproduced in the manuscript source (Adeyemo, 2025; ISO, 2018).

After permissions were secured, questionnaires were distributed to eligible respondents in coordination with establishment owners or managers. Participants were informed of the study purpose, confidentiality protections, and voluntary nature of participation. Completed questionnaires were checked, coded, and organized for analysis.

Data analysis

The data were analyzed using frequencies, percentages, means, standard deviations, and rankings. Descriptive statistics were used to summarize the level of adherence, managerial decision-making, facilitators, barriers, and stakeholder perspectives. The study did not report inferential tests; consequently, the results are interpreted as descriptive patterns rather than evidence of causal relationships (Babbie, 2020).

Ethical considerations

Participation was voluntary, and informed consent was obtained before questionnaire administration. Respondents were informed that they could decline or withdraw without penalty. Names of individuals and specific establishments were not recorded in the reported results. The thesis states that responses were kept confidential and used for academic purposes, and that data handling and reporting were conducted with attention to accuracy and research integrity.

Findings, Analysis, and Discussion

The findings are presented according to the study objectives. Tables 1 and 2 summarise the principal descriptive results and distinguish policy and organisational adherence from facilitators and barriers. Overall, adherence to basic food safety requirements is generally high, though some areas require stronger technical implementation and institutional support (Codex Alimentarius Commission, 2022; De Boeck et al., 2019).

Level of adherence to food safety and quality assurance policies

Table 1: Overall Level of Adherence to Food Safety and Quality Assurance Policies among Registered Food Establishments in Marawi City

Dimension	Overall mean	Interpretation
Policy compliance: sanitary regulations, hygiene, licensing and records	4.47	Very high adherence
Organizational and operational factors/practices	4.25	Very high adherence
FSMS implementation and quality assurance practices	4.32	Very high adherence

As summarized in Table 1, policy compliance obtained an overall mean of 4.47. Sanitation and hygiene standards received the highest reported indicator mean (4.67), followed by sanitary permit and licensing compliance (4.59). Health certification and maintenance of food safety records each received a mean of 4.46, while documented procedures received

4.42. Compliance with inspection findings within prescribed timelines had a comparatively lower mean of 4.23, although it remained within the very high adherence category (Hassan et al., 2017; Ermeje et al., 2025).

Table 1 also shows that organizational and operational practices received an overall mean of 4.25. Maintenance of facilities and equipment received a mean of 4.62, while staff training received 4.29 and implementation of standard operating procedures received 4.35. Internal inspections or audits (4.14), documentation of corrective and preventive actions (4.17), and identification and monitoring of Critical Control Points (3.96) were comparatively weaker. These results suggest that establishments report stronger performance in routine requirements than in some systematic and technical FSMS activities (Susanto, 2026; Adeyemo, 2025).

The third dimension in Table 1, FSMS implementation and quality assurance practices, obtained an overall mean of 4.32. Verification of control measures received a mean of 4.63, management review 4.39, monitoring systems and continuous improvement mechanisms 4.32 each, and documentation and recordkeeping 4.27. Hazard analysis and CCP identification each received 4.16. The pattern indicates that monitoring and review processes are present, but hazard analysis and critical control point management warrant further technical support (Awuchi, 2023; De Boeck et al., 2019).

The ordering of the three Table 1 dimensions is informative: policy compliance received the highest mean (4.47), followed by FSMS and quality assurance (4.32), and organizational or operational practices (4.25). These differences are descriptive and were not tested for statistical significance. The findings therefore identify areas for follow-up rather than establishing statistical differences among the dimensions (ISO, 2018; Thiakthum & Pianthong, 2025).

Managerial decision-making

Managerial decision-making received an overall mean of 4.23, interpreted as Strongly Agree. Strategic plans explicitly including measurable food safety objectives received the highest mean (4.34). Leadership accountability received 4.27, integration of inspection findings into planning 4.25, use of formal risk assessment and monitoring data 4.23, resource allocation for FSMS implementation 4.17, and tracking and evaluation of corrective actions 4.15. These results suggest that respondents generally perceive management as committed to food safety and planning. The comparatively lower score for corrective-action tracking indicates a need to strengthen follow-up and verify whether corrective measures prevent recurrence (Martino, 2019; Bryson, 2018).

Facilitators and barriers to compliance

Table 2: Facilitating Factors and Barriers Affecting Food Safety Policy Compliance among Registered Food Establishments in Marawi City.

Factor group	Overall mean	Highest/important indicators
Facilitators	4.50	Management–staff communication (4.63); equipment availability (4.53); regular training (4.50); accessible regulatory guidelines (4.41)
Barriers	4.22	Inadequate facilities/equipment (4.39); insufficient staffing (4.36); access to updated regulatory information (4.25); fragmented oversight (4.14); irregular inspections (4.12); workload stress (4.03)

As shown in Table 2, facilitators received a mean of 4.50, indicating strong agreement that supportive conditions exist. Effective communication between management and staff was the strongest facilitator (4.63). Equipment availability (4.53), regular training (4.50), clear management priorities (4.46), accessible regulatory guidelines (4.41), and adequate infrastructure (4.346) were also rated positively (Armas et al., 2024; Tiu et al., 2021).

At the same time, Table 2 shows that barriers received a mean of 4.22, showing that respondents also strongly recognized constraints. Inadequate facilities and equipment (4.39) and insufficient staffing (4.36) were the most prominent concerns. Respondents also identified difficulty accessing updated regulatory information (4.25), fragmented oversight (4.14), irregular inspections (4.12), and workload-related stress (4.03). The coexistence of high facilitator and barrier scores suggests that supportive practices are present but are not experienced uniformly or are insufficient to remove structural constraints (Astill et al., 2025; Dassie et al., 2025).

Table 2 should be interpreted as complementary evidence rather than as a contradiction. Respondents could agree that communication and training were helpful while also reporting that shortages of personnel, space, and regulatory updates were serious barriers. These averages reflect the surveyed group's perceptions; direct audits and consultations with regulators would be needed to measure the actual frequency, severity, and economic costs of the constraints (Astill et al., 2025; Martino, 2019; Grace, 2015).

Stakeholder perspectives on policy effectiveness

Stakeholder perspectives received an overall mean of 4.15, interpreted as Agree. Feedback from food establishments being considered in regulatory revision and stakeholder involvement in decision-making each received a mean of 4.28. Policy practicality received 4.25. Awareness campaigns received 4.01, while the perceived mismatch between regulatory expectations and operational realities received 3.97 and training tailored to local cultural and operational needs received 3.96. Timely and transparent communication between public health officials and establishments had the lowest mean (3.80) (Head, 2016; FAO & WHO, 2019).

The findings indicate that stakeholders generally consider existing policies practical and acknowledge opportunities for participation. However, communication and locally relevant training still need improvement. The relatively low communication score matters because establishments need timely, consistent information to interpret and apply regulatory requirements (Ermeje et al., 2025; Caye, 2024).

Integrated interpretation

Taken together, Tables 1 and 2 points to a distinction between basic compliance and the more technical elements of preventive food safety management. High scores for hygiene, licensing, equipment, and communication indicate that many routine requirements are reportedly in place. Lower relative scores for CCP monitoring, hazard analysis, internal audits, corrective-action tracking, and regulator-to-establishment communication identify areas where implementation may be less consistent. The findings support policy action that combines technical capacity building with improved regulatory coordination, infrastructure and staffing support, and systematic verification (Thiakthum & Pianthong, 2025; Rathi, 2026; Bomba & Susol, 2020).

The results should be interpreted within the limits of a self-reported, cross-sectional survey of registered establishments. They do not establish actual microbiological safety, independently verified compliance, or causal effects of management decisions. The findings also do not represent unregistered vendors or establishments outside the selected study area (Creswell & Creswell, 2018).

A feasible monitoring plan would assign responsibility for the food-safety checklist, specify the frequency of internal review, identify who approves corrective actions, and record whether the identified hazard was effectively controlled. Establishments with limited resources could start with a small set of measurable priority indicators—such as the availability of safe water, critical temperature logs, staff training completion, and timely closure of inspection findings — before broadening their systems. These proposals are implications of the results, not interventions evaluated by the present study (Codex Alimentarius Commission, 2022; FAO & WHO, 2019).

Conclusion

Registered food establishments included in this study generally reported high adherence to food safety and quality assurance policies in Marawi City. Compliance was particularly strong in sanitation and hygiene, licensing, documentation, equipment availability, and management support. Respondents also reported strong managerial commitment and identified communication, training, equipment, and accessible guidelines as important facilitators (Grace, 2015; Rustia et al., 2021).

Nevertheless, high overall ratings do not mean that all components of food safety management are fully institutionalized. Hazard analysis and CCP identification, internal audits, corrective-action follow-up, staffing, facilities, regulatory coordination, and timely communication remain important gaps. Stakeholders generally viewed policies as practical, but they also identified the need for better alignment between regulatory expectations and operational realities (De Boeck et al., 2019; Susanto, 2026).

The study concludes that strengthening food safety governance in Marawi City requires moving beyond basic compliance toward consistent, preventive, risk-based FSMS implementation. Evidence-informed local policy should be based on regular monitoring, clear coordination among responsible agencies, technical support for establishments, and meaningful stakeholder feedback (Head, 2016; Republic Act No. 10611, 2013).

Recommendation

- Strengthen HACCP-based FSMS implementation by providing standardized hazard-analysis tools, CCP monitoring templates, simplified compliance checklists, and technical assistance, with particular attention to establishments that need support in identifying and monitoring critical control points (Codex Alimentarius Commission, 2022; Awuchi, 2023).
- Institutionalize continuing, competency-based training for food handlers, supervisors, and managers. Training should cover hygiene, hazard identification, documentation, monitoring, verification, and corrective-action procedures, and should reflect the operational and cultural context of Marawi City (Ermeje et al., 2025; Hassan et al., 2017).
- Improve coordination among regulatory agencies through harmonized inspection protocols, clear assignment of responsibilities, consistent inspection schedules, and accessible updates on regulatory requirements (FAO & WHO, 2019; Republic Act No. 10611, 2013).

- Develop practical digital monitoring and reporting mechanisms, where feasible, to support timely communication, inspection records, follow-up actions, and transparent tracking of compliance concerns (Head, 2016; Bryson, 2018).
- Prioritize infrastructure and workforce support, particularly for establishments facing inadequate sanitation facilities, limited processing space, insufficient equipment, or staffing shortages. Local support programs should consider the capacity of small and medium food businesses (Astill et al., 2025; Dassie et al., 2025).
- Require standardized corrective-action records that identify the issue, action taken, responsible person, completion date, and verification of effectiveness. Establishments should complement these records with periodic internal audits and management reviews (De Boeck et al., 2015; De Boeck et al., 2019).
- Strengthen stakeholder engagement through regular consultations, clear communication channels, and formal feedback mechanisms. Feedback from food establishments and food handlers should be considered when reviewing local implementation procedures (Caye, 2024; Armas et al., 2024).
- Conduct future research using direct observation, inspection records, or microbiological testing where appropriate, and consider longitudinal or comparative designs. Future studies may also include informal food vendors and additional stakeholder groups to provide a broader assessment of food safety conditions (Tiu et al., 2021; Babbie, 2020).

Author Contributions

Rashida O. Abdul-Rashid is the sole named author of this study. Based on the research activities described in the manuscript, the proposed CRediT roles are conceptualization, methodology, investigation and questionnaire administration, data curation, formal analysis of descriptive survey data, interpretation and policy formulation, writing—original draft, and writing—review and editing. The author should verify these role assignments, confirm approval of the final manuscript, and accept accountability for its accuracy and integrity before publication.

Informed Consent to Participate

The study reports that 100 participating food-establishment personnel were informed about the research and participated voluntarily after providing informed consent.

Conflict of Interest

The author declares no competing interests.

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Data Availability

The study is based on questionnaire responses from personnel at registered food establishments in Marawi City. Participant-level questionnaires and raw data were not supplied with this editorial revision, and no public data repository has been identified. Any release of de-identified data or summary tables is subject to author confirmation, participant confidentiality safeguards, and any applicable institutional permissions.

Use of Generative AI and Editorial Assistance

AI-assisted editorial support was used in this revision for literature searching, bibliographic cross-checking, APA 7 formatting, citation linkage, and suggested interpretive prose. This assistance did not collect or independently validate the survey responses, questionnaire reliability, or reported statistical results. Rashida O. Abdul-Rashid remains responsible for reviewing the revised text, checking the sources and data, and approving the final disclosure.

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