Enhancing Regional Elderly Care Through Vocational Nursing: A Strategic PEST-SWOT Analysis and Formation Logic

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Article Information	ABSTRACT
    Corresponding Author: Yong Zhou sxmu5203@foxmail.com **ORCID:** https://orcid.org/0009-0003-9247-8414	This study examines the development of higher vocational nursing professional groups (HVNPGS) in promoting regional elderly care through a PEST-SWOT analysis framework. The objective is to identify the internal and external factors influencing the sustainability and effectiveness of vocational nursing programs. Using a mixed-methods approach, the study combines qualitative data from interviews and focus groups with quantitative data from structured surveys conducted across various vocational nursing institutions. The PEST-SWOT analysis model was employed to evaluate the political, economic, social, and technological dimensions impacting the growth of HVNPGs. The findings reveal that political support, particularly government policies and financial subsidies, plays a critical role in the success of vocational nursing programs. Economic sustainability remains a challenge, especially in rural areas, while societal attitudes toward elderly care and nursing professions continue to affect program attractiveness. Technological integration offers opportunities for enhancing nursing education, though disparities in access present ongoing challenges. The study concludes that a comprehensive strategy addressing political, economic, societal, and technological factors is essential for the growth of HVNPGs. The implications suggest that policymakers and educators must prioritise funding, societal engagement, and technological infrastructure to ensure vocational nursing programs that can meet the increasing demands of elderly care. **Keywords:** Higher Vocational Colleges, Nursing Specialty Group, Regional Old-Age Care, PEST-SWOT Analysis

1. INTRODUCTION

The global healthcare system faces unprecedented pressure due to the rapidly ageing population (Navaneetham & Arunachalam, 2023). The proportion of the population aged 65 and older is projected to reach 16% by 2050, a significant increase from 9% in 2019 (Sleeman et al., 2019). This demographic shift is particularly concerning for countries with limited healthcare resources. Furthermore, the rising demand for long-term care for the elderly necessitates a substantial increase in qualified care specialists to meet the growing needs of this demographic (Martinez & Wolverton, 2009). Additionally, as the population ages, the prevalence of chronic diseases is increasing. This strains healthcare systems, as older adults require more frequent and complex care. In addition, the ageing population is more likely to experience functional decline, which can lead to a need for increased support with activities of daily living. Consequently, the

countries have focused on the importance of vocational education in the health sector to solve the respective challenges.

Higher vocational nursing professional groups (HVNPG) have become a key to solving the regional elderly care needs. Such groups of professionally trained nurses are in the best place to deliver quality specialised care to the elderly and, at the same time, help maintain the sustainability of the existing health facilities (Pavlopoulou, 2021). The HVNPG development and implementation process that would successfully address the needs of regions and countries is both elaborate and multifaceted. Due to this, its analysis should consider internal and external factors (Sargeant & Shang, 2024).

Vocational nursing programs allow students to acquire competency and learn how to integrate effective strategies into their practice after the training (Hashim, 2014). Many of these programs are developed to cater for regional requirements so that the graduates are adequately prepared for the requirements of regional health systems. However, the emergence and enduring nature of HVNPGs are determined by several key success factors such as handy, viable, natural, political support, economic sustenance, social acceptance, and technological innovation. They all impact the effectiveness of VE (vocational education) as a method of forming qualified personnel and the inclusion of such professional groups into the overall healthcare system (Zheng, 2015). Therefore, there is a need for broad frameworks like PEST-SWOT that can evaluate these factors into the proper perspective for formulating strategies in establishing HVNPGs that would encourage regional elderly care.

The primary objectives of this research are to examine the strengths and weaknesses followed by opportunities and threats for HVNPG development in the context of elderly care and to formulate strategic solutions that enhance the integration and sustainability of HVNPGs based on the regional healthcare system. In particular, this study examines the function of vocational nursing education in helping to meet regional elderly care needs. It intends to serve the needs of an ageing population through these programs, along with suggestions for optimisation (Matulodi, 2023; Boltz et al., 2024). This research seeks to contribute to more effective strategies for promoting sustainable elderly care models by identifying the key factors that lead to the success of HVNPGs.

This study is significant for policy and practice in vocational nursing education and elderly care. As the global population ages at an unprecedented rate, the need for specialised healthcare services is skyrocketing (Younis & Salih, 2024). Healthcare resources are often strained by complex, long-term care needed by elderly individuals. This condition urges healthcare systems to enhance their capacity and integrate innovative methods to meet these requirements. In order to enhance their capacity, one solution is to increase the number of healthcare workers who are well-suited to providing geriatric care. They can meet the unique needs of elderly patients, and this ensemble is called vocational nursing education (Currie et al., 2023). This research combines political, economic, social, and technological factors. It analyses strengths, weaknesses, opportunities, and threats to provide a distinct perspective on the relationship between vocational nursing education and the sustainability of elderly care.

2. LITERATURE REVIEW

Global society is undergoing a profound demographic shift, characterised by a significant increase in the average age. According to Rusli et al. (2023), the proportion of the population aged 65 and older is projected to reach 16% by 2050, a substantial increase from the 9% observed in 2019 (Navaneetham &

Arunachalam, 2023). The shifting demographics challenge healthcare systems since older people have more extensive and long-term medical needs (Kamau et al., 2023).

Higher vocational nursing programs (HVNPs) have taken an important place in this process, as it has been acknowledged that these programs can contribute to filling the gap in the regional disparities in the provision of health services par, particularly in Geriatric care (Chang et al., 2024). Vocational nursing education has now become one of the options for addressing the demand for elderly care services. These programs offer structured practical experience, where the graduates step into the healthcare environments directly, especially in geriatric care. The singular strength of vocational education is that it has local needs as the main prerequisite, so there would be no problems in offering care to ageing populations or whatever issues the specific region may have (Peng et al., 2023). In catering to elderly care, vocational nursing education has received wide acceptance in many countries, including China, Japan, and South Korea, as a strategy (Bae, 2023). Therefore, observing PEST analysis is crucial to appreciate the formation and the HVNPs' development in old age consideration. The vocational nurses' training, coupled with adequate support from the government signature to elderly care initiatives, has offered substantial efficiencies in all healthcare structures across these countries in contemporary periods (Ooijen et al., 2023).

According to Peng et al. (2023), a significant advantage of HVNPs is that they deliver clinical and practical training that may be easily transferred to the healthcare environment. The graduates of these programs are generally in a better position to address the direct requirements of elderly patients' care, especially in parts of the world where the existing healthcare systems have been stretched (Ijilmurun, 2023). Furthermore, the increasing use of elderly care in the vocational nursing curriculum means that students finish their courses equipped with adequate knowledge in handling the different challenges relating to the health of the elderly (Wang et al., 2024). Nevertheless, vocational nursing programs also have many liabilities, such as limited equipment and scarcity of medical personnel. In many regions, there is an inadequate supply of vocational nursing services and increased turnover and burned-out workers in the health sector (Guarnera et al., 2024). Additionally, the vocational nursing education system is highly diverse depending on available resources, such as updated training sessions and professional trainers (Cui et al., 2023).

The ageing population's increasing demand for home care services creates multiple opportunities for expanding and developing HVNPs. Since the world's population is getting older, the demand for qualified geriatric care is steadily increasing, positively affecting the demand for vocational nursing programs (Okur et al., 2023). Besides, advancements in technology in the health sector create chances to improve vocational nursing education by using digital health and telehealth. However, HVNPs have several threats, namely political and economic risks. Some HVNPs may find it challenging to run their programs due to unstable health financing and inadequate government funding for vocational education (Alshammari & Alenezi, 2023). Moreover, cultural perceptions of elderly care and the nursing profession may significantly threaten these programs because, in many cultures, both fields are considered less valuable (Muhalla et al., 2024).

In the context of increasing interest in enhancing elderly care and developing HVNPGs, distinctive gaps in the literature continue to exist regarding how HVNPGs may be effectively positioned and developed to meet region-specific elderly care demands. There is limited literature on the specific aspects of VN education, the translation of policies and best practices for nursing education in general, and the state of healthcare systems in general. However, the growing global demand for elderly care is significantly noted

by some scientific works (Møller & Wegener, 2024). Furthermore, as highlighted by Serafin et al. (2022), vocational nursing is accepted as a solution-oriented profession in many countries.

The pattern of formation of vocational nursing groups and the role of political, economic, social, and technical factors in vocational nursing and their interrelationship are inconclusive (Zalimiene et al., 2024). This implies that more studies must be conducted to determine the specific external and internal factors that affect the increased integration of HVNPGs into regional health systems.

Additionally, while the PEST-SWOT framework has been utilised in various fields to analyse external and internal factors, its application to vocational nursing education in elderly care remains limited. Existing studies focus on broader healthcare education strategies without a nuanced understanding of the challenges and opportunities vocational nursing programs face in addressing elderly care at the regional level (Drange & Ingelsrud, 2023). The impact of emerging healthcare technologies, such as telemedicine and digital health tools, on vocational nursing education has not been sufficiently studied. It leaves a gap in understanding how these technologies can be effectively integrated into nursing curricula to improve care for elderly patients (Vikström-Dahl et al., 2024). Furthermore, there is a lack of comprehensive strategic frameworks that address how vocational nursing programs can adapt and shape regional healthcare policies and social attitudes towards elderly care. Addressing these gaps is crucial for developing more targeted, sustainable, and region-specific vocational nursing programs to meet the growing demand for high-quality elderly care.

3. METHODOLOGY

3.1. Research Design

This study employs a mixed-methods research design, integrating both qualitative and quantitative approaches to comprehensively analyse the internal and external factors that affect the development of Higher Vocational Nursing Professional Groups (HVNPGs) in promoting regional elderly care. The mixed-methods design allows for a holistic understanding of the research problem by combining the strengths of both approaches, i.e., qualitative and quantitative. The qualitative data provides in-depth insights into the socio-political, economic, and cultural contexts influencing vocational nursing education, while quantitative data offers a structured analysis of measurable factors. The study's methodology is grounded in the PEST-SWOT framework, systematically analysing political, economic, social, and technological dimensions and strengths, weaknesses, opportunities, and threats associated with HVNPGs.

3.2. Data Collection

3.2.1 Qualitative Data Collection

Qualitative data was collected through Semi-structured interviews and focus group discussions conducted with participants such as vocational nursing educators, healthcare administrators, state and provincial-level government eldercare policymakers and representatives from nursing professional associations. The interviews were conducted with 25 participants from four states, from urban and rural areas, to obtain a view of the difficulties and possibilities of VN education in elderly care. Interviews were carried out with nursing professionals and vocational educators to reveal more about the internal and external factors established by PEST-SWOT. Moreover, due to the semi-structured nature of the discussion, the conversation was flexible. The important discussion areas, including political support for elderly care

initiatives, economic challenges and opportunities for vocational nursing programs, public perception of elderly care, and the use of technology in teaching nursing students, play a significant role. This was discussed comprehensively with all the participants.

3.2.2 Quantitative Data Collection

The quantitative component involved distributing structured questionnaires to vocational nursing institutions and regional healthcare facilities across various provinces. Three hundred responses were collected, with a response rate of approximately 80%. The questionnaire was designed to capture data on key variables identified in the PEST-SWOT framework, including political support (measured through policy implementation), economic sustainability (budgetary allocations and financial support), social acceptance (public perception of elderly care and nursing), and technological adoption (use of digital tools and telemedicine in nursing education and elderly care). The questionnaire utilised a 7-point Likert scale for most items, ranging from "strongly disagree" to "strongly agree," to gauge the respondents' perceptions of various external and internal factors impacting HVNPGs. Additionally, demographic variables such as the type of institution (public/private), geographic location (urban/rural), and years of operation were included to explore variations across different contexts.

3.3 Sampling and Participants

The qualitative and quantitative data collection participants were purposely selected with stakeholders in the nursing profession, vocational education and care of the elderly. To sample the qualitative part of the study, purposive sampling was employed to recruit 25 participants, 12 of whom were nursing educators, others in health care policy-making forums, and the rest of the participants were professionals in nursing in both urban and rural settings. The participants were selected based on their expertise in formulating and enacting vocational nursing programs and elderly care policies. To acquire quantitative data, the study adopted stratified random sampling to ensure an equal representation of the institutional and geographical structure of the sample population. Vocational nursing institutions and healthcare facilities were divided into two groups. They were categorised based on the institution's location (urban or rural) and whether they were a public or private institution. In this case, the adopted approach enabled the study to capture regional influences and assorted difficulties experienced by various kinds of institutions in implementing the vocational nursing program.

3.4 Data Analysis

The qualitative data was analysed using thematic analysis and transcription; the data was coded inductively to identify key themes that emerged from the interviews and focus group discussions. Themes were categorised based on the PEST-SWOT dimensions: political, economic, social, and technological factors, as well as strengths, weaknesses, opportunities, and threats focusing on HVNPGs. The thematic analysis helped identify recurring issues such as government policy gaps, funding challenges, societal undervaluation of elderly care, and greater technological integration in nursing education. These themes were then mapped onto the PEST-SWOT analysis framework to create a comprehensive picture of how internal strengths and weaknesses interact with external opportunities and threats in the development of HVNPGs.

The quantitative data was analysed by identifying prominent codes and patterns. Before the actual analysis of data, descriptive statistics were used to describe the respondents' demographic profile and get an overall idea about all the political, economic, social, and technological factors.

Subsequently, exploratory factor analysis (EFA) was employed to confirm the PEST-SWOT analysis's instrumentation and highlight the variables' ensuing relations. The correlation between internal environment strengths/weaknesses and external environment opportunities/threats was determined using Pearson correlation analysis. Regression analysis was then used to determine which factors influence the success of the development of HVNPGs, especially the political, economic, social, and technological factors related to the internal factors of vocational nursing programs.

4. RESULT & DISCUSSION

The PEST-SWOT analysis focuses on political, economic, social and technological factors within the context of vocational nursing programs that address the needs for elderly care services. The interviews and focus group discussions yielded several themes that involved government policy, funding, societal perception, and technology in vocational nursing education. Furthermore, the quantitative evidence affirms political support and technological integration as the research's significant predictors of the HVNPGs' effectiveness. The results from both databases are synthesised to provide insight into how these factors work for the development of vocational nursing programs and the ability of these programs to respond to the increasing needs for elderly care in the respective regions.

4.1 Qualitative Findings

Table 1 shows the common themes identified in the qualitative part of the investigation concerned with forming the HVNPGs in regional elderly care. These themes centered around four primary areas: political support, healthcare policies of vocational nursing programs and their economic viabilities, society's perceptions of elderly care and the nursing profession, and integrating technology in the delivery of nursing education. Political factors became potent, and the participants described government policy and financial incentives as crucial in developing HVNPGs. The social issue highlighted during the event included the unequal distribution of resources and funds, especially in rural areas. As for the social perception of elderly care (which was the topic of the last two questions), some regions still consider it a low-paid profession, while others view it as a necessary and important mission for their communities. The analysis also revealed that technological developments like telemedicine and digital health technologies were both opportunities and threats. Thus, vocational programs must prepare how to incorporate such technologies to enhance the overall quality of healthcare for the elderly.

Table 1. Summary of Themes

Themes	Key Insights
Political Support and Healthcare Policies	Government policies and financial incentives play a critical role in the growth of HVNPGs.
Economic Sustainability	Uneven resource distribution and funding, especially in rural areas, affects the sustainability of vocational nursing programs.

| Societal Attitudes Toward Elderly Care and Nursing | There are varied social perceptions of the nursing profession, with some regions undervaluing elderly care while others see it as vital to community well-being. |
| Role of Technology in Nursing Education | Telemedicine and digital tools offer opportunities and challenges; vocational nursing programs must integrate these advancements into curricula. |

4.1.1 Political Support and Healthcare Policies

Political support and health care policies are often key to forming and maintaining the HVNPGs, which is particularly crucial to the country's elderly care sector. Some research focuses on the government's role in influencing the development of vocational education to fit health requirements. Funding not only utilises grants for establishing vocational nursing schools but also unleashes resourceful staff, i.e., qualified nursing personnel who are well-equipped and trained in vocational nursing. Unfortunately, policies associated with vocational nursing differ a lot from one area to the other, and therefore, the quality and accessibility of vocational nursing education varies across different regions. Therefore, the absence of politics will undoubtedly affect the healthcare sector and the integration of vocational nursing as a significant component of its system.

Moreover, China's policies regarding public-private partnerships will help promote elderly care services, and this joint venture can bring about integral collaboration between vocational training and healthcare sectors. Significant legislative and financial support is necessary to meet the increasing consumer needs for professional elderly care services. However, the success of such policies depends on the compliance of numerous countries and regions with their respective policies and the political will of their governments.

4.1.2 Economic Sustainability

Table 2 illustrates the economic factors for identifying an HVNPG's prospects in establishing, expanding and providing elderly care. The funds provided to vocational nursing programs often determine the program's ability to produce skilled personnel to handle the profession and the programs' ability to deliver quality services. On the other hand, administrative areas with higher economic support enjoy greater capacity within the facilities, such as experienced staff and more program coverage that increases the quality of elderly care (Zhang et al., 2023). Nevertheless, the economic conditions in most areas (mainly rural) tend to worsen the situation by aggravating the inequality in resource distribution.

Fuchs et al. (2023) also establish that low-income areas have poor sustainable funding sources. This makes vocational nursing programs easily affected by budget cuts, leading to their poor ability to deliver consistent care services. The economically distressed students and other members of society also lack the required exposure to essential healthcare training materials, advanced technologies and adequately remunerated salaries of healthcare personnel. This presents a massive challenge to nursing programs in attracting competency-based healthcare forces. Hence, it requires enhancing the economic base of vocational nursing education so that the HVNPGs can exist and sustain the needs of elderly care.

Table 2. Summary of Economic Sustainability

Finding	Description
Economic Support for Vocational Nursing Programs	Public funds and subsidies are essential for sustainable vocational nursing programs, especially in underfunded regions.
Impact of Funding on Quality of Care	Regions with more substantial economic backing have better facilities and staff, providing higher-quality care for elderly populations.
Regional Disparities in Resource Allocation	Rural and low-income areas often experience inequities in resource allocation, which limits the reach and quality of vocational nursing programs.
Effect of Public-Private Partnerships	Public-private partnerships can bolster elderly care services by improving financial sustainability and collaboration with healthcare providers.
Challenges in Attracting Skilled Professionals	Inconsistent funding, particularly in rural areas, makes attracting and retaining skilled professionals difficult due to a lack of competitive salaries and resources.
Vulnerability to Budget Cuts in Low-Income Areas	Low-income regions are more vulnerable to budget cuts, which hinder the consistency and quality of vocational nursing programs.

4.1.3 Societal Attitudes Towards Elderly Care and Nursing

The overall social perception in deciding the form and functioning of HVNPGs comprises the perception of elderly care nursing and its impact and impression upon the profession, shown in Table 3. Thus, numerous areas are lacking, especially in nursing and elderly care, as this field is not valued enough to attract more people or receive more public support. It is also to be noted that in cultures where the support of older adults is believed to be the family's duty and not the professional workers, there is little call for the formal nursing programs that HVNPGs depend on for support. Gender biases also influence this societal undervaluation, given that nursing is associated with feminised labour; hence, a lower wage rate and less prestige are associated with it (Venables et al., 2023). On the other hand, in countries like Japan, where elderly care is the inherent culture of its society, and it embraces it with responsibility, nursing professionals get high respect and recognition, thus resulting in more people enrolling on vocational programs and healthier, enhanced professional development (Younis & Salih, 2024). Papaioannou et al. (2023) argue that such perceptions remain critical to transform in order to enhance the position of the nursing profession and to guarantee that HVNPGs will manage to address the growing needs of the elderly care services that are currently in high demand. Thus, society's perception is the key to increasing the competitiveness of nursing courses and the nursing courses' full inclusion in the healthcare systems that target the elderly population.

Table 3. Societal Attitudes Towards Elderly Care and Nursing

Finding	Description
Societal Perception of Nursing	Nursing is often undervalued, particularly in elderly care, affecting the demand for vocational programs.
Cultural Influence on Elderly Care	Formal nursing programs struggle to gain traction and respect in regions where family care is preferred.
Gender Bias in the Nursing Profession	The perception of nursing as a female profession leads to lower wages and diminished societal prestige.

Cultural Respect for Elderly Care in Japan	In Japan, cultural respect for elderly care improves nursing status, leading to higher professional recognition and enrollment.
Importance of Changing Societal Attitudes	Changing societal perceptions of nursing is essential to improve the status and attractiveness of the profession.

4.1.4 Role of Technology in Nursing Education

Table 4 presents the integration and innovative methods in nursing education as a way vocational nursing programs can adapt to the needs of current society. It requires upgrading how students are trained to meet the modern challenges in the ever-changing healthcare delivery system, especially for elderly care. Technical enhancement in telemedicine, electronic health records, and computerised simulation-related knowledge supports the training of nursing professionals and the acquisition of essential technical knowledge needed in the modern, technologically advanced systems of healthcare delivery (Alshammari & Alenezi, 2023). According to Castonguay et al. (2023), telemedicine enables nurses to offer care remotely, especially in rural or low-resource settings where elderly patients are less likely to access in-person services.

The application of simulation technology aids in enhancing the students' readiness as they join vocational nursing education by exposing them to real-life experiences bound to simulation-based learning environments (Hernon et al., 2023). However, Sharma and Sharma (2023) noted a problem of equitable distribution of technological resources since most rural or income-conscious institutions cannot afford the technological facilities for their implementation. This insufficient availability of technologies results in the gap between the number of resourceful urban programs and inadequately funded rural programs being brought up. This would eventually limit the successful coverage of the needs of elderly care across regions by vocational nursing education. Therefore, the possible implementation of technology to improve the training opportunity for nurses enriches the quality of training but is obstructed by the issue of inequality in the distribution of technology in different regions.

Table 4. Role of Technology in Nursing Education

Finding	Description
Impact of Telemedicine	Telemedicine enhances remote care delivery, particularly for elderly patients in underserved regions.
Use of Simulation Technology	Digital simulation tools improve student preparedness by replicating real-life healthcare scenarios.
Technological Disparities	Uneven access to technological resources in rural and low-income areas limits the integration of advanced tools.
Role in Elderly Care	Technology-driven nursing education is critical in preparing nurses for the complex needs of elderly care.
Infrastructure Challenges	Successful technology adoption in nursing education depends on overcoming regional infrastructure inequalities.

4.3 Quantitative Findings

4.3.1 PEST-SWOT Analytical Analysis Matrix

The PEST-SWOT analysis method is commonly used to formulate business strategies, evaluate management efficiency and implement countermeasures analysis. SWOT analysis is widely used in vocational education and subject teaching-related research. It aims to analyse the advantages and disadvantages in the development of vocational education, the opportunities and threats, and the qualitative analysis of things itself and the environment. In this study, the PEST-SWOT theory constructed the analysis matrix to systematically analyse elderly care in the areas promoted by the professional groups of higher vocational colleges. Refer to Table 5 for details.

Table 5. PEST-SWOT Analysis Matrix

SWOT PEST	Politics Contains Law	Economic	Society	Technology
Strength	S			
Weakness	W			
Opportunity	+P	+E	+S	+T
Threat	-P	-E	-S	-T

S: Strength; W: Weakness; P: Political Contains Law; E= Economics; S=Society; T: Technology O: Opportunity; T: Threat

4.3.2 PEST-SWOT Analytical Model

PEST analysis is often used to analyse the external environment and explore the macro environment adaptability of through politics, including law (P), economy (E), society (S), and technology (T). PEST is oriented to the macro environment and deconstructs the environment with distinct levels, but its advantages and disadvantages are unknown. PEST-SWOT analysis is the PEST method and SWOT analysis, from the object of the internal advantage (S) and disadvantage (W), to explore the things in the macro environment of political, economic, social and technical. These four levels reflect the opportunity (O) and threat (T), providing insight into the research object in the current environment that shows adaptability. Through these improved means to realise the transformation and upgradation, one can acquire the harmony of things and social conditions. This study formed the PEST-SWOT analysis model based on the analysis matrix (see Figure 1 for details).
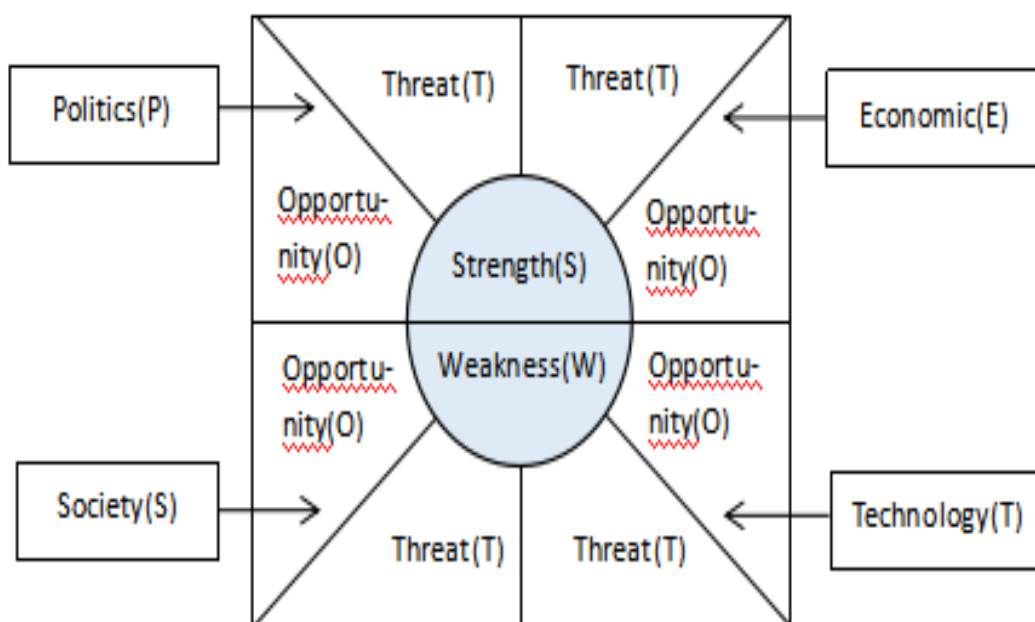
Figure 1. PEST-SWOT Analysis Model

The PEST-SWOT Analysis Model in Figure 1 highlights the interplay between political, economic, social, and technological factors, emphasising their impact on the strengths, weaknesses, opportunities, and threats higher vocational nursing professional groups (HVNPGs) face. To address this concern effectively, the framework must be expanded to provide a more detailed analysis of how these factors influence vocational nursing education. Politically, supportive legislation and policy reforms present opportunities to expand nursing programs, while inconsistent healthcare regulations could pose threats that require immediate policy alignment.

Economically, stable funding provides the financial foundation necessary for program expansion, whereas budget cuts in healthcare would need to be mitigated by exploring public-private partnerships and alternative funding sources. Societal attitudes towards nursing can either enhance or undermine its value, with regions undervaluing nursing calls for targeted public awareness campaigns. While technological advancements like telemedicine offer clear opportunities for integrating innovative tools into nursing curricula, disparities in technological access could hinder this progress. Prioritising activities like policy advocacy, securing funding, enhancing public perception, and bridging technology gaps should be key steps to mitigate threats and leverage opportunities. This structured approach will ensure more proactive responses to the identified factors.

4.3.3 PEST-SWOT Elements Analysis of Boosting Rural Old Vocational Nursing Care

According to the PEST-SWOT analysis matrix model, this study lists the nursing group of higher vocational colleges with its advantages and disadvantages. It also elucidates the higher vocational nursing professional group's opportunity and probability of being threatened by political (including law), economic, social, and technical factors. These factors are the four dimensions of stratification, which form a more complex concrete external environment analysis to derive a conclusion.

This study reveals higher vocational nursing professional groups' internal advantages and external opportunities. It also studies various combinations of internal advantages and external threats, internal disadvantages and external opportunities, internal disadvantages and external threat combination analysis. It implies a boost for higher vocational nursing professional groups with the rural revitalisation of social adaptation. This is done by coming forward with a comprehensive report, a dynamic grasp of the development trend of professional groups, and by providing a reference for the serviceability of higher vocational nursing professional groups for industrial optimisation (see Table 6).

Table 6. PEST-SWOT Analysis Matrix of the Construction of Nursing Professional Group to Promote Rural Elderly Care and Childcare

SWOT PEST		Politics (Contains Law)（P）	Economics（E）	Society（S）	Technology（T）
Internal Resources	S T R E N G T H	The nursing profession has a long history and solid foundation, is highly resource-open, and has formed a stable clustering effect. The various nursing professions are strongly interconnected and share expertise, creating a combined force of complementary professional knowledge and skills. The nursing profession's talent development model is mature. It benchmarks occupations, serves industries, and cultivates composite technical skilled personnel.			
	W E A K N E S S	The nursing profession's influence is limited by its level of education and geographical location, and it needs to improve its core competitiveness further. The "industrial chain" that the profession corresponds to has a large span and complex structure, and there may be a lag in internal updates and optimisation. Expanding the nursing profession's talent service area requires time for adjustment and adaptation.			
External Environments	O P P O R T U N I T Y	State and local governments promote the high-quality development of elderly care and childcare services, and the related policy support system is constantly being established and improved.	The overall regional economy is steadily and continuously growing, with special funds supporting and fiscal subsidies for constructing elderly care beds and childcare places.	Elderly care and childcare services are crucial to family happiness and are the foundation for ensuring and improving people's livelihoods.	The nursing profession has a mature knowledge and skills system, and the teacher team has comprehensive knowledge and abilities.
		It is strengthening the planning and layout of the elderly care and childcare industry, supporting social forces to establish elderly care and childcare institutions, activating regional resources, and establishing an "institution-led station" supply model for elderly care and childcare services.	Social forces establishing relevant institutions enjoy preferential policies such as land, financing, and investment, and multiple measures are taken to help struggling institutions, leading to a peak in the development of	"providing education for children and care for the elderly" is rooted in China's excellent traditional and advanced socialist culture.	The medical, childcare, and elderly care industries have complete industrial chains, strong technical expertise, and social forces with a specific service reserve.

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			elderly care and childcare.		
	Increasing efforts to build the elderly care and childcare service team, setting up relevant courses, co-building internship and training bases, and strengthening the training and development of elderly care and childcare personnel.	With the new population structure, the demand for elderly care, childcare, and investment has increased.	The awareness of "integrating medical care with elderly care and blending health with elderly care" has been enhanced.	The medical and health system has established elderly care and childcare institutions with improved facilities, ensuring operational support and reliable service supply and providing standardised industry guidance.
	The elderly care and childcare industry has not yet been formally legislated, and ethical risks exist.	Residents' limited willingness to rely on social institutions for elderly care and childcare is affected by their consumption level.	There is no consensus on understanding the elderly care and childcare industry in society.	The industrial project is complex, and the relevant expert consulting capabilities are insufficient, making it difficult to promptly connect with industry service personnel.
T H R E A T	Localising policy documents for elderly care and childcare has a short implementation period, and the execution path is unclear.	The economic development level in different regions is unbalanced, and the industrial plasticity is low.	The new industry is in the promotion and construction stage, and society members' trust in it is low.	The relevant institutions established by social forces have lagging equipment, insufficient implementation capabilities, and experience.
	The comprehensive regulatory and field information disclosure systems for elderly care and childcare are incomplete, and the mechanism for responding to various risks is not sound.	The downward trend of the social economy has led to a lack of investment, and there is insufficient development momentum for the elderly care and childcare industry.	Social capital intervention may weaken the universality and public welfare of the elderly care and childcare industry.	There is no complete continuing education system for midwifery, childcare, and elderly care industries, and the technology support is weakening.

5. DISCUSSION

The quantitative and qualitative analysis results provide an in-depth analysis of the internal and external conditions for the development of higher vocational nursing professional groups (HVNPGs) in the nursing of the elderly. Using the PEST-SWOT framework, this study has provided a multidimensional understanding of the success and challenges of vocational nursing programs and the political, economic, social, and technological factors at play.

These findings further contribute to the existing literature on vocational nursing education and provide important information on how such programs can be optimised to respond more effectively to the needs of an ageing population. The qualitative analysis revealed four key themes: economic sustainability,

social attitudes towards caring for the elderly, and technology's function in nursing education. The quantitative results support these themes, as the PEST-SWOT framework used to systematically assess the strengths, weaknesses, opportunities, and threats facing HVNPGs were consistent with the themes. Government policies and financial subsidies to researchers and entrepreneurs were critical quantitative and qualitative data factors.

Chang et al. (2024) show that in strong states with abundant governmental backing, vocational nursing programs are more robust in light of policies tied to targeted financial incentives. The PEST SWOT analysis further reinforced these findings, which provided opportunities for state and local governments to encourage the high-quality development of elderly care services. However, the analysis also revealed that inconsistent policy implementation and weak legislative engagement can make rural residents particularly vulnerable.

HVNPGs are still an economic challenge, particularly in uneven resource distribution areas. Our quantitative analysis showed that variations in economic support influence the quality of vocational nursing programs and their ability to supply high-quality care for the elderly. This follows previous research (Ibrahim et al., 2024; Landsberger, 2024), which points to the continued need for sustainable financial investment in vocational nursing education. Qualitative and quantitative findings highlighted that HVNPGs require stronger public-private partnerships to improve their financial viability and position them to meet rural and low-income communities better. At the same time, the state and local governments are advertising elderly care services. In addition, the finding reflects that much more must be done to address economic disparities that inhibit vocational nursing programs from reaching and affecting more people.

A second crucial factor influencing the development of HVNPGs was a societal attitude towards elderly care and nursing. The cultural perception of elderly care and nursing differed significantly from region to region, as exhibited by the qualitative data. The perception that elderly care and nursing were primarily regarded as the responsibility of the family rather than a professional service also influenced the attitude towards this profession. Positive perceptions of nursing are typical in regions like Japan and are associated with stronger vocational nursing programs. In contrast, regions with lesser societal support find it difficult to draw and keep skilled professionals (Erlandsson et al., 2023). To improve the status of HVNPGs and accommodate the increasing demand for elderly care, it is important to change the social attitudes towards elderly care and nursing.

The key theme emerging from the qualitative and quantitative findings was technological advancement in healthcare. Technological tools such as telemedicine and simulation enhance training and prepare nursing professionals (Takanokura et al., 2023). Therefore, technological tools play an increasingly important role in nursing education. Along with these findings, there is a significant disparity in access to technological aids in urban and rural regions.

According to Haase et al. (2023), the distribution of technological resources is uneven. It restricts some vocational nursing programs from fully integrating digital tools into their curricula, resulting in substandard care for the elderly population. The qualitative and quantitative analyses noted that technological integration is a double-edged sword. Even advanced technology can significantly improve nursing education and care for the elderly. However, they must consider the infrastructural shortcomings that inhibit the whole industry from realising its potential.

6. CONCLUSION AND RECOMMENDATIONS

This study thoroughly examines internal and external factors in the differentiation and success of higher vocational nursing professional groups (HVNPG) within regional elderly care. The research leverages PEST-SWOT to identify and determine the key political, economic, social, and technological elements affecting vocational nursing education and its ability to respond to the emerging needs of elderly care services. These findings also emphasise that political support and economic viability are necessary to promote the growth of HVNPGs. However, social attitudes and technological gaps are important factors that must be overcome to maximise the performance of these institutions.

The study concluded that governments' political and financial backing and the fostering of public-private partnerships helped increase the extent and depth of vocational nursing education. Nevertheless, these programs are unsustainable when the economic support between these programs is unevenly distributed, especially in rural and low-income regions. Additionally, nursing is stymied by the societal undervaluation of the nursing profession coupled with gender biases that serve to limit the appeal of these programs to talented healthcare professionals. The technologies used in nursing education were also highlighted with advanced tools like telemedicine and digital simulations, which can offer great potential for training improvements. However, technological inequities hinder broader adoption in some regions.

6.1 Limitations and Future Directions

This study is based on qualitative and quantitative data from institutional stakeholders, nursing educators, healthcare administrators, and government officers. This data offers important guidance on organisational and policy-driven factors that help drive HVNPGs but does not account for the perspectives of nursing students or the elderly population that HVNPGs directly serve. Future research should include these key groups' experiences and perceptions to understand better the contextual challenges and opportunities for vocational nursing education and elderly care. Another limitation of this study is that the data collection was cross-sectional. The findings endorse the current status of vocational nursing programs and their position in elderly care, though they do not reflect long-term trends or the changing healthcare atmosphere. Longitudinal studies are required to understand how HVNPGs adjust to this rapid technological advancement and changes in therapeutic policies. Future research could look into different things, including how new healthcare technologies, like artificial intelligence and robotics, are changing the curriculum and practice of vocational nursing education in elderly care settings.

As healthcare technology advances into the future, future studies will also explore how vocational nursing programs can incorporate new digital tools and innovations in advancing the preparation of nurses to deal with the modern needs in healthcare. Finally, future research can address policy evaluation related to how government interventions and funding models affect the sustainability and scalability of HVNPGs in different regions. Future research can help fill these gaps, strengthening vocational nursing programs and elderly care services worldwide.

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