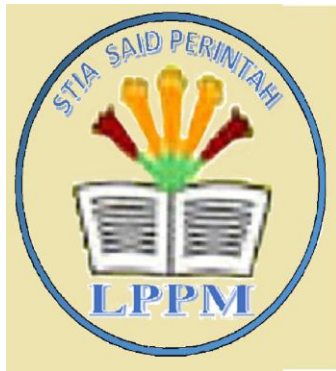

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Enhancing Accuracy in Food Security Services: Challenges and Technological Solutions

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Abstract

This research is significant because the accuracy of public services in the field of food security directly influences food availability and community welfare in Maluku Province. The study aims to examine the precision and effectiveness of public services delivered by the Maluku Provincial Food Security Agency in implementing market operations. A descriptive qualitative method was employed, utilizing interviews, observations, and document analysis as data collection techniques. The findings indicate that, despite facing challenges such as limited technological infrastructure and coordination barriers, the agency has demonstrated effectiveness in executing market operations. The study concludes that enhancing the use of technology and strengthening collaboration among stakeholders are crucial steps toward improving the accuracy and reliability of public services in the region's food security sector.

Keywords : Food Security, Public Service, Technology Integration

Introduction

The public has become increasingly critical in demanding transparent and accountable public service delivery, particularly in the food security sector (Hadi Prabowo & Dadang Suwanda, 2022). Although Law No. 18 of 2012 mandates the state to ensure the availability, accessibility, quality, and safety of food for all citizens, empirical realities often deviate from these normative expectations (Kaputra, 2013). The Food Security Agency of Maluku Province, tasked with implementing market operations, faces various challenges, such as delayed interventions during food price surges and the misallocation of social assistance programs (Undang-Undang Nomor 18 Tahun 2012 Tentang Pangan, 2012). This gap between policy mandates and field implementation is the primary concern of this study and forms a central focus of scholarly inquiry.

The urgency of this research is amplified by post-pandemic food security dynamics and the escalating threat of climate change both of which compromise food distribution and price stability in Maluku Province. Reliance on maritime logistics, frequent weather disruptions, and limited infrastructure across islands heighten the risk of delayed government intervention. Under these conditions, the effectiveness of institutional responses in conducting market operations is not merely administrative but also critical to ensuring equitable access to food and protecting vulnerable communities from price volatility. This study is particularly relevant in the context of recent food inflation, which has eroded household purchasing power, widened food access disparities, and triggered local socioeconomic tensions. By examining the government's responsiveness in such scenarios, the study aims to support efforts to enhance public service performance and reinforce food security systems during periods of economic stress.

To assess the quality of public service delivery, scholars have developed key indicators: responsiveness (the ability to promptly address public demands), responsibility (adherence to administrative standards), and accountability (answerability to stakeholders) (Dwiyanto Agus, 2017). Among these, responsiveness is often viewed as the most critical benchmark, reflecting the agility of bureaucracies in identifying issues and delivering timely solutions. In Maluku, early detection mechanisms for local food price fluctuations remain inadequate, even though local food sources such as sago, cassava, and maize offer potential to reduce dependency on imported rice (Syartiwidya, 2023). However, no integrated approach currently combines local commodity data, mobile technology, and digital community participation to improve service responsiveness in these island regions.

Delays in responsiveness are especially evident during lean seasons or natural disasters, where food assistance from local authorities often arrives only after crises have already impacted communities (Renstra Dinas Ketahanan Pangan Provinsi Maluku, 2019–2024). These delays stem from limited field data and weak inter-agency coordination, which hinder collaboration between the Food Security Agency and local farmers. Consequently, food diversification programs aimed at reducing rice dependency are poorly implemented, and vulnerable populations are frequently neglected in the distribution of essential food assistance (Aziz & Wahyudi, 2023). These conditions perpetuate unequal access to food aid and underscore the mismatch between legal frameworks and field realities in complex geographic contexts, thereby necessitating more adaptive and context-specific strategies.

Similar challenges have been documented outside Maluku. Research in North Sulawesi revealed that poor inter-agency coordination led to uneven local food distribution, hampering diversification efforts (Elizabeth, 2011). Soedarto & Ainiyah, (2022) argue that site-specific technologies can enhance local crop productivity when supported by intensive farmer training. Meanwhile, a study in West Java found that misaligned government policies obstructed the success of food diversification programs (Janti, 2016). These studies highlight that coordination challenges are systemic and widespread across Indonesia. As such, improved inter-agency collaboration is vital for ensuring effective local food distribution and the success of national diversification initiatives.

In response, the concept of "adaptive responsiveness" has emerged in public service literature as a promising approach. It combines early detection of price fluctuations with adaptive responses tailored to local needs through appropriate technologies and participatory feedback mechanisms. Unlike administrative responsiveness, which focuses on procedural compliance, or normative responsiveness, which emphasizes meeting public expectations, adaptive responsiveness emphasizes predictive, context-sensitive, and participatory strategies supported by digital tools and local data. Compared to smart governance, which relies heavily on centralized analytics, adaptive responsiveness prioritizes local adaptability and ongoing community engagement. While e-government improves access and efficiency, it may lack the flexibility needed to respond to rapidly evolving local conditions. Likewise, resilience-based models often emphasize long-term recovery rather than real-time responses. Thus, adaptive responsiveness offers both theoretical and practical advancements in

public service delivery, particularly in geographically fragmented regions like Maluku. Prakarsa Mandyartha et al., (2024) support this by demonstrating that digital applications can deliver responsive services and enhance user experience across sectors.

Despite its potential, the application of adaptive responsiveness in Maluku remains limited. The province's archipelagic nature and infrastructural disparities demand tailored strategies in both data collection and personnel capacity-building. The novelty of this study lies in its integration of local commodity data, location-based mobile technology, and digital participation via community-driven social media platforms. While offering a new perspective on enhancing responsiveness in island settings, existing research has yet to explore a similar model, either within Indonesia or in other archipelagic regions. This highlights a significant gap in the literature regarding the use of early warning systems and participatory interventions rooted in local data. Therefore, this study makes an original contribution to the development of an evidence-based, context-sensitive adaptive responsiveness model to strengthen local food governance in geographically complex areas. These innovations are expected to enhance the accuracy and timeliness of market operations amidst logistical and infrastructural constraints in Maluku.

Against this backdrop, the research question is formulated as follows: To what extent is public service responsiveness reflected in the implementation of market operations by the Maluku Provincial Food Security Agency, and what factors influence it? This study not only investigates early warning mechanisms and the speed of government intervention but also explores the role of mobile technology in enhancing the performance of field officers. It further examines the effectiveness of community participation models particularly those utilizing local social media platforms in targeting social assistance. The aim is to bridge the gap between theoretical models of responsiveness and their practical application by analyzing the market operation dynamics through the lenses of data, technology, and public participation.

It is anticipated that the findings will yield actionable policy recommendations, including: (1) enhancing inter-agency coordination through an integrated digital dashboard; (2) developing mobile training modules with offline capabilities to overcome connectivity limitations; and (3) creating participatory guidelines that use local social media groups for feedback and complaints. These initiatives would improve response time and targeting accuracy, transforming market operations from a routine bureaucratic process into a strategic instrument for maintaining price stability and mitigating food insecurity.

Ultimately, this study is expected to contribute to the broader development of adaptive responsiveness in archipelagic regions and enrich public service literature in Indonesia. By emphasizing the integration of local data, mobile technology, and digital participation, this research provides a replicable framework for provinces with similar geographic and demographic conditions. The findings aim to strengthen the foundation for more responsive, inclusive, and sustainable food security policies that advance community welfare. Specifically, the study assesses how adaptive responsiveness can be operationalized in island-based public services, with particular attention to the role of local data, mobile technologies, and digital participation in accelerating intervention and improving targeting effectiveness.

Theory Review

Public Service

Public service represents the state's commitment to fulfilling the basic rights of its citizens through the provision of quality, equitable, and easily accessible services. According to Denhardt, (2015), the paradigm of public service has shifted from a rigid bureaucratic model toward a more participatory and citizen-oriented approach. In this evolving context, the effectiveness of public service is no longer measured solely by administrative efficiency, but also by the government's capacity to respond to, include, and adapt to dynamic social changes. Fandy Tjiptono & Anastasia Diana, (2020) further emphasize that effective public service must account for community perceptions, as these perceptions are key indicators of satisfaction, trust, and institutional legitimacy.

Recent studies also highlight that improvements in public service quality are closely linked to community participation and the integration of digital technologies. Evidence shows that the implementation of mobile-based digital service systems in various Indonesian regions has significantly enhanced service quality. For instance, research by Roro Christina et al., (2021) reveals that information clarity, process transparency, and community involvement in service planning positively influence perceived satisfaction. These findings underscore the idea that ideal public service delivery hinges not only on organizational design and human resources, but also on collaborative and innovative strategies capable of addressing the increasingly complex and dynamic demands of society.

Dimension of Public Service Quality

The quality of public service is a crucial indicator for evaluating the effectiveness of bureaucratic performance. According to Zeithaml, Parasuraman, and Berry (as cited in Fandy Tjiptono & Anastasia Diana, 2020), service quality encompasses five core dimensions: tangibles (physical facilities and appearance), reliability (consistency and dependability in service delivery), responsiveness (willingness to assist), assurance (sense of security and competence), and empathy (attention and concern for service users). In the context of public services, Agus Dwiyanto (2017) expands this framework by adding three additional dimensions: responsiveness, responsibility, and accountability. Among these, responsiveness is often considered the most vital, as it reflects the bureaucracy's ability to swiftly address public needs. Therefore, public service quality is measured not only by service availability but also by how services are delivered promptly, fairly, and with accurate targeting.

Recent empirical studies support the application of these dimensions to improve public service quality in Indonesia. Research by Sukma & Utomo, (2020) indicates that the core dimensions of public service quality significantly influence community satisfaction. Likewise, Sakir, (2024) finds that enhancements in reliability and empathy positively impact public trust in government institutions. These findings suggest that reinforcing service quality dimensions not only boosts bureaucratic effectiveness but also strengthens the legitimacy of public institutions in the eyes of citizens.

Context of Food Security Service Gaps in Indonesia

The issue of service gaps in Indonesia's food security sector refers to the discrepancy between normative state policies and their actual implementation on the ground. According to Syafii, (2018), although regulations such as Law No. 18 of 2012 mandate the state's obligation to ensure the availability, affordability, quality, and safety of food, many communities particularly those in frontier, outermost, and underdeveloped (3T) regions continue to experience limited food access. This gap is attributed to weak inter-agency coordination, the lack of comprehensive local food data, and minimal community involvement in program planning. From a public service perspective, these shortcomings indicate low levels of responsiveness and accountability among implementing agencies in the food sector.

Recent empirical studies further affirm the persistence of these service gaps. For instance, research by Aziz & Wahyudi, (2023) reveals that the distribution of non-cash

food assistance (BPNT) in several Indonesian regions is often mistargeted, primarily due to discrepancies in beneficiary data and delays in aid distribution. Similarly, Agus Dwi Wicaksono, (2022) observes that the limited utilization of information technology in mapping food needs has hindered the government's ability to anticipate price fluctuations and address local food crises effectively. Bridging these service gaps requires the integration of real-time data systems, the use of location-based technologies, and active community participation in food policy formulation. Such an approach is essential to close the divide between macro-level policy frameworks and the micro-level realities encountered in the field.

Method

This study adopts a qualitative descriptive approach to explore and interpret the responsiveness of public services at the Maluku Provincial Food Security Agency. This approach was selected for its strength in providing in-depth, contextual descriptions of complex phenomena such as responsiveness in public service delivery. Unlike phenomenological methods, which emphasize individual lived experiences, or case studies, which focus intensively on a single unit, the qualitative descriptive approach allows for broader interpretive insights that remain grounded in real-world contexts.

By employing this approach, the researcher can examine data holistically to understand the social dynamics and institutional behavior present in the field. Qualitative research is particularly well-suited for revealing nuanced realities through narrative forms, helping readers grasp the operational context and relational dynamics within public service institutions. The central concern of this study is how the agency demonstrates responsiveness in delivering services to the community, particularly in the area of food security.

Data were collected using three primary techniques: (1) in-depth interviews with ten key informants civil servants at the Maluku Provincial Food Security Agency; (2) direct observation guided by a structured observation checklist; and (3) documentation analysis of secondary sources such as annual reports, regulations, and meeting minutes. Informants were purposively selected based on their direct involvement in food distribution processes.

To ensure the relevance and depth of information obtained, specific inclusion and exclusion criteria were applied. Inclusion criteria required informants to be structural officials at least at the echelon III level, technical field staff with a minimum of two years

of relevant experience, or personnel directly involved in market operations or food aid distribution. Conversely, civil servants with less than one year of food-related responsibilities and administrative staff without direct field engagement were excluded. These criteria ensured that the insights collected reflected both expertise and firsthand involvement in service delivery.

Several strategies were employed to ensure the validity and reliability of the findings. Source triangulation was used to cross-verify information obtained from interviews, observations, and documents. Methodological triangulation further strengthened credibility by comparing data derived from different collection methods to identify recurring patterns. Member checking was conducted by returning synthesized findings or interview summaries to selected informants to confirm factual accuracy and correct interpretive misunderstandings. Additionally, an audit trail was maintained throughout the research process, documenting every stage of data collection, transcription, coding, and analysis through field notes, interview logs, and reflective memos.

This study also acknowledges certain methodological limitations. One primary concern is potential response bias during interviews, particularly in hierarchical bureaucratic environments where institutional loyalty may inhibit candid responses. To mitigate this, the researcher ensured confidentiality and anonymity, conducted interviews in neutral and informal settings, and employed open-ended questions designed to elicit honest and spontaneous reflections. Reflexivity was also maintained through regular journaling and critical self-reflection on the researcher's own assumptions, values, and positionality that could influence data interpretation.

Data analysis followed the interactive model proposed by Miles and Huberman, involving iterative processes of data reduction, data display, and conclusion drawing. In the data reduction phase, irrelevant content was filtered out to focus on key findings such as quotes on service efficiency or the use of digital innovations. Selected data were then organized into thematic matrices and diagrams to illustrate relationships between key categories. For example, issues related to early price detection and inter-agency coordination were visualized in a cause effect matrix. Final conclusions were developed through repeated reflection, cross-validation, and member checks.

Emerging themes from the analysis include the role of mobile applications in accelerating field reporting, persistent coordination challenges among agencies during food aid distribution, and adaptive responses to community complaints facilitated by local

social media platforms. Through this rigorous process of data collection and analysis, the study aims to present a rich, credible, and context-sensitive portrayal of public service responsiveness within the archipelagic environment of Maluku.

Discussions

Responsiveness Capacity at the Maluku Provincial Food Security Agency

Responsive public service is a cornerstone of modern bureaucracy, emphasizing the importance of meeting community needs. Syahrudin et al., (2020) argue that the quality of public services must be continuously enhanced, as it constitutes a fundamental right of every citizen. Within this framework, the Maluku Provincial Food Security Agency holds a vital role in ensuring the availability and affordability of food, particularly during periods of price volatility and distribution crises in remote and isolated areas.

Field officers at the agency demonstrate adaptive, prompt, and well-structured responses. They utilize digital price panel applications to monitor food prices in real time, maintain regular coordination with vendors through official communication channels, and engage directly with communities using a friendly and proactive approach especially in remote regions such as the Tanimbar Islands and Southwest Maluku. In situations where vendors are unavailable, officers even take on the role of food distributors themselves, all while upholding administrative accountability and procedural integrity.

This was illustrated by informant R.S., an officer at the Maluku Provincial Food Security Agency who is directly involved in field operations. He stated;

"We can't afford to wait too long when food prices suddenly surge. As soon as there's a spike, we immediately go to the field, check prices through the app, and coordinate quickly with vendors. If no sellers are available, we take the initiative to sell basic food items directly to the public. The most important thing is ensuring that people continue to have access to affordable food."

This testimony underscores that responsiveness extends beyond merely acting swiftly; it entails taking initiative in challenging circumstances to ensure that community needs are effectively met. It reflects the agency's commitment to moving beyond routine administrative functions by delivering practical, frontline solutions under pressure.

These findings contrast sharply with the case documented by Leni Oktopiani et al., (2023) concerning e-KTP services in Ujungberung, where low responsiveness was accompanied by a high volume of public complaints. As Denhardt, (2015) emphasizes, responsiveness is not solely defined by speed it also requires a deep understanding of local contexts and the courage to take decisive, solution-oriented action.

Service Speed at the Maluku Provincial Food Security Agency

The speed of public service delivery is a critical determinant of overall service quality. However, it is not solely defined by how rapidly responses are provided, but also by the effectiveness of operational mechanisms, the perceptions of service recipients, and the extent to which policy interventions can stabilize food access. Osborne & Gaebler, (1995), through their Reinventing Government framework, emphasize the importance of innovative, flexible, and results-oriented bureaucracies in enhancing public service performance. In alignment with this view, the New Public Management (NPM) paradigm advocates for greater efficiency, responsiveness, and the incorporation of private sector practices into public administration.

Within the Maluku Provincial Food Security Agency, digital transformation particularly the use of WhatsApp as a real-time communication tool among officers, vendors, and institutional partners has enabled faster coordination and more responsive decision-making. This practice exemplifies the adaptive governance model, which prioritizes agility, decentralization, and responsiveness, especially in geographically isolated and logistically complex regions.

As emphasized by Dwiyanto, (2006), technical collaboration is also a key factor in service responsiveness. The simplification of procedures, strong synergy among field officers, and the capacity to circumvent bureaucratic hierarchies in urgent situations have facilitated swift interventions such as officers directly distributing food when vendors are unavailable. These digital coordination mechanisms support prompt and adaptive actions, demonstrating how responsiveness can be enhanced without being constrained by traditional bureaucratic rigidity.

Given Maluku's complex geographical conditions, a contextual governance approach allows for flexible procedures and services tailored to local realities. This was confirmed by informant B.W., a field coordinator at the Maluku Provincial Food Security Agency, who stated:

"We already have a dedicated WhatsApp group that is always active. So, if there's a disruption in delivery or a sudden price increase, we can coordinate immediately. There's no need to wait for official letters or lengthy instructions. Sometimes, we even take over the distribution ourselves if the vendor is late. The point is, speed is crucial, especially when the public starts to panic due to rising prices."

This testimony provides tangible evidence of how digital-based coordination mechanisms foster quick, adaptive responses that overcome delays in administrative

processes. In line with contextual governance principles, the agency's approach enables services to adjust to local circumstances. Furthermore, the use of WhatsApp Groups as closed yet functional platforms enhances internal coordination and creates fast feedback loops with communities.

Service Accuracy at the Maluku Provincial Food Security Agency

Service accuracy is a critical indicator in evaluating the quality of public service delivery. Within the Maluku Provincial Food Security Agency, accuracy encompasses not only timeliness, but also procedural compliance, the provision of relevant information, and alignment with the actual needs of the community. This reflects the "reliability" dimension of the SERVQUAL model by Parasuraman, A., Zeithaml, V. A. And Berry, (1988), which underscores the importance of precision and punctuality in delivering services.

This standard of accuracy is exemplified through the implementation of the *Gerakan Pangan Murah* (Affordable Food Movement), which is scheduled and executed responsively, especially during periods of price volatility ahead of major religious holidays. While minor technical delays may occasionally occur, the activities are generally carried out as planned, demonstrating the agency's commitment to directly supporting small traders and local communities through targeted subsidies.

Accuracy is also reflected in the careful selection of commodity types and quantities, which are determined based on real-time price monitoring and ongoing coordination with Bulog, local vendors, and regional governments. According to R.H., a technical officer at the Maluku Provincial Food Security Agency, the accuracy in scheduling and commodity targeting is guided by continuously updated market data and inter-agency coordination conducted prior to implementation.

This approach aligns with the New Public Service model introduced by Denhardt & Denhardt, (2003), which advocates for service provision that is responsive to public needs. The agency also adopts principles of agility and problem-solving, as proposed by Dwiyanto, (2006), by leveraging digital coordination through WhatsApp. Community feedback has been overwhelmingly positive, particularly with regard to the program's timeliness and accuracy in reaching targeted beneficiaries. These outcomes illustrate the application of a proactive, adaptive, and performance-oriented model of public service.

Accuracy in Service Delivery at the Maluku Provincial Food Security Agency

The quality of public service is a fundamental indicator of bureaucratic

effectiveness and efficiency in addressing community needs. In the realm of food security, precise and responsive service delivery is imperative, as access to food constitutes a basic right for every citizen. The Maluku Provincial Food Security Agency holds a strategic mandate to ensure the availability, affordability, and stability of food supplies. Enhancing service accuracy is therefore critical, particularly in meeting the dynamic needs of communities across the province's geographically challenging areas.

Within this agency, service accuracy encompasses three key dimensions: timeliness, targeted distribution, and the use of reliable, real-time data. Field data is systematically collected by officers through direct observation, supervision, and active engagement with local communities, thereby ensuring that interventions are both timely and appropriately directed. Effective coordination with local governments and food vendors further strengthens distribution efficiency and prevents redundancy.

This approach is reinforced by the testimony of E.H., a field officer from the agency, who explained that regular village visits and direct coordination with local authorities allow for data collection that reflects actual community needs, rather than relying solely on official reports. This ground-level approach enhances the precision and relevance of food assistance.

In practice, food distribution during market operations (*Gerakan Pangan Murah*) is guided by a vendor mapping system, which matches commodity types and quantities to observed demand patterns. Although technical challenges such as overcrowding and delivery mismatches occasionally occur, the agency addresses these through structured mechanisms, including queuing systems, numbered coupons, and routine evaluation meetings with field teams and stakeholders.

These operational strategies reflect the reliability and responsiveness dimensions of the SERVQUAL model (Parasuraman, A., Zeithaml, V. A. And Berry, 1988), as well as the principles of citizen-centered service delivery emphasized in the New Public Service paradigm (Denhardt, J.V and Denhardt, 2003). The agency's approach demonstrates a strong awareness of local contexts, procedural flexibility, and a consistent commitment to continuous improvement in public service delivery.

Timeliness of the Maluku Provincial Food Security Agency

Timeliness is a critical dimension in assessing the quality of public services, particularly in the execution of market operations aimed at stabilizing food prices and ensuring the availability of essential commodities. The prompt implementation of such

operations reflects the government's ability to respond swiftly to community needs during periods of crisis or seasonal price fluctuations.

At the Maluku Provincial Food Security Agency, timeliness is ensured through scheduled and anticipatory planning. Market operations are conducted according to predetermined timelines, with preparatory tasks such as loading supplies and securing necessary permits typically completed at least one day in advance. However, technical challenges such as traffic congestion, adverse weather conditions, and logistical delays at storage facilities can occasionally disrupt the planned schedule.

Despite these challenges, field officers are committed to maintaining operational continuity. As noted by E.F.T., a logistics coordinator at the agency, contingency plans are in place to mitigate such disruptions. In cases of rain or traffic congestion, goods may be delivered the night before, or distribution points may be relocated to ensure that operations proceed without significant interruption.

To improve execution, the agency has implemented several key strategies. These include preparing food packages in advance, maintaining real-time communication with vendors and local partners via WhatsApp groups, and selecting distribution sites based on accessibility and proximity to target communities.

Nevertheless, non-technical delays such as extended ceremonial speeches or waiting for the arrival of local dignitaries remain recurring issues that can lead to frustration among residents. This highlights the need for better inter-agency coordination and streamlined event protocols, particularly in remote or vulnerable regions.

From the public's perspective, perceptions of timeliness are mixed. While many acknowledge the agency's efforts in planning and implementation, delays due to ceremonial formalities have negatively affected overall satisfaction. These concerns are especially pronounced in areas such as the Tanimbar Islands and Southwest Maluku, where timely delivery is critical due to limited access to alternative markets.

Ability to Respond at the Maluku Provincial Food Security Agency

Ability in public service is a critical component within the SERVQUAL model developed by Parasuraman, A., Zeithaml, V. A. And Berry, (1988), which evaluates an agency's capacity to respond promptly and accurately to community needs. In the context of market operations, this dimension is particularly important, as the services directly relate to the population's basic food security.

In practice, officers of the Maluku Provincial Food Security Agency demonstrate not

only technical competence but also strong interpersonal communication skills. Beyond their operational duties, they serve as frontline communicators, effectively conveying informative and persuasive messages to the public especially during delays in market openings. By using empathetic and reassuring language, these officers help maintain public order and foster understanding during potentially tense situations.

This behavior reflects a form of strategic and anticipatory responsiveness, rather than a purely reactive approach. It indicates that the agency's personnel are not only capable in execution but are also adaptive and emotionally intelligent in engaging with communities a hallmark of high-quality public service delivery.

As stated by O.L., a food security analyst at the agency, their role extends beyond distribution:

"We are not only distributing goods, but we must also be able to explain the situation to the community using simple and reassuring language. This is important to prevent panic when there are delays."

Responsiveness in public service also involves adaptive problem-solving. In situations where certain commodities, such as eggs, are in short supply, officers at the Maluku Provincial Food Security Agency take the initiative to contact alternative distributors without awaiting instructions from higher authorities. This behavior reflects the concept of public service entrepreneurship as described by Denhardt J. V. and R. B. Denhardt, (2003), in which responsiveness is demonstrated through foresight, initiative, and decentralized decision-making.

Operationally, the agency makes use of digital communication platforms such as WhatsApp to facilitate real-time price monitoring, rapid decision-making, and situational updates. These tools allow staff to respond quickly to changing market dynamics, thereby enhancing institutional resilience and promoting decisions that are more informed by data.

Nevertheless, the absence of public complaints should not be immediately interpreted as evidence of public satisfaction. As noted by Denhardt J. V. and R. B. Denhardt, (2003), a lack of feedback might also indicate the presence of weak complaint mechanisms or limited civic engagement. To address this, it is important to strengthen public feedback channels, for instance by implementing digital surveys or post-event evaluations, in order to gather public perceptions more systematically.

This study offers a novel contribution by identifying the institutionalization of WhatsApp-based coordination mechanisms as an effective strategy for improving

responsiveness in archipelagic regions. It also highlights the shifting role of agency officers who are increasingly engaging in field-based, solution-oriented practices rather than merely performing administrative duties. These procedural adaptations contribute to the broader discourse on digital responsiveness in food governance, especially in geographically dispersed and island-based contexts.

Conclusion

This study highlights the responsiveness of the Maluku Provincial Food Security Agency in implementing market operations, showcasing adaptive, timely, and context-sensitive public service practices within the unique challenges of archipelagic regions. By employing the five service quality dimensions from the SERVQUAL model, the main findings can be summarized as follows:

First, the speed of service delivery has significantly improved through digital transformation, particularly the use of WhatsApp as a real-time communication tool. This platform has facilitated more efficient inter-agency coordination and expedited decision-making, effectively reducing delays typically caused by bureaucratic procedures.

Second, service accuracy is reflected in the agency's ability to align food distribution with actual community needs. This is achieved through participatory data collection methods, including direct engagement with local communities and village leaders, thereby enhancing the precision of food assistance targeting.

Third, in terms of timeliness, the agency has demonstrated readiness through logistical planning and contingency measures that help mitigate technical disruptions such as adverse weather or traffic. However, persistent non-technical delays such as waiting for speeches or the arrival of officials during ceremonial events highlight the need for improved cross-agency coordination and simplified field protocols.

Fourth, the agency's service ability is evident in the dual role of its officers, who not only carry out operational duties but also act as communicators to the public. They deliver informative and calming messages during disruptions, thereby reinforcing public trust. Their proactive behavior is further exemplified by their initiative in substituting absent distributors during supply shortages without awaiting top-down directives.

Finally, responsiveness is understood not merely as reaction speed, but as strategic decision-making and direct problem-solving. For example, in situations where vendors are unavailable, officers have stepped in to directly sell food commodities to the public. Such actions illustrate a commitment to public service that transcends routine

administrative functions and reflect a form of field-level adaptability essential for addressing urgent community needs.

Recommendations

Future research should seek to enhance the analysis of public service responsiveness by integrating quantitative indicators such as average response times, volumes of food redistributed, levels of public satisfaction, and the frequency of complaints received. The inclusion of these metrics would allow for a more comprehensive understanding that complements current qualitative findings.

Comparative studies involving other archipelagic provinces such as East Nusa Tenggara or North Maluku could provide insight into whether the strategies adopted by the Maluku Provincial Food Security Agency are uniquely context-bound or potentially replicable in other regions facing similar geographic and logistical challenges.

Further examination of WhatsApp's function as an official coordination tool is also warranted. Its influence on communication efficiency and decision-making structures within public institutions offers valuable lessons for procedural innovation in digital governance.

In addition, research should explore the evolving roles of frontline officers who manage both technical operations and public engagement. Understanding how training, organizational culture, and institutional support enable them to perform these dual responsibilities will contribute to the development of effective human resource strategies for crisis and emergency contexts.

Finally, assessing the long-term sustainability of these adaptive response models is critical. Investigating how such practices can be institutionalized within broader policy frameworks will be essential for strengthening food governance systems, particularly in archipelagic and disaster-prone regions.

Limitations and Future Research

This study acknowledges several limitations. First, its scope is primarily centered on the general management and service delivery practices of the Maluku Provincial Food Security Agency, without offering in-depth analysis of regional variations particularly in remote island areas that face unique geographical constraints. Furthermore, social and cultural dimensions that shape public perceptions, participation, and trust in food service operations were not explored in sufficient depth.

The cross-sectional nature of the research design also limits the ability to observe

changes in service quality over time, reducing the study's capacity to capture evolving patterns, institutional learning, or long-term impacts. Additionally, limitations related to time, data access, and logistical constraints narrowed the breadth of the analysis.

Future research should aim to address these gaps by incorporating regional comparisons that account for the influence of geographic isolation and socio-cultural diversity on service delivery outcomes. Longitudinal studies are also recommended to trace the evolution of service responsiveness and the institutionalization of adaptive practices. Further exploration into the use of digital technologies such as WhatsApp as tools for coordination and public engagement, alongside evaluations of organizational innovation and capacity-building efforts, would deepen the understanding of effective public service delivery in complex and resource-constrained environments.

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