

## Original Research Article

# Developing a framework for the expansion of community pharmacy operations in Nigeria: A Delphi study

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## Abstract

**Purpose:** To develop and validate a framework to assess readiness for business expansion by community pharmacies.

**Methods:** A three-round Delphi process was conducted with 16 community pharmacy experts selected by the snowballing method, aimed at building consensus on key indicators of readiness to scale. The study instrument was a 4x4 matrix developed by mapping four Ansoff's product-market growth strategies against four analysis domains of Strengths-Weaknesses-Opportunities-Threats (SWOT). Each matrix cell contains expert-validated indicators of readiness, scored on a 5-point Likert scale. Psychometric validation of the framework utilized a pilot test involving 12 randomly selected community pharmacists. Cronbach's alpha reliability, split-half and McDonald's Omega coefficients were determined.

**Results:** The draft framework contained 80 items, of which 5 were removed and 6 were revised following round 1 survey. Round 2 survey achieved consensus on 71 items. The final round removed 3 of the 4 non-consensus items, while one was revised, yielding a final 72-item framework. The framework demonstrated excellent internal consistency and reliability, with Cronbach's alpha (0.987), split-half (0.981), and McDonald's omega (0.985) confirming its psychometric strength.

**Conclusion:** This framework enables community pharmacists to align growth strategies with organizational capabilities and external conditions, and could be adapted to other business contexts.

**Keywords:** Ansoff's matrix, Business expansion, Community pharmacy, Scale up operations, SWOT analysis

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## INTRODUCTION

The community pharmacy market has evolved significantly in recent years, driven by increasing demand for accessible healthcare, digital transformation, and the growing involvement of pharmacists in public health services [1]. Despite

these opportunities, many independent community pharmacies in Nigeria face challenges in scaling up their operations to increase market share, expand service offerings, and enter new markets [2]. These challenges may include limited financial and institutional resources, regulatory constraints, operational

inefficiencies, and inadequate understanding of the competitive environment [3]. The absence of an evidence-based framework to guide expansion decisions further increases the risk of unsuccessful growth initiatives.

Among the available strategic planning tools, the Ansoff matrix identifies four growth pathways: market penetration, product development, market development, and diversification [4]. Each strategy offers distinct opportunities for expansion but is associated with different levels of risk and resource requirements. However, strategic decisions based solely on growth pathways may overlook the organisational and environmental factors that ultimately determine implementation success.

The analysis of an organisation's internal Strengths and Weaknesses, alongside external Opportunities and Threats (SWOT), could complement Ansoff's perspectives [5]. Together, these factors shape the organisation's capacity to pursue and sustain growth. In practice, however, Ansoff and SWOT are often applied independently, limiting their ability to provide comprehensive guidance for scale-up decisions. Furthermore, both frameworks have attracted criticism for oversimplifying complex business realities and for their susceptibility to subjective interpretation [6,7].

There is a growing need for an integrated framework that links strategic growth options with organisational readiness and environmental conditions. The Delphi technique seems most suitable to build such a framework as it has been widely used to develop consensus-based tools, frameworks, and guidelines in healthcare settings [8, 9]. Therefore, this study aimed to develop a hybrid Ansoff–SWOT matrix through a Delphi process and to evaluate its psychometric properties. By integrating growth strategies with organisational and environmental assessment, the framework seeks to provide community pharmacies with a structured, evidence-based approach to scale-up decision-making.

## METHODS

### Study design

The study was a 3-round, sequential Delphi process employing iterations of online surveys involving a group of 16 community pharmacy experts with the goal of building consensus. The instrument was a 4x4 matrix developed by combining the 2x2 Ansoff's product-market matrix with the 2x2 strengths-weaknesses-opportunities-threats (SWOT) matrix. This was

followed by a pilot survey of community pharmacists to validate the instrument.

### Study participants

The Delphi panel comprised 16 selected community pharmacy experts from across Nigeria. Panelists were required to have had a minimum of 10 years' practice experience as business leaders in community pharmacies with evidence of organizational performance and business growth. The experts were purposively selected from the States with the highest population of community pharmacists in each of the six geopolitical zones of Nigeria, based on data from the Pharmacy Council of Nigeria [10]. Expert nomination was done using purposive and snowballing methods, while their written informed consent was necessary to finally select at least 2 experts per State. The size ( $n = 16$ ) was considered appropriate given that the Delphi process was expert - based and depth was more relevant than breadth, while a wider variety of competences and larger panel sizes might be counterproductive as established by previous evidence [11].

### Development and administration of survey instruments

In line with applicable norms for an expert-based Delphi process, the questionnaire for Round 1 survey was exploratory and generative in orientation and comprised two sections. Section 1 sought relevant participant-related information such as practice experience, type and size of pharmacy organization, and highest educational qualification, while ensuring expert anonymity. Section 2 proposed an equal number of items ( $n = 5$ ) for every intersection of the 4x4 Ansoff-SWOT hybrid matrix. Items were generated from a detailed review of relevant literature [8,12-14]. Respondents were requested to assess each item for relevance and clarity and indicate whether the item should be retained. A dichotomous scale of YES or NO was applied. Open-ended suggestions and comments were also solicited.

The questionnaire for Round 2 survey was developed using feedback from Round 1 and was evaluative and judgmental in orientation. The number of items per quadrant of the 4x4 matrix was no longer uniform, as some items were expunged while some others were revised in line with experts' suggestions in Round 1. A rank order scale was applied in which the experts rated each item based on how appropriate they perceived it to be as a measure of readiness to scale up within the specific strategic quadrant of

the matrix. The ranks ranged from “not at all appropriate”, “slightly appropriate”, moderately appropriate”, “appropriate”, to “highly appropriate”. For Round 3 survey, which was conclusive in outlook, the output of Round 2 was presented to the panelists alongside the 4 items for which there was no consensus. Respondents were requested to express their final verdicts on the framework and whether they preferred the outstanding 4 items to be removed, retained, or revised.

### Psychometric validation of the hybrid matrix

The final framework was administered to 12 randomly selected community pharmacists from Lagos State, being the most populous State for community pharmacists in Nigeria [10]. They were requested to respond to the items with a mind reflecting on the possible expansion of their retail pharmacies. Their responses were used to pilot test and assess key psychometric properties of the instrument.

### Data analysis

For all three rounds of the Delphi process, consensus criteria were as follows:

≥ 70 % (n ≥ 11) of experts responding “yes”, “appropriate,” or “highly appropriate” = Retain.

55 - 69 % (n = 8 - 10) of experts responding “yes”, “appropriate,” or “highly appropriate” = Revise.

< 55 % (n < 8) of experts responding “yes”, “appropriate,” or “highly appropriate” = Remove.

In analyzing responses to the final framework, the score for each cell (intersection) is computed by dividing the total mean score per cell (intersection) by the number of items in the cell, as illustrated in Eq 1. Readiness for Market Penetration is calculated using Eq 2.

$$\text{Cell Score (MPS)} = \frac{\sum \text{Item Scores in MPS}}{\text{Number of items in MPS}} \quad (1)$$

$$\text{MP Score} = \frac{\text{MPS} + \text{MPW} + \text{MPO} + \text{MPT}}{4} \quad (2)$$

Where MP = Market penetration; S = Strength; W = Weakness; O = Opportunity; T = Threat

Interpretation of readiness scores:

MP Score 1.00 – 2.49 = Not ready to scale via MP (red flag); 2.50 – 3.49 = Nearly ready to scale via MP (yellow flag); 3.50 – 5.00 = Ready

to scale via MP (green light). Choosing the most feasible scale-up strategy for a pharmacy entails comparing readiness scores across the different scale-up strategies. The strategy with the highest score, and within the “ready to scale” region, is the most feasible. For the psychometric validation of the instrument, Cronbach's alpha reliability coefficient, the split-half index and McDonald's omega were computed.

## RESULTS

### Demographic characteristics of study participants

Two sets of respondents participated in the study: the Delphi panelists and the community pharmacists used for reliability/pilot testing of the final framework. Table 1 presents demographic variables of the Delphi panelists. All 16 experts who consented to participate in the Delphi process completed all 3 rounds of the consensus-building exercise, achieving a 100% response rate. The online format of the surveys made their participation easy and convenient, while regular, polite follow-up messages seemed to have contributed to the zero-attribution rate. Panelists perceived that their participation constituted some form of service to the profession and this helped to drive their patience with the seemingly long iterative process.

For instrument validation, a total of 12 participants were interviewed, comprising 7 (58.3 %) males and 5 (41.7 %) females, with a median age of 53 years (range: 38–69 years). Regarding educational qualifications, two-thirds (8; 66.7%) held a B.Pharm or Pharm.D degree, while 2 (16.7 %) each possessed a master's degree or Fellowship of the West African Postgraduate College of Pharmacists (FPCPharm). More than half (7; 58.3%) were pharmacy owners, whereas 3 (25.0 %) were pharmacy managers and 2 (16.7 %) were superintendent pharmacists. Participants had a median community pharmacy practice experience of 8 years (range: 5–31 years). Most practiced in independent retail pharmacies (9, 75.0%), while 2 (16.7 %) worked in wholesale pharmacies and 1 (8.3 %) in retail chain pharmacies.

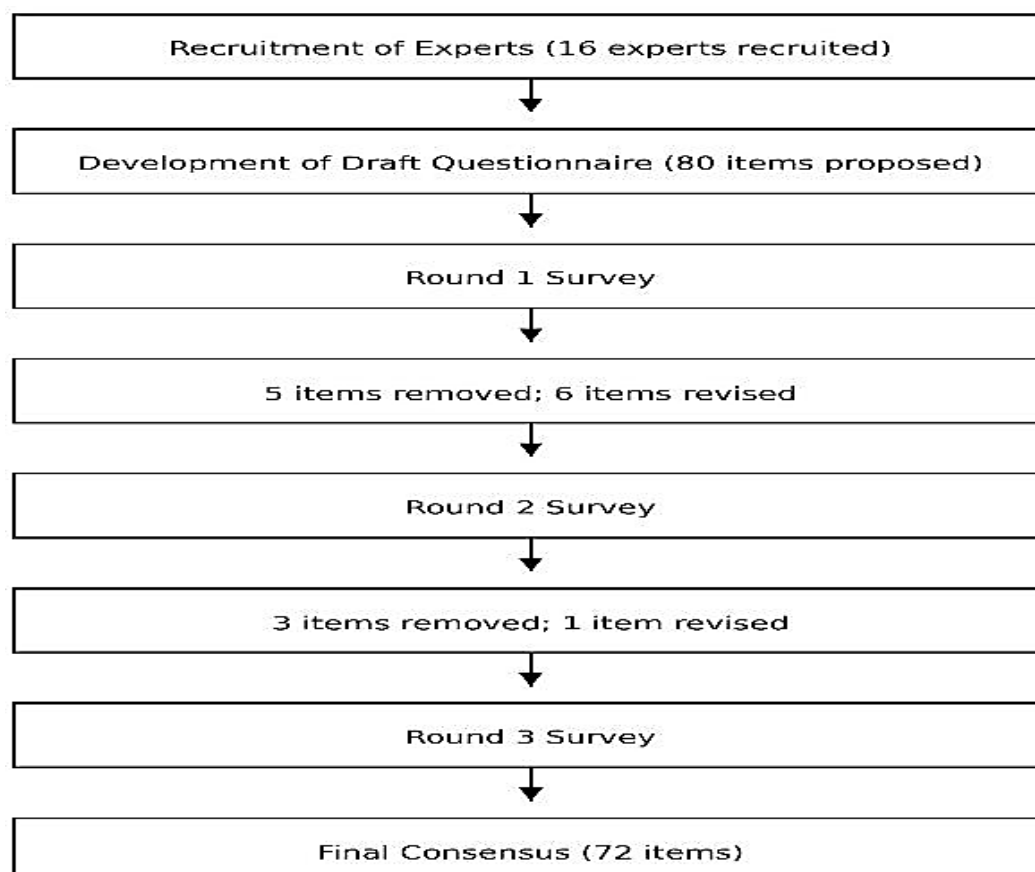
### The Delphi process

Figure 1 presents the flow chart of the Delphi process, with the rectangular shapes indicating the actions taken at every stage and the arrows showing the direction of the activities. Explanatory statements are enclosed in parentheses within the rectangular shapes.

**Table 1:** Demographic characteristics of Delphi Panelists (N = 16)

| Variable                             | Categories                    | Frequency | %    |
|--------------------------------------|-------------------------------|-----------|------|
| Sex                                  | Male                          | 11        | 68.8 |
|                                      | Female                        | 5         | 31.2 |
| Age (Yrs.)                           | Median 58 (Max-Min = 71 - 44) |           |      |
| Highest Educational Qualification    | B.Pharm./Pharm.D              | 5         | 31.2 |
|                                      | M.Pharm/M.Sc./Other Masters   | 9         | 56.3 |
|                                      | FPCPharm                      | 2         | 12.5 |
| Pedigree with the Profession         | FPSN                          | 9         | 56.3 |
|                                      | FNAPharm                      | 4         | 25.0 |
|                                      | FPCPharm                      | 2         | 12.5 |
|                                      | DSA                           | 1         | 6.25 |
| Position in your Organization        | Pharmacy Owner                | 14        | 87.5 |
|                                      | Pharmacy Manager              | 1         | 6.25 |
|                                      | Superintendent Pharmacist     | 1         | 6.25 |
| Community practice experience (Yrs.) | Median 16 (Max-Min = 39-11)   |           |      |
| Type of Community Pharmacy           | Independent retail            | 9         | 56.3 |
|                                      | Retail Chain                  | 6         | 37.5 |
|                                      | Wholesale                     | 1         | 6.25 |
| Distribution of Panelists            | Southwest (Lagos)             | 4         | 25.0 |
|                                      | South-South (Rivers)          | 3         | 18.8 |
|                                      | Southeast (Anambra)           | 2         | 12.5 |
|                                      | North Central (Abuja FCT)     | 3         | 18.8 |
|                                      | Northwest (Kaduna)            | 2         | 12.5 |
|                                      | Northeast (Borno)             | 2         | 12.5 |

**Abbreviations:** B.Pharm – Bachelor of Pharmacy; PharmD – Doctor of Pharmacy; M.Pharm – Master of Pharmacy; M.Sc – Master of Science; FPCPharm – Fellow of West African Postgraduate College of Pharmacists; FNAPharm – Fellow of Nigeria Academy of Pharmacy; FPSN – Fellow of Pharmaceutical Society of Nigeria; DSA – Distinguished Service Awardee; FCT – Federal Capital Territory

**Figure 1:** Flow Chart of Delphi Process for a framework for community pharmacy scale-up

## The final framework for community pharmacy expansion

Below is the framework intended to guide community pharmacists who plan to expand.

### INSTRUCTIONS

Please note that “**Expansion**” here refers to the various mechanisms by which a retail pharmacy outlet attempts to **scale up** its scope of operations to serve more customers, increase market share and exploit new markets. This framework presents 4 optional **scale-up strategies** for the community pharmacy business:

**Market Penetration (MP):** The pharmacy expands by offering more of its current products and services in its current market/location

**Product Development (PD):** The pharmacy expands by developing new products and services in its current market/location

**Market Development (MD):** The pharmacy expands by offering its current range of products and services in a new market/location

**Diversification (DV):** The pharmacy expands by venturing into a totally new market/location with a new product/service.

To enhance the success of the scale-up, the pharmacy takes stock of the following **SWOT** factors:

**Strengths (S):** Positive attributes of the pharmacy enterprise that increase the odds of successful business expansion

**Weaknesses (W):** Negative attributes of the pharmacy enterprise that limit its ability to successfully scale up

**Opportunities (O):** Factors and trends in the external environment that present potential for the pharmacy to successfully scale up

**Threats (T):** Factors and trends in the external environment with the potential to harm the pharmacy and negatively impact scale-up efforts. For each intersection in the 4x4 matrix (Table 2), relevant items are presented in Table 3 a & b with serial numbers representing the intersection. Respondents were required to study Table 2 before responding to items in Table 3 a & b. In responding to Table 3 a & b, please think about the possible expansion of your retail pharmacy operations from its current level to a larger scale,

and rate each item based on how **applicable** it is to your retail pharmacy as of the present moment.

### Psychometric properties of the hybrid matrix

Table 4 presents the results of the psychometric validation of the hybrid matrix, showing outputs for the entire scale as well as those of individual domains.

### Pilot testing/validation of the hybrid matrix

Table 5 presents the results of the pilot testing and validation of the matrix, with the mean of means representing the readiness to scale. To determine the most viable scale-up strategy, the pharmacy's scores for the four different strategies can be compared. The strategy with the highest score within the “ready to scale” range becomes the most viable.

## DISCUSSION

This study aimed to fill an important gap in empirical evidence for decision-making in business expansion. Business decisions based on empirical evidence are more robust, based more on facts and less on personal biases or intuitions, and hence have better chances of successful implementation [15]. While the hybrid Ansoff-SWOT matrix developed by this study is based on data from community pharmacies, it is envisaged that organisations in other sectors can adopt or adapt it to their markets. This hybridization offers a comprehensive strategic and diagnostic planning tool that aligns strategic options with capabilities and contexts of individual pharmacies. It provides a guide to improved effectiveness in the choice of scale-up strategy and efficiency in the deployment of organisational resources in the scale-up endeavour, thereby improving overall organisational performance [9,12].

In whole and in part, the framework exhibited excellent psychometric reliability. The high Cronbach's alpha reliability coefficients (above 0.9) confirm that the items within each intersection measure the same underlying construct [16]. The split-half coefficient, which tests how well different halves of the test measured the same construct, also yielded indices ranging from 0.878 (very good reliability) to 0.981 (excellent reliability) [17]. This further confirms the instrument's stability by demonstrating that responses are consistent across different subsets of items. For even more emphasis, McDonald's omega, which measures

how much of the variance in total scores is due to a common underlying factor, produced indices above 0.9 for all the scale-up strategies. This index, which provides a more accurate estimation of reliability, even when items are not tau-equivalent (that is, have different factor loadings), yielded high outputs ( $\geq 0.80$ ), further reinforcing the claim that the scale captures a coherent latent construct for strategic readiness [18].

The pilot findings suggest that the 4×4 Ansoff–SWOT matrix is a useful tool for objectively assessing community pharmacy readiness for scale-up. All respondents scored within the "yellow flag" range (2.88–3.24), indicating moderate readiness and the need for further capacity building before expansion. This underscores the importance of strengthening both organisational capabilities and environmental positioning before implementing growth strategies.

**Table 2:** The Hybrid ANSOFF-SWOT matrix for community pharmacy scale-up

| Scale-up strategy        | Strengths (S) | Weaknesses (W) | Opportunities (O) | Threats (T) |
|--------------------------|---------------|----------------|-------------------|-------------|
| Market Penetration (MP)  | MPS           | MPW            | MPO               | MPT         |
| Product Development (PD) | PDS           | PDW            | PDO               | PDT         |
| Market Development (MD)  | MDS           | MDW            | MDO               | MDT         |
| Diversification (DV)     | DVS           | DVW            | DVO               | DVT         |

**Table 3a:** Readiness to scale up community pharmacy operations. Responses include: **NA** - Not at all Applicable; **SA** - Slightly Applicable; **MA** – Moderately Applicable; **AP** – Applicable; **HA** – Highly Applicable

| S/N  | Statement                                                                            |
|------|--------------------------------------------------------------------------------------|
| MPS1 | My pharmacy has a strong customer base that can support expanded services            |
| MPS2 | I effectively leverage customer loyalty programs to increase repeat purchases        |
| MPS3 | My pharmacy brand is well recognized in my community.                                |
| MPS4 | I have a good relationship with suppliers, allowing competitive pricing              |
| MPS5 | My staff is skilled in delivering excellent customer service                         |
| MPW1 | My pharmacy lacks an effective marketing strategy to attract more customers          |
| MPW2 | I struggle to maintain a steady stock of essential medicines                         |
| MPW3 | My current pricing structure limits my competitiveness                               |
| MPW4 | Limited working capital hinders my ability to increase sales                         |
| MPO1 | I see an opportunity to expand sales through online marketing                        |
| MPO2 | The growing demand for chronic disease medications presents an expansion opportunity |
| MPO3 | Expanding our range of over-the-counter (OTC) medications could increase revenue     |
| MPO4 | Implementing a home delivery service could improve customer retention                |
| MPO5 | Collaborating with local healthcare providers could drive more sales                 |
| MPT1 | Competition from online pharmacies threatens my business growth                      |
| MPT2 | Regulatory changes may increase my operational costs                                 |
| MPT3 | Rising costs of medications make it difficult to maintain profitability              |
| MPT4 | The emergence of large pharmacy chains could reduce my customer base                 |
| MPT5 | Price undercutting by competitors affects my ability to expand                       |
| PDS1 | My pharmacy has the capacity to introduce new healthcare products.                   |
| PDS2 | I have a team capable of handling new product categories                             |
| PDS3 | My business can leverage supplier relationships to get new products.                 |
| PDS4 | I have access to data on changing customer preferences for product development       |
| PDS5 | My pharmacy has a strong brand equity that supports new product launches             |
| PDW1 | I lack the knowledge to identify high-demand new products                            |
| PDW2 | My pharmacy does not have enough space to expand product offerings.                  |
| PDW3 | Limited financial resources prevent me from introducing new products                 |
| PDW4 | There is inadequate staff training for handling new products                         |
| PDW5 | My pharmacy has difficulty keeping up with changing customer preferences             |
| PDO1 | I could expand into telepharmacy services to offer virtual consultations             |
| PDO2 | Collaborating with manufacturers could help in launching exclusive products          |
| PDO3 | Partnering with clinics could help introduce specialized health products             |
| PDO4 | Rising health awareness creates demand for more wellness products                    |
| PDT1 | Regulatory restrictions make it difficult to launch new pharmacy services            |
| PDT2 | Customers may not accept new products due to brand loyalty elsewhere                 |
| PDT3 | Introducing new products may require significant financial investment                |
| PDT4 | High supplier costs may make new product lines unaffordable                          |
| PDT5 | The presence of large pharmacy chains makes competing with new products challenging  |

**Table 3b:** Readiness to scale up community pharmacy operations. Responses include: **NA** - Not at all Applicable; **SA** - Slightly Applicable; **MA** – Moderately Applicable; **AP** – Applicable; **HA** – Highly Applicable

| S/N  | Statement                                                                   |
|------|-----------------------------------------------------------------------------|
| MDS1 | I have identified underserved areas where my pharmacy could expand          |
| MDS2 | My pharmacy has a good reputation that would support new locations          |
| MDS3 | I have a team that can manage business expansion effectively                |
| MDS4 | I have strong supplier relationships to support multi-location operations   |
| MDW1 | My business model does not currently support multi-location expansion       |
| MDW2 | Financial constraints limit my ability to expand                            |
| MDW3 | Managing staff across multiple locations would be a challenge               |
| MDW4 | My pharmacy does not have a clear expansion strategy                        |
| MDO1 | There is demand for pharmacies in underserved communities                   |
| MDO2 | Expanding into rural areas could create a strong customer base              |
| MDO3 | Government incentives could support my expansion efforts                    |
| MDO4 | Franchising my pharmacy brand could be a viable growth strategy             |
| MDO5 | Partnering with hospitals could increase business opportunities             |
| MDT1 | High rental costs in new areas may limit expansion                          |
| MDT2 | Regulatory licensing requirements could slow down new openings              |
| MDT3 | Increased operational costs may outweigh the benefits of expansion          |
| MDT4 | Existing competition in new areas may make entry difficult                  |
| MDT5 | Difficulty in finding qualified staff for new locations                     |
| DVS1 | My pharmacy has the capacity to add a new business in a new location        |
| DVS2 | My business is adaptable to new trends                                      |
| DVS3 | I am experienced in handling multiple business operations                   |
| DVS4 | I have strong financial management skills to support a new business venture |
| DVW1 | My financial resources are limited for new business ventures                |
| DVW2 | I have not conducted a feasibility study on a new business venture          |
| DVW3 | My team is not trained for diversification into new business models         |
| DVW4 | I lack partnerships that could facilitate diversification                   |
| DVO1 | The demand for wholesale pharmacy operations is increasing                  |
| DVO2 | There is a market for pharmacy-led wellness services                        |
| DVO3 | Partnering with local businesses could support diversification              |
| DVO4 | The rise of e-commerce presents opportunities for online sales.             |
| DVT1 | Market saturation in some areas may limit diversification success           |
| DVT2 | High investment costs may make investment in novel ventures risky           |
| DVT3 | The failure of a new business model could impact overall operations         |
| DVT4 | Competition from established businesses in new sectors may be strong        |

**Table 4:** Reliability coefficients of the 4x4 matrix for community pharmacy expansion

| Scale-up strategy        | N  | Cronbach's Alpha | Split Half | McDonald's Omega |
|--------------------------|----|------------------|------------|------------------|
| Full scale               | 72 | 0.987            | 0.981      | 0.985            |
| Market Penetration (MP)  | 19 | 0.961            | 0.965      | 0.953            |
| Product Development (PD) | 19 | 0.954            | 0.878      | 0.949            |
| Market Development (MD)  | 18 | 0.959            | 0.975      | 0.956            |
| Diversification (DV)     | 16 | 0.945            | 0.911      | 0.935            |

**Table 5:** Mean domain performance from the pilot testing/validation of the hybrid matrix (n = 12)

| Scale-up strategy        | Strength (S) | Weaknesses (W) | Opportunities (O) | Threats (T) | Mean of Means |
|--------------------------|--------------|----------------|-------------------|-------------|---------------|
| Market Penetration (MP)  | 3.57         | 2.48           | 3.52              | 3.40        | 3.24          |
| Product Development (PD) | 3.20         | 2.43           | 2.93              | 2.94        | 2.88          |
| Market Development (MD)  | 3.06         | 3.00           | 3.15              | 3.16        | 3.09          |
| Diversification (DV)     | 3.17         | 3.13           | 3.15              | 3.15        | 3.15          |

Market penetration recorded the highest readiness score, suggesting that expansion through existing products and markets may be the most feasible strategy for participating pharmacies. This finding aligns with Ansoff's proposition that market penetration is generally

associated with lower risk because it leverages existing products, competencies, and customer bases [4]. Conversely, product development demonstrated the lowest readiness score, indicating greater demands on innovation, resources, and operational capabilities. The

findings also support the practical applicability of the hybrid matrix. While traditional Ansoff theory ranks market penetration as the least risky strategy, product development and market development as moderately risky, and diversification as the highest-risk option [4, 6], the pilot results showed product development performing below diversification. Although this observation should be interpreted cautiously given the limited sample size, it suggests that strategic risk may be influenced not only by the chosen growth pathway but also by the degree of alignment between organisational strengths and external opportunities. In addition to assessing readiness, the matrix identifies specific areas requiring improvement by linking strategic options to internal strengths and weaknesses as well as external opportunities and threats. This provides pharmacy owners and managers with actionable guidance for targeted capacity-building and resource allocation before embarking on expansion initiatives. Beyond business expansion, the central goal of community pharmacy is the improved access to quality medicines and professional pharmacy services within the community [19]. The effectiveness of the scale-up of pharmacy operations must be demonstrated in the continued availability of the pharmacist to patients with or without prior appointment, identifying and triaging health-related problems, participating in health promotion, ensuring the effectiveness of medicines, preventing harm from medicines, and optimizing scarce healthcare resources [20]. By adopting the systematic approach proposed by this study, the framework becomes a quality assurance tool that safeguards the core professional mission of community pharmacy even as the business expands. The relevance of the framework to the mission of community pharmacy is significant both to practitioners who are enabled to identify areas of strength and weaknesses in their growth potential, and to regulators, pharmacy interest groups, and business consultants who design tailored regulatory and capacity-building interventions, especially as community pharmacists take on expanded clinical and public health roles [1]. The framework developed by this study can arguably guide scale-down decisions in community pharmacy operations or switching from one scale-up strategy to another in line with evidence from the organisational and environmental audit of the 4x4 matrix.

### Limitations

This study is limited by the localized pilot-testing, which focused only on Lagos State, thus failing to evaluate the scale's performance in diverse

geo-political contexts represented by the diverse practice ecosystems across Nigeria. Moreover, the absence of a content validity index and exploratory factor analysis represents important limitations to the validity testing of the scales.

## CONCLUSION

This study developed a novel hybrid framework that merged the benefits of four strategic scale-up options with an audit of organizational and environmental conditions. It established an important consensus among community pharmacy experts regarding relevant elements of the framework and tested the psychometric reliability of the matrix for expanding the scope of retail pharmacy operations in a resource-constrained setting such as Nigeria. Adopting the framework as a guide for scale-up decisions could improve organizational performance while minimizing downstream risks.

## DECLARATIONS

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### Ethical considerations

Ethics approval for this study (BSHREC/Vol.1/24/01/015 dated 23rd January 2024) was obtained from the Bayelsa State Health Research Ethics Committee. The study adhered to the 1964 Helsinki Declaration and its later amendments, while strict anonymity was maintained throughout the survey. All participants gave their written informed consent before participating in the study.

### Conflicts of Interest

The authors declare no competing interests

### Data Availability

All data related to this study are available upon reasonable request to the corresponding author.

## Contribution of authors

We declare that this work was done by the author(s) named in this article, and all liabilities pertaining to claims relating to the content of this article will be borne by the authors.

ME: Study design, data acquisition and interpretation, report review and approval, fund acquisition

MRI: Conceptualization, data acquisition and analysis, report drafting, review and approval

DA: project management, data interpretation, report review and approval

PKO: supervision, report review and approval

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