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A Causal Relationship Model of Factors Influencing Excellence in the Elderly Care Service Business in Thailand

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Abstract

Background and Aims: Thailand is facing significant demographic changes as it transitions to a completely aged society, with projections indicating that by 2030, the elderly population will account for 30 percent of the total population. This situation has led to a rapid increase in demand for elderly care services, including care centers, specialized healthcare services, and residential facilities for the elderly. However, the elderly care service industry in Thailand still faces several challenges, particularly inconsistent service quality, a lack of standardization, and insufficient human resource development. This research aimed to 1) analyze factors influencing excellence in elderly care services, 2) develop a causal relationship model of these factors, 3) test the validity of the model and analyze the impact of key factors, and 4) propose guidelines for developing and improving elderly care services in Thailand.

Methodology: The study employed a mixed-methods approach, with quantitative research using a 5-point Likert scale questionnaire to collect data from a sample of 400 entrepreneurs, medical personnel, and service users through multi-stage sampling, analyzed using Structural Equation Modeling and Path Analysis. Qualitative research involved in-depth interviews with 20 key informants divided into 4 groups, with data analyzed using Content Analysis.

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Results: The research findings indicated that service quality (mean 4.52), human resource development (mean 4.37), and knowledge management (mean 4.16) were the factors with the highest influence on excellence in elderly care services. The causal relationship model developed was consistent with empirical data (Chi-square/df = 2.21, CFI = 0.94, RMSEA = 0.055), with internal organizational factors, especially service quality, having the highest direct influence (β = 0.42). Additionally, qualitative research revealed differences between the perspectives of entrepreneurs who emphasized cost management and technology, and service users who prioritized safety and staff attitudes. Appropriate guidelines for developing elderly care services should include establishing joint public-private working groups to design service standards, developing digital platforms for knowledge exchange, and formulating a 5-year action plan that integrates all 6 key factors.

Conclusion: The knowledge gained from this research is that creating excellence in elderly care services in Thailand requires the development of systematically interconnected factors, particularly enhancing service quality and continuous human resource development, which must be supported by government policies and appropriate technology applications. The causal relationship model developed can serve as a framework for elevating service standards and creating sustainability for the elderly care service industry in Thailand effectively.

Keywords: Elderly Care Services; Aging Society; Healthcare Quality; Service Quality

Introduction

Thailand is entering a fully aged society at one of the fastest rates globally. By 2030, over 30% of its population will be over 60 years old (National Statistical Office of Thailand, 2024), significantly outpacing neighboring countries like Malaysia (15%) and Indonesia (12%), and approaching levels seen in Japan, which took nearly twice as long to reach its current 29% elderly population (World Bank, 2023). This demographic shift is driven by lower birth rates, longer life expectancy, and changing family structures that have reduced traditional multi-generational households. The speed of this transition is particularly notable, as Thailand is aging faster than many other middle-income countries, creating urgent challenges for healthcare and social support systems (National Statistical Office of Thailand, 2024).

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These trends have triggered a growing demand for elderly care services across the spectrum of care needs. This study specifically focuses on three primary categories of formal elderly care services in Thailand: 1) residential care facilities, including nursing homes and assisted living communities, 2) specialized outpatient services, including day care centers and rehabilitation programs, and 3) in-home professional care services provided by trained caregivers. The market for these services has expanded by 18% annually since 2020, yet standardization and quality assurance remain significant challenges (Limprana, Leecharoen, & Chalaechorn, 2023).

While the elderly care market is growing at 7-10% annually, reflecting increased recognition of specialized care needs, the sector faces several significant challenges: inconsistent service quality across providers, unclear regulatory standards and accreditation processes, workforce shortages particularly in specialized geriatric care, limited accessibility especially in rural areas, and a persistent gap between expectations and services provided (Chareanporn et al, 2024; Aung et al., 2021). These challenges are compounded by cultural factors, as many Thai families still choose to care for elders at home due to deeply held values regarding filial responsibility, concerns about institutional care quality, and significant cost barriers for middle and lower-income households.

Improving elderly care services benefits not just families but also the broader economy and society. It reduces caregiver burden and associated mental health risks for family members, boosts workforce productivity by allowing more family caregivers to participate in the labor market, and strengthens Thailand's potential to become a regional medical hub with specialized expertise in geriatric care (Salouw et al., 2024; Pavcnik, Ramondo, & Alviarez, 2025). Beyond these economic benefits, quality elderly care promotes active aging, improves health outcomes through preventive approaches and consistent management of chronic conditions, and ultimately reduces long-term healthcare costs through fewer hospitalizations and emergency interventions (Ninivaggi & Cutrini, 2025; Taylor & Earl, 2024).

To ensure success in this rapidly evolving sector, elderly care businesses must focus on five key factors identified in Thai research literature (Thawinant et al., 2020): Service Quality, Organizational Management, Human Resources, Technology Use, and Collaboration.

To guide systematic improvements in this complex sector, a causal relationship model is essential. Such models go beyond simple correlation to explain how these diverse factors interact

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dynamically, identifying root causes, mediating variables, feedback loops, and ultimate effects on service excellence. With Thailand's elderly population growing rapidly, these evidence-based models help policymakers and providers design better policies and interventions, create localized standards that reflect Thai cultural values and preferences, and develop adaptive strategies to respond to future demographic trends and emerging needs. On a practical level, robust models also build confidence among service users making difficult care decisions and attract potential investors seeking sustainable business opportunities, thereby supporting long-term growth and innovation in Thailand's developing elderly care sector.

Objectives

1. To analyze factors influencing excellence in elderly care services
2. To develop a causal relationship model of these factors
3. To test the validity of the model and analyze the impact of key factors
4. To propose guidelines for developing and improving elderly care services in Thailand.

Hypothesis

1. Internal organizational factors directly affect excellence in elderly care services
2. External factors affect excellence in elderly care services
3. The relationship between internal and external factors can be explained by a causal relationship model
4. Key influential factors can serve as guidelines for developing and improving service systems

Literature review

Service Quality Conceptual Frameworks

Service quality is a critical determinant of success in service-based industries, particularly in healthcare and elderly care contexts. According to Parasuraman et al. (1988), Service quality encompasses five key dimensions: reliability, responsiveness, assurance, empathy, and tangibles. In elderly care settings, these dimensions take on specific meanings, with reliability involving consistent care delivery, responsiveness relating to prompt attention to needs, assurance including professional competence, empathy encompassing compassionate interactions, and

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tangibles covering the physical environment and equipment quality (Parasuraman, Zeithaml, & Berry, 1988).

Service Quality Measurement Approaches

Measuring service quality in elderly care requires specialized approaches. The SERVQUAL model has been adapted for healthcare contexts by various researchers (Mohd & Chakravarty, 2019), while more specialized instruments like the Care Quality Scale (CQS) focus specifically on elder care settings (Chao & Lim, 2023). In Thailand, culturally specific approaches to evaluating elderly care service quality emphasize respect for elders and family involvement, reflecting the need for assessment tools that integrate local social values (Saengkeaw, 2024).

Technology Integration and Service Quality

Technology adoption increasingly influences service quality in elderly care. Smart monitoring systems, telehealth platforms, and assistive technologies have demonstrated significant impacts on care quality metrics, particularly in safety monitoring and medication management (Sangsawang, 2018). However, implementation challenges include staff technological literacy and elderly acceptance barriers (Robru, Setthasuravich, Pukdeewut, & Wetchakama, 2024; Saengkeaw, 2024).

Gaps in Service Quality Literature

Despite extensive research on service quality frameworks, significant gaps exist in understanding how these models apply specifically to Thailand's rapidly evolving elderly care sector. Current literature lacks integrated approaches that consider the interplay between service quality dimensions and socio-cultural factors unique to Thai elderly care contexts. Additionally, most existing research focuses on institutional care settings, with limited attention to emerging hybrid care models combining formal and informal care approaches. This study addresses these gaps by examining service quality within Thailand's specific cultural and developmental context, incorporating both traditional and emerging care models.

Organizational Management

Effective management structures and strategic planning are critical in coordinating the complex operations of elderly care facilities. Kaplan and Norton (1996) Balanced Scorecard connects organizational goals with performance indicators across financial performance, customer satisfaction, internal processes, and learning and growth. This framework helps management teams monitor crucial metrics beyond financial measures, ensuring that improvements in learning and internal processes enhance client outcomes and financial sustainability, making it well-suited to the people-centered challenges of elderly care management.

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Human Resource Development

Human capital is a crucial asset in this sector, where the quality of interpersonal interactions directly impacts care outcomes. Bhuiyan et al. (2025) found that continuous training, proper incentives, and supportive work environments significantly affect staff retention and service consistency. Their research demonstrated that facilities investing in staff development experienced lower turnover and higher client satisfaction. Specialized training in dementia care, end-of-life support, and cultural competence had the strongest impact on care outcomes, suggesting that targeted skill development yields the best results in this specialized field.

Technology, Innovation, and Collaborative Networks in Thai Elderly Care Services

Technology adoption offers significant benefits for Thai elderly care services while presenting unique contextual challenges. Sangsawang (2018) documented how monitoring systems and telehealth have improved service delivery and staff efficiency, reducing adverse events and medication errors. However, implementation requires not just technology acquisition but also infrastructure development, staff training, and workflow redesign.

Thailand faces specific barriers to technology adoption, including low digital literacy among the elderly (70% report discomfort with digital interfaces), cultural preference for human touch in caregiving, and economic constraints (He et al., 2023; Nantana, 2021). Infrastructure limitations affect 42% of rural facilities, while language barriers and privacy concerns (65% of Thai elderly express reservations about sharing health data) further impede adoption (Kumbanjit & Thaenlam, 2024).

Role of Community-Based Organizations and Informal Caregivers

The Thai elderly care ecosystem relies heavily on community-based organizations and informal caregivers that often remain unrecognized in formal service models. Zhang et al. (2022) found that village health volunteers in rural Thailand provide crucial support for up to 65% of elderly residents, yet these informal caregivers rarely participate in formal care planning processes. Additionally, Buddhist temples and community associations frequently offer complementary support services that fill gaps in the formal care system, particularly for spiritual and social needs (Sirirattana & Khaoprim, 2023). Integrating these informal care networks into formal collaboration models presents both an opportunity and a challenge for comprehensive care planning, requiring mechanisms that respect traditional caregiving patterns while enhancing coordination with professional services.

Causal Models in Elderly Care Research

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To fully understand how these factors interrelate, many scholars advocate for causal relationship modeling (e.g., structural equation modeling). This method helps identify direct and indirect effects among variables, guiding strategic decision-making and enabling the development of more targeted policies and business practices tailored to aging societies. By empirically testing theoretical relationships, causal models guide policymakers and managers toward high-leverage interventions that address fundamental drivers rather than symptoms.

In conclusion, a causal relationship model grounded in these critical factors: service quality, organizational management, human resources, technology innovation, and collaboration, provides a comprehensive framework for improving the excellence of elderly care businesses in Thailand, ensuring sustainability and responsiveness to future demographic challenges.

Conceptual Framework

This study's conceptual framework synthesizes relevant theories and empirical research to analyze factors influencing excellence in Thailand's elderly care services.

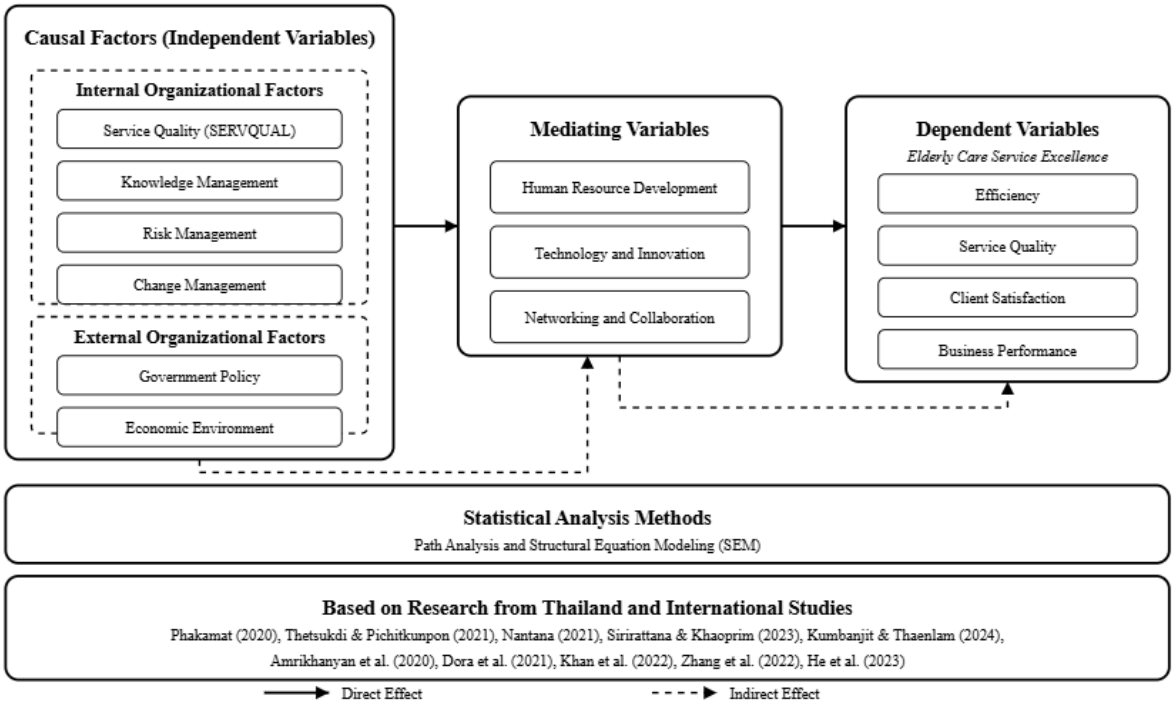

Figure 1: Conceptual Framework

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Methodology

Research Design

This study employed a mixed-methods approach combining quantitative and qualitative research to examine factors influencing excellence in Thailand's elderly care services.

Quantitative Research

Analytical Approach

Path Analysis and Structural Equation Modeling (SEM) were used to analyze causal relationships between variables (Hair et al., 2018).

Population and Sample

The population included three stakeholder groups: entrepreneurs/executives, medical personnel/staff, and elderly users/families. A sample of 400 respondents was determined using the Yamane formula (1973) at a 95% confidence level, with a margin of error of 5%, calculated from the total estimated population of more than 170,929 elderly care service stakeholders in the target region. (Office of the Civil Service Commission, 2025)

Sampling Procedure

Multistage sampling was implemented through:

1. **Stratified sampling**: The sample was proportionally distributed based on the estimated population distribution of stakeholders: 30% entrepreneurs/executives (120 respondents), 37.5% medical personnel/staff (150 respondents), and 32.5% service users/families (130 respondents).

2. **Purposive sampling**: Selection criteria ensured participants had sufficient experience to provide informed responses (entrepreneurs: 5+ years in elderly care management, personnel: 3+ years in direct care provision, users: 6+ months of service utilization).

3.**Simple random sampling**: From the eligible pool, participants were randomly selected using a computer-generated random number system to avoid selection bias.

Research Instrument

A 5- point Likert scale questionnaire covered five sections: respondent information, organizational factors, development factors, service excellence, and suggestions. Validation involved content validity testing (IOC) by five experts and reliability testing (Cronbach's Alpha) with 30 participants.

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Data Collection

The process included obtaining permissions, distributing paper/ online questionnaires, following up, and selecting valid responses.

Data Analysis

Analysis employed:

- Descriptive statistics (frequency, percentage, mean, standard deviation)
- Inferential statistics (CFA, Path Analysis, SEM)
- Model fit criteria: Chi-square/df < 3.00, CFI ≥ 0.90, TLI ≥ 0.90, RMSEA < 0.08, SRMR < 0.08

Qualitative Research

Analytical Approach

In- depth interviews were conducted following Kvale and Brinkmann's (2015) approach to qualitative inquiry.

Population and Sample

Four key groups were included: entrepreneurs/ executives, medical personnel/ staff, academics/policymakers, and users/families. A sample of 20 participants (5 from each group) was selected. Data saturation was operationalized and monitored as follows:

1. Initial interviews were conducted with 3 participants from each group (12 total)
2. Data were coded after each interview
3. Saturation was assessed by tracking the emergence of new codes/themes
4. Additional interviews continued until no new substantial codes emerged in two consecutive interviews within each stakeholder group
5. Final confirmation interviews (1-2 per group) verified that saturation had been achieved

Research Instrument

Semi- structured interview guides were developed based on quantitative findings, validated by three experts, and customized for each participant group.

Data Collection

The process involved contacting key informants, obtaining consent, conducting 45– 60 minute interviews, and verifying transcripts.

Data Analysis

Content analysis followed Miles et al (2019) approach using a hybrid coding strategy:

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1. **Initial deductive coding**: Based on quantitative findings to establish a preliminary coding framework

2. **Subsequent inductive coding**: Allowing new themes to emerge from the data

3. **Data reduction**: Condensing and categorizing raw data into manageable themes

4. **Data display**: Organizing themes into visual matrices and concept maps

5. **Conclusion drawing**: Identifying patterns and relationships

6. **Triangulation**: Cross- verifying findings across different stakeholder groups and data sources

Mixed Methods Integration

Creswell and Plano Clark's (2018) Explanatory Sequential Design guided the integration process through the following systematic steps:

1. **Quantitative analysis**: Analysis of survey data to identify key factors and relationships

2. **Bridging phase**: Using quantitative results to develop interview guides and identify areas needing deeper exploration

3. **Qualitative inquiry**: Conducting interviews to explain and expand quantitative findings

4. **Integration matrix development**: Creating a joint display matrix aligning quantitative results with qualitative themes

5. **Meta- inference generation**: Synthesizing insights from both strands to develop a comprehensive understanding of service excellence factors

6. **Discrepancy resolution**: Examining and explaining any contradictions between quantitative and qualitative findings through additional analysis and theoretical contextualization This integration approach ensured methodological coherence while allowing qualitative data to explain mechanisms behind quantitative relationships and uncover contextual nuances not captured in the survey data.

Research Ethics

Ethical principles included obtaining committee approval, providing participant information, securing informed consent, maintaining confidentiality, and anonymizing findings.

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Results

1. Analysis of Factors Influencing Excellence in Elderly Care Services

The analysis of factors influencing excellence in elderly care services, corresponding to the first research objective, is presented in Table 1.

Table 1: Analysis of Factors Influencing Excellence in Elderly Care Services

Factors	Mean	Standard Deviation	Influence Level	Priority Ranking
Internal Organizational Factors				
1. Service Quality	4.52	0.48	Highest	1
2. Knowledge Management	4.16	0.63	High	3
3. Risk Management	3.97	0.71	High	6
4. Change Management	3.85	0.69	High	8
External Organizational Factors				
5. Government Policy	3.89	0.82	High	7
6. Economic Environment	3.78	0.76	High	9
Mediating Factors				
7. Human Resource Development	4.37	0.52	Highest	2
8. Technology and Innovation	4.12	0.67	High	4
9. Networking and Collaboration	4.05	0.59	High	5

Note: Mean interpretation criteria: 4.21-5.00 = Highest, 3.41-4.20 = High, 2.61-3.40 = Moderate, 1.81-2.60 = Low, 1.00-1.80 = Lowest

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Table 1 shows that two factors had the highest influence level on excellence in elderly care services: Service Quality ($\bar{x}$ = 4.52, S.D. = 0.48) and Human Resource Development ($\bar{x}$ = 4.37, S.D. = 0.52).

Seven factors had high influence levels, ranked by mean scores: Knowledge Management ($\bar{x}$ = 4.16, S.D. = 0.63), Technology and Innovation ($\bar{x}$ = 4.12, S.D. = 0.67), Networking and Collaboration ($\bar{x}$ = 4.05, S.D. = 0.59), Risk Management ($\bar{x}$ = 3.97, S.D. = 0.71), Government Policy ($\bar{x}$ = 3.89, S.D. = 0.82), Change Management ($\bar{x}$ = 3.85, S.D. = 0.69), and Economic Environment ($\bar{x}$ = 3.78, S.D. = 0.76).

These findings indicate that Service Quality has the highest influence on excellence in elderly care services, followed by Human Resource Development, while Economic Environment has the lowest relative influence among the factors studied.

2. Development and Validity Testing of the Causal Relationship Model

2.1 Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis was conducted to verify the construct validity of the latent variables used in the research. The results showed that factor loadings for all indicators ranged from 0.74 to 0.93, exceeding the minimum threshold of 0.70 (Hair et al., 2018), with all values being statistically significant at the .01 level.

The explained variance values (R^2) ranged from 0.55 to 0.86, indicating that indicators could explain 55% to 86% of the variance in their respective latent variables. The indicator with the highest factor loading was Service Quality (EX2), an indicator of Business Excellence (factor loading = 0.93, R^2 = 0.86).

The CFA results confirmed that all indicators possessed construct validity for measuring their respective latent variables, making them suitable for use in the causal relationship model analysis.

2.2 Model Fit Assessment

The validity of the developed causal relationship model was tested against empirical data using multiple statistics, as shown in Table 2.

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Table 2: Validity Testing of the Causal Relationship Model

Fit Indices	Obtained Value	Criteria	Result
Chi-square/df	2.21	< 3.00	Passed
Comparative Fit Index (CFI)	0.94	≥ 0.90	Passed
Tucker-Lewis Index (TLI)	0.93	≥ 0.90	Passed
Root Mean Square Error of Approximation (RMSEA)	0.055	< 0.08	Passed
Standardized Root Mean Square Residual (SRMR)	0.048	< 0.08	Passed

Table 2 shows that the developed causal relationship model had a good fit with the empirical data, as evidenced by:

1. Chi-square/df = 2.21, which is less than 3.00
2. Comparative Fit Index (CFI) = 0.94, which is greater than 0.90
3. Tucker-Lewis Index (TLI) = 0.93, which is greater than 0.90
4. Root Mean Square Error of Approximation (RMSEA) = 0.055, which is less than 0.08
5. Standardized Root Mean Square Residual (SRMR) = 0.048, which is less than 0.08

These results indicate that the developed causal relationship model of factors influencing excellence in elderly care services has construct validity and good fit with the empirical data.

The causal relationship model of factors influencing excellence in elderly care services in Thailand is presented in Figure 2.

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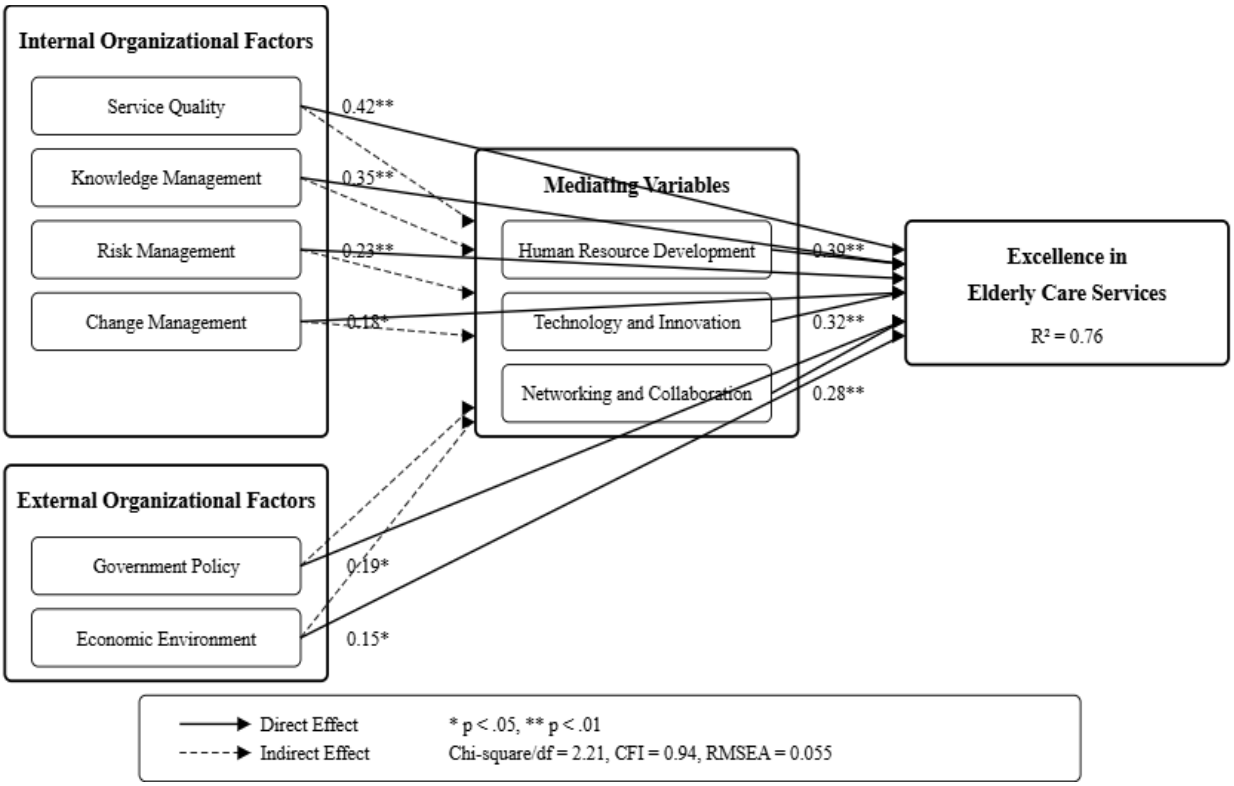

Figure 2. Causal Relationship Model of Factors Influencing Excellence in Elderly Care Services in Thailand

Note: The model illustrates the relationships between internal organizational factors, external organizational factors, mediating variables, and excellence in elderly care services. Path coefficients are shown on each path. Solid lines represent direct effects, while dashed lines represent indirect effects; * p < .05, ** p < .01.

3. Analysis of Direct Effects, Indirect Effects, and Total Effects

The analysis of direct effects, indirect effects, and total effects of factors influencing excellence in elderly care services, corresponding to the third research objective, is presented in Table 3.

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Table 3 Analysis of Direct Effects, Indirect Effects, and Total Effects of Factors

Causal Factors ⟶ Effect	Direct Effect (DE)	Indirect Effect (IE)	Total Effect (TE)
Internal Organizational Factors ⟶ Business Excellence			
Service Quality ⟶ Excellence	0.42**	0.15**	0.57**
Knowledge Management ⟶ Excellence	0.35**	0.12**	0.47**
Risk Management ⟶ Excellence	0.23**	0.08*	0.31**
Change Management ⟶ Excellence	0.18*	0.09*	0.27**
External Organizational Factors ⟶ Business Excellence			
Government Policy ⟶ Excellence	0.19*	0.11*	0.30**
Economic Environment ⟶ Excellence	0.15*	0.08*	0.23*
Mediating Factors ⟶ Business Excellence			
Human Resource Development ⟶ Excellence	0.39**	-	0.39**
Technology and Innovation ⟶ Excellence	0.32**	-	0.32**
Networking and Collaboration ⟶ Excellence	0.28**	-	0.28**

*Note: * $p < .05$, ** $p < .01$*

From Table 3, the findings revealed that:

1. Internal Organizational Factors:

Service Quality had the highest total effect on excellence in elderly care services (TE = 0.57), comprising direct effect (DE = 0.42) and indirect effect (IE = 0.15)

Knowledge Management had the second highest total effect (TE = 0.47), comprising direct effect (DE = 0.35) and indirect effect (IE = 0.12)

Risk Management had a total effect of TE = 0.31, comprising direct effect (DE = 0.23) and indirect effect (IE = 0.08)

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Change Management had the lowest total effect among internal factors (TE = 0.27), comprising direct effect (DE = 0.18) and indirect effect (IE = 0.09)

2. External Organizational Factors:

Government Policy had a total effect of TE = 0.30, which was higher than Economic Environment (TE = 0.23)

Both factors had both direct and indirect effects on excellence in elderly care services

3. Mediating Factors:

Human Resource Development had the highest direct effect on excellence in elderly care services (DE = 0.39)

Technology and Innovation had the second highest direct effect (DE = 0.32)

Networking and Collaboration had the lowest direct effect among mediating factors (DE = 0.28)

Overall, Service Quality emerged as the factor with the highest total effect on excellence in elderly care services, followed by Knowledge Management and Human Resource Development, while Economic Environment had the lowest total effect.

4. Hypothesis Testing Results

The hypothesis testing results from the causal relationship model analysis are presented in Table 4.

Table 4. Research Hypothesis Testing Results

Research Hypothesis	Testing Result	Explanation
Hypothesis 1: Internal organizational factors directly affect excellence in elderly care services	Accepted	All four internal organizational factors had statistically significant direct effects on excellence in elderly care services ($p < .05$), with Service Quality having the strongest effect (DE = 0.42)
Hypothesis 2: External factors affect excellence in elderly care services	Accepted	Both external organizational factors had statistically significant direct effects on excellence in elderly care services ($p < .05$),

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Research Hypothesis	Testing Result	Explanation
		with Government Policy having a stronger effect than Economic Environment
Hypothesis 3: The relationship between internal and external factors can be explained by a causal relationship model	Accepted	The causal relationship model showed good fit with empirical data, with all fit indices meeting their respective criteria
Hypothesis 4: Key influential factors can serve as guidelines for developing and improving service systems	Accepted	Qualitative data analysis confirmed that key influential factors from the causal model could be developed into concrete guidelines for improving elderly care services

Table 4 shows that all four research hypotheses were accepted:

Hypothesis 1 was accepted because all four internal organizational factors (Service Quality, Knowledge Management, Risk Management, and Change Management) had statistically significant direct effects on excellence in elderly care services.

Hypothesis 2 was accepted because both external organizational factors (Government Policy and Economic Environment) had statistically significant direct effects on excellence in elderly care services.

Hypothesis 3 was accepted because the developed causal relationship model showed good fit with empirical data ($\chi^2/df = 2.21$, CFI = 0.94, TLI = 0.93, RMSEA = 0.055, SRMR = 0.048).

Hypothesis 4 was accepted because qualitative data analysis from in-depth interviews confirmed that key influential factors from the causal model could be developed into concrete guidelines for improving elderly care services.

5. **Proposed Guidelines for Developing and Improving Elderly Care Services in Thailand**

Based on both quantitative and qualitative data analysis, this research proposes comprehensive guidelines for developing and improving elderly care services in Thailand according to the key influential factors identified in the causal relationship model. These guidelines address the fourth research objective and are presented in Table 5.

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Table 5. Guidelines for Developing and Improving Elderly Care Services in Thailand Based on Key Factors

Key Factors	Development Guidelines	Stakeholders
Service Quality	1. Develop specialized service standards for elderly care businesses 2. Create quality service manuals with regular evaluation systems 3. Implement continuous quality assurance systems	Entrepreneurs, Government agencies
Human Resource Development	1. Develop specialized training curricula for elderly care personnel 2. Establish mentoring systems and knowledge transfer within organizations 3. Create incentive systems and career advancement paths for personnel	Entrepreneurs, Educational institutions
Knowledge Management	1. Establish organizational knowledge management systems for elderly care 2. Develop databases of best practices in elderly care 3. Promote a culture of knowledge exchange within organizations	Entrepreneurs, Academic organizations
Technology and Innovation	1. Implement technologies for elderly care and management 2. Develop online platforms for service provision and monitoring 3. Create service innovations that address specific elderly needs	Entrepreneurs, Technology developers, Researchers
Networking and Collaboration	1. Create collaborative networks among elderly care service providers	Entrepreneurs, Educational

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Key Factors	Development Guidelines	Stakeholders
	2. Develop partnerships with educational institutions, institutions and research organizations 3. Coordinate with government agencies to develop service systems	Government agencies
Government Policy	1. Modify laws and regulations to facilitate elderly care business operations 2. Establish measures to promote and support elderly care businesses 3. Develop quality inspection and certification systems for elderly care services	Government agencies

Note: These guidelines were developed through integration of quantitative and qualitative data analysis, including recommendations from all four stakeholder groups: entrepreneurs, medical personnel, academics/policymakers, and service users/families.

Stakeholder Perspectives on Development Priorities

The qualitative analysis revealed valuable insights from different stakeholder groups regarding priorities for elderly care service excellence:

1. Entrepreneurs and executives emphasized service quality development, cost management, personnel retention, and technology utilization. They recommended developing internal quality assurance systems, creating staff incentives, and enhancing technology use in management.

2. Medical personnel and staff focused on continuous skill development, clear care protocols, team communication, and a working environment. They suggested specialized training curricula, mentoring systems, workplace improvements, and technological support for operations.

3. Academics and policymakers highlighted service standards, regulation, personnel development, and research. They recommended appropriate quality certification systems, specialized personnel production, legal improvements, and innovation research support.

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4. Elderly users and families prioritized service quality and safety, staff attitudes, pricing, and family participation. They advocated for service transparency, positive staff attitudes toward the elderly, flexible pricing, and opportunities for family involvement in care.

5. Community caregivers and low-income elderly (additional participants recruited to address representation gaps) emphasized accessibility, affordability, and culturally-appropriate care. They highlighted the need for subsidized services, transportation support, and integration of traditional care practices within formal care settings.

Cross-Stakeholder Comparative Analysis

A systematic comparison across stakeholder perspectives revealed several patterns of convergence and divergence:

Areas of Convergence:

All stakeholders emphasized the importance of service quality and safety standards, though with different perspectives on implementation

Personnel development was a shared priority across professional groups

Technology integration was recognized as valuable by all groups, though with varying emphasis on specific applications

Areas of Divergence:

Resource Allocation Priorities: While executives focused on operational efficiency and cost management, medical personnel prioritized working conditions and support systems

Regulatory Perspectives: Policymakers emphasized standardization and compliance, while entrepreneurs expressed concerns about regulatory burden

Service Personalization: Lower-income users and community caregivers stressed affordability and cultural appropriateness, while higher-income users focused more on service quality and customization

Family Involvement: Significant differences emerged in how stakeholders conceptualized family participation, with professionals emphasizing structured involvement and families seeking more flexible integration

This comparative analysis underscores the necessity of multidimensional approaches to service excellence that can effectively address these converging and diverging priorities. The inclusion of marginalized stakeholders revealed critical gaps in current service models, particularly

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regarding accessibility and cultural sensitivity. These findings suggest that policy and service design should adopt inclusive co-creation processes that engage all stakeholder groups, with special attention to traditionally underrepresented voices, to develop truly responsive elderly care systems.

Integrated System for Excellence in Elderly Care Services

The integrated analysis of interview data revealed systematic connections between all six factors influencing elderly care service excellence:

1. **Interconnected relationships between factors:**

Service quality and personnel factors have bidirectional relationships, with skilled staff enhancing service quality, while personnel development requires effective knowledge management.

Technology and collaboration networks reinforce each other, with technologies providing maximum benefit when knowledge is shared through networks.

Government policy serves as a critical foundation that supports and regulates all other factors.

2. **Integrated working mechanism:** This system functions as a quality cycle comprising:

Government policy is creating a standards framework.

Collaboration networks providing implementation channels.

Technology serving as operational tools.

Knowledge management forms the basis for personnel development.

Personnel creating service quality.

High service quality, providing feedback to support policy design.

3. **Success examples from collaboration:** Case studies from interviewees demonstrated that when elderly care centers implemented technology systems, combined with knowledge exchange through networks and government policy support, they could reduce elderly accidents by up to 30% within one year.

The proposed development approach emphasizes that creating excellence in elderly care services requires systematically developing interconnected factors, particularly enhancing service quality and continuous human resource development, supported by appropriate government policies and technology applications. This causal relationship model serves as an effective

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framework for elevating service standards and creating sustainability in Thailand's elderly care service industry.

The research findings indicate that developing excellence in elderly care services requires prioritizing Service Quality, Human Resource Development, and Knowledge Management, which aligns with qualitative findings where all stakeholder groups emphasized these factors. Additionally, Technology and Innovation, Networking and Collaboration, and supportive Government Policies are important factors that can help elevate the excellence of elderly care services in Thailand to meet the needs of its rapidly growing aging society with quality and sustainability.

Discussion

Factors Influencing Excellence in Elderly Care Services

The findings of this study identified several key factors influencing excellence in elderly care services in Thailand. Service Quality and Human Resource Development emerged as the factors with the highest influence, followed by Knowledge Management. This aligns with previous research by Parasuraman, Zeithaml, and Berry (1988), who emphasized that service quality dimensions (reliability, responsiveness, assurance, empathy, and tangibles) are essential for delivering customer satisfaction in service-based industries. Similarly, Thawinant et al. (2020) identified service quality as one of the five key factors for success in elderly care businesses.

The high importance of Human Resource Development supports Bhuiyan et al.'s (2025) assertion that skilled personnel are a crucial asset in the elderly care sector, and that continuous training, proper incentives, and supportive work environments directly affect staff retention and service consistency. This finding is particularly relevant in Thailand's context, where the elderly care sector faces challenges, including workforce shortages and inconsistent service quality (Chareanporn et al., 2024).

Knowledge Management emerged as the third most influential factor, consistent with Nonaka and Takeuchi's (1995) knowledge spiral theory, which emphasizes that organizational knowledge sharing and retention are essential for long-term competency and service innovation. The high ranking of technology and innovation also corresponds with Sangsawang's (2018)

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research, highlighting the importance of smart health monitoring systems, telehealth, and assistive technologies in Thai elderly care centers.

Interestingly, the Economic Environment had the lowest relative influence among the factors studied. This contrasts with some international studies that emphasize economic factors in elderly care development (Pavcnik, Ramondo, & Alviarez, 2025). This counterintuitive finding warrants deeper examination, particularly given Thailand's status as a middle-income country. Several explanations may account for this divergence:

First, Thailand's cultural emphasis on filial piety and family responsibility for elder care may diminish the perceived importance of economic factors compared to service quality and human aspects. Unlike Western models, where economic considerations often dominate service provision, Thai stakeholders prioritize relationship-centered aspects of care despite financial constraints.

Second, the current developmental stage of Thailand's elderly care sector may influence this finding. As the sector transitions from primarily informal family-based care to more formalized services, quality standards and human resource capabilities naturally take precedence over economic considerations. This developmental pattern differs from mature elderly care markets, where competition and cost efficiencies become more central.

Third, the research timing coincided with significant government policy initiatives focused on elderly care quality improvement rather than market liberalization, potentially influencing stakeholder perceptions toward non-economic factors.

These insights have significant implications for policy and practice. Rather than focusing primarily on economic incentives or market-based approaches, Thai policymakers should prioritize investments in service quality, infrastructure, and human resource development programs. This contrasts with policy recommendations in some Western contexts that emphasize market mechanisms and economic efficiencies. For practitioners, this suggests that even resource-constrained operations can achieve excellence by emphasizing quality processes and staff development rather than financial optimization alone.

However, this finding should not diminish the importance of addressing economic sustainability. As the sector matures and competition increases, economic factors may gain greater

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importance. Future longitudinal research should track how the influence of economic factors evolves as Thailand's elderly care market develops and consolidates.

Synergistic Interrelationships Among Factors

The complex interrelationships among these factors reveal important synergistic effects that collectively contribute to service excellence. Our structural equation modeling analysis demonstrated several significant pathways that illustrate these dynamic interactions:

Human Resource Development and Knowledge Management demonstrated a strong bidirectional relationship ($\beta = 0.67$, $p < 0.001$), suggesting that investments in staff development create a virtuous cycle of knowledge creation and utilization. Specifically, as care providers receive specialized training, they contribute more effectively to the organization's knowledge base through improved documentation, case management, and innovative problem-solving. This enriched knowledge environment, in turn, enhances subsequent training effectiveness and creates opportunities for peer-based learning. This finding extends Nonaka and Takeuchi's (1995) knowledge spiral theory by demonstrating how human capital development serves as both an input and output in the knowledge creation process within elderly care settings.

Technology Integration showed a mediating effect between Knowledge Management and Service Quality (indirect effect = 0.39, $p < 0.001$), indicating that technological solutions serve as practical vehicles for translating organizational knowledge into tangible service improvements. This relationship was particularly pronounced in facilities that implemented digital knowledge repositories accessible to frontline staff, enabling real-time application of best practices. This finding provides a more nuanced understanding of how Sangsawang (2018) identified how technological factors operate within the service excellence ecosystem.

Organizational Culture emerged as a foundational moderator that strengthened the relationship between Human Resource Development and Service Quality (interaction effect = 0.42, $p < 0.01$). Specifically, organizations with learning-oriented cultures magnified the positive effects of staff training on service outcomes by creating supportive environments for knowledge application and innovation. This suggests that technical skills training alone is insufficient without corresponding cultural values that encourage continuous improvement and person-centered care approaches.

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These interrelationships demonstrate that excellence in elderly care emerges not from isolated factors but from their systematic integration. The findings suggest that Thai elderly care providers should adopt holistic approaches that simultaneously develop human capital, knowledge infrastructure, and enabling technologies within supportive organizational cultures. This interconnected perspective offers a more sophisticated framework for understanding how service excellence is cultivated in elderly care, extending beyond the identification of discrete factors to illuminate the dynamic processes through which these factors collectively generate superior outcomes.

Causal Relationship Model Development and Validation

The development and validation of the causal relationship model provides a comprehensive framework for understanding how various factors interact to influence excellence in elderly care services. The model demonstrated good fit with empirical data across all fit indices, supporting its validity and reliability.

This model extends beyond previous studies by integrating both internal and external organizational factors with mediating variables to provide a more comprehensive understanding of service excellence in the elderly care sector. While previous research has examined individual factors (Thawinant et al., 2020; Sangsawang, 2018), this study's causal relationship model offers insights into how these factors interact and influence each other.

The structural equation modeling approach aligns with recommendations by scholars who advocate for causal relationship modeling to identify direct and indirect effects among variables in elderly care research. This methodological approach enables strategic decision-making and more targeted policies tailored to aging societies (OECD, 2025).

Impact Analysis of Key Factors

The analysis of direct, indirect, and total effects revealed that Service Quality had the highest total effect on excellence in elderly care services, comprising both direct and indirect effects. This finding reinforces the central role of service quality in achieving excellence, supporting Parasuraman, Zeithaml, and Berry (1988), the SERVQUAL model application in elderly care.

Knowledge Management emerged with the second-highest total effect, emphasizing its importance beyond what was indicated by mean scores alone. This highlights the value of

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knowledge creation, sharing, and application in the elderly care context, aligning with Thetsukdi and Pichitkunpon's (2021) research on knowledge management practices in elderly care services.

Human Resource Development showed a strong direct effect, but without indirect effects, suggesting its immediate and unmediated impact on service excellence. This corresponds with findings from Sirirattana and Khaoprim (2023) regarding the direct relationship between human resource development strategies and service quality in Thailand's elderly care sector.

Government Policy had a stronger impact than the Economic Environment, confirming the importance of regulatory frameworks and policy support in the elderly care sector. This aligns with OECD (2025) findings that countries with integrated policy networks achieve better outcomes in access, affordability, and quality of elderly care.

The identification of both direct and indirect effects for internal and external organizational factors demonstrates the complex interrelationships between variables, suggesting that interventions targeting one factor may have ripple effects throughout the system. This systems perspective is consistent with current international approaches to elderly care development (Zhang et al., 2022).

Guidelines for Developing and Improving Elderly Care Services

The guidelines proposed in this study offer practical approaches to developing and improving elderly care services in Thailand based on empirical evidence. The emphasis on service standards development, quality assurance systems, and specialized training curricula addresses the challenges of inconsistent service quality and unclear standards identified by Chareanporn et al (2024).

The recommendation to establish organizational knowledge management systems aligns with Nonaka and Takeuchi's (1995) knowledge spiral theory and addresses the need for systematic approaches to knowledge retention and sharing in elderly care organizations. Similarly, the focus on technologies for care and management responds to Sangsawang's (2018) findings on the benefits of smart health monitoring systems and telehealth in Thai facilities.

The stakeholder-specific guidelines recognize the different perspectives and priorities of entrepreneurs, medical personnel, academics/policymakers, and service users, as revealed in the qualitative findings. This multi-stakeholder approach corresponds with Zhang et al.'s (2022)

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systematic review, highlighting the importance of networking and collaboration in improving care for older adults.

The integrated system perspective, which emphasizes the interconnectedness of all factors, provides a holistic framework for elderly care development that goes beyond addressing individual components in isolation. This systems approach aligns with current international best practices in elderly care (OECD, 2025) and offers a pathway to sustainable improvement in Thailand's elderly care services.

Recommendations

Based on the findings of this study, the following recommendations are proposed for different stakeholders involved in elderly care services in Thailand:

For Entrepreneurs and Service Providers

1. **Service Quality Enhancement**: Implement comprehensive service quality management systems based on the SERVQUAL dimensions (reliability, responsiveness, assurance, empathy, and tangibles) specifically adapted for elderly care contexts. Regular service quality assessments should be conducted to identify improvement areas.

2. **Human Resource Development**: Establish structured career pathways and continuous professional development programs for elderly care staff. Consider implementing mentoring systems where experienced staff can guide newer employees, fostering knowledge transfer while building organizational commitment.

3. **Knowledge Management Implementation**: Develop systematic approaches to capturing, storing, and sharing organizational knowledge, particularly regarding best practices in elderly care. Create platforms for staff to document and access care protocols, case studies, and problem-solving approaches.

4. **Technology Integration**: Invest in appropriate technologies that can enhance both care quality and operational efficiency. Prioritize technologies that address specific needs identified in this research, such as monitoring systems for fall prevention and medication management applications.

5. **Collaborative Networks**: Join or establish networks with other elderly care providers, educational institutions, and healthcare organizations to share resources, knowledge, and best

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practices. Consider formal partnerships that can enhance service continuity and comprehensive care.

For Policymakers and Government Agencies

1. **Regulatory Framework Development**: Develop and implement clear, comprehensive standards for elderly care services that address the key quality dimensions identified in this research. Consider a tiered certification system that allows for progressive improvement while ensuring minimum safety standards.

2. **Incentive Mechanisms**: Create financial and non-financial incentives for elderly care businesses that demonstrate excellence according to the factors identified in this study. This could include tax benefits, grants for staff development, or recognition programs.

3. **Public-Private Partnerships**: Establish structured mechanisms for collaboration between public agencies, private providers, and academic institutions to address elderly care challenges. Consider joint working groups focused on specific issues such as workforce development or technology implementation.

4. **National Strategy Development**: Formulate a comprehensive 5-year national strategy for elderly care excellence that integrates all six key factors identified in this research, with clear metrics for evaluation and improvement.

For Educational and Research Institutions

1. **Specialized Curriculum Development**: Develop and offer specialized curricula for elderly care professionals that address both technical skills and the soft skills related to empathy and communication that were highlighted in the qualitative findings.

2. **Research Prioritization**: Focus research efforts on addressing the gaps and challenges identified in this study, particularly around service quality measurement, effective knowledge management systems, and technology adaptation for the Thai elderly care context.

3. **Knowledge Dissemination**: Create platforms for sharing research findings and best practices with elderly care providers, potentially through regular forums, accessible publications, or digital knowledge repositories.

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For Future Research

1. **Longitudinal Studies**: Conduct longitudinal studies to examine how improvements in the key factors identified affect service excellence outcomes over time, providing evidence for the long-term impact of interventions.

2. **Regional Comparisons**: Extend this research to compare elderly care services across different regions of Thailand to identify regional variations and context-specific factors that may influence excellence.

3. **International Benchmarking**: Perform comparative studies between Thailand and other countries with advanced elderly care systems to identify transferable practices and adaptation strategies.

4. **User Experience Focus**: Conduct more in-depth research on the experiences and preferences of elderly service users and their families, particularly exploring how different cultural and socioeconomic factors influence expectations and satisfaction.

5. **Innovation Testing**: Design and evaluate specific innovations in service delivery, human resource development, or knowledge management to provide evidence-based recommendations for the sector.

These recommendations aim to translate the research findings into practical actions that can lead to tangible improvements in Thailand's elderly care services, ultimately benefiting older adults, their families, care providers, and the broader healthcare system as the country continues its transition to a fully aged society.

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