



## Research article

# Measurement model for community enterprise management strategies

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## ARTICLE INFO

**Keywords:**

Logistics management  
Service quality management  
Marketing management  
Production management  
Product design management

## ABSTRACT

Community enterprises in Thailand are facing a highly competitive marketing challenge, an inability to hand on business to the next generation, and a lack of a flexible goods production system. This study aims to develop a measurement model for community enterprise management by surveying the expectations of 500 entrepreneurs in a community enterprise group using a questionnaire. This study uses exploratory factor analysis and confirmatory factor analysis. The objective is to develop critical strategies for overcoming obstacles and creating sustainability for organizations, comprising eight dimensions: product design management, production management, logistics management, product quality and standard management, marketing management, knowledge management, service quality management, and organization management. The study results can be used to effectively solve and improve the community enterprise's operation and continuously develop it per the entrepreneur's expectations. Moreover, the government sector can use this method to determine the policy toward supporting more sustainable community enterprises. The government can also use this approach to set policies, promote the creation of an environment conducive to community enterprise operations, and create added value for community businesses through the identity of the area to support community enterprises to be more sustainable.

## 1. Introduction

Community enterprise originated with continuously developing a community economy, or sustainable economy. In contrast, a community enterprise is classified as a group of community activities through learning, not a single activity that aims for a large market. They are not complex activities, but about production for consumption to subsidize buying products from the market and producing and consuming in daily life. However, in the era of rapid change in business competition, community entrepreneurs must promptly make adjustments to survive, while they pursue the main goal of sustainable growth for community enterprises [1]. The impacts of being a community entrepreneur on organization and operation management are increasing competitive capabilities, proper resource usage, and integrating a response to the changing environment. Community enterprise development for the base economy emphasizes economic opportunity creation and the development and promotion of a new era of community entrepreneurs who can manage production and make sales.

Community Enterprise Promotion Division [2] Community enterprises in Thailand during 2018–2022 Overall, in 2022, there were

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<https://doi.org/10.1016/j.heliyon.2024.e38744>

Received 17 April 2024; Received in revised form 16 September 2024; Accepted 29 September 2024

Available online 30 September 2024

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81,748 community enterprises, 54.95 percent of which were in the agricultural sector, followed by 39.73 percent in the manufacturing sector and 3 percent in the service sector. The GDP value was 449,046 million baht, accounting for 2.6 percent of the country's GDP, and 5,446,192 jobs, accounting for 30.25 percent of the country's total employment. The government therefore places importance on community enterprise operations. However, the number of community enterprises registered nationwide in 2018 was 14,316; in 2019, there were 13,451; in 2020, there were 13,660; in 2021, there were 13,812; in 2022, there were 11,663. From past data, it was found that the number of community enterprise group registrations tends to decrease, which is in line with the government policy that wants to support the establishment of more community enterprises.

The government views community enterprise as an economic activity and a main tool to make recovery and strengthen the community economy, as it is the overall country's based economy, according to the model scheme under national strategy (years 2023–2037) to promote and develop the Small and Medium Enterprises: SMEs, to strengthen entrepreneurs, to create opportunities to reach financial services and markets, to make an ecosystem that supports business operations, and to create rules that build a solid income-distributing structure for the community economy [3]. A successful community enterprise should begin with a small business operation using non-complicated technology for local consumption and the community market. While having the skilled and professional training, along with learning about the demands of a continuously changing market, it will slightly develop to the use of modern technology by having production control to obtain product standards and be ready for trading competition. Processes leading to community enterprise development have to rely on a body of knowledge, local wisdom, economic and social knowledge, marketing management, production technology, and modern management.

Since 2020, according to the COVID-19 epidemic in Thailand, community enterprises have been highly affected, especially business revolving funds. Even though they were allowed to delay bank (loan) payments, there was still a limitation on additional fund provision for business operations, including the low turnover during the COVID-19 epidemic, causing a slow recovery of community enterprises. Some entrepreneurs had to reduce production or lay off their labor due to decreasing product demands in the market. In 2022, the total GDP was 6,105,604 million Baht, accounting for 35.2 % of the total GDP that was previously increased by 34.5 % with a 4.5 % rate of expansion, which was continuously expanded after the 2.8 % rate of expansion in 2021. For the overall picture of 2022, community enterprises had better adjustment compared to the COVID-19 epidemic period [4]. There was government promotion to spur tourism measures and encourage consumers to purchase more, causing quicker adaptation of community enterprises compared to large-scale businesses because they have a non-complicated business structure and require a small investment. Entrepreneurs had adjusted themselves, and the government directly supported the business. However, the global inflation problem affected the cost of product's raw materials, and the price of oil also caused a higher cost of community enterprise's products and services. For a community enterprise's business operation, it is difficult to increase the product's price due to the lower consumption recovery. So, community enterprises have to carry some costs, causing less profit.

Organizing a group of community enterprises requires the initiative and administrative organization of local community members who share collective benefits [5]. To encourage effective community enterprise management, they must understand product design, effective production, and product quality and standards. From the community enterprise working group's point of view, they must continuously develop and improve the product to generate profit and respond to constantly changing consumer demands because community enterprises are a channel that helps community members have extra income. Community enterprises are very close to the community and have a better chance of being acknowledged when there is product or service preparation. It is beneficial for small organizations to focus on the production process that reduces environmental impacts on the community, which can easily attract potential customers. Entrepreneurs should make a difference in their products and services to differentiate themselves from the competition [6].

A matter that we should pay attention to in community enterprise management is community entrepreneurship, which is important for economic growth. Entrepreneurs can drive a successful business to ensure the organization's survival [7]. Community enterprises and customers play a key role in pursuing survival goals, while there should be a strong motivation to support sustainable community entrepreneurship, which can help the whole community [8]. A literature review found that community entrepreneurs still encounter challenges, including a lack of discretion in business operations, skill management, business planning prioritization, and specific management knowledge such as product development, production, quality control, and marketing analysis [9]. The lack of an effective response strategy to handle change results in a high rate of failure during the startup period [10], a lack of organizational management experience, a high cost of production, a lack of revolving funds, poor product development management, and a lack of all-round data management [11].

A study on what makes compact and small community enterprises successful in Phetchaburi province, Thailand, using simple statistical analysis, found five factors that determine success: members' motivation to engage in entrepreneurship, systematic division of labor, accounting record, intelligent marketing, and quality assurance [12]. A study on the business patterns of herbal community enterprises in Thailand using structural equation model analysis, identified the factors as marketing channels, a competition advantage, logistics integration, and innovation management [13]. Moreover, several studies mentioned entrepreneurship, indicating it is a main way to lead to sustainable product and service development. Moreover, innovative knowledge and entrepreneurs' abilities are important in searching for new development opportunities. Thus, the entrepreneur is a key mechanism for sustainable community enterprise development [11,14,15]. However, there are existing concerns about obstacles to establishing a public enterprise community, including the lack of organization and administrative experience, production and quality control problems, inefficient product design, and low entrepreneurship skills. These are significant obstacles that might affect the long-term survival of community enterprises. In addition, knowledge management and community enterprise administration are important to sustainable product and service development, according to previous research.

There are several reasons why we choose to study the community enterprises in Bangkok, Nonthaburi, Pathum Thani, and

Samutprakarn, as follows: Firstly, these provinces have the greatest number of registered community enterprises in Thailand. Secondly, there are a variety of products and services offered by community enterprises. Most product types are processed foods, such as green tea drinks, Ventilago denticulata Willd tea in boxes, fruit juice, sun-dried snakeskin gourami, etc. Herbal products are coconut oil soap, herbal shampoo, herbal compresses, etc. Crafts/handmade are hand-woven cotton shawls, golden-design Thai Benjarong porcelain ware, genuine cowhide shoes, artificial flowers, etc. Services include cultural tourism, Thai traditional health services, community shops, community banks, etc. Thirdly, community enterprise product distribution can be done through OTOP's (One Tambon, One Product) social media or website in each district, sales at community enterprise shops, and still relying on government sector events. While product distribution fairs mostly hold in the districts of Bangkok, Nonthaburi, Pathum Thani, and Samutprakarn, which have the highest number of populations in Thailand, Fourthly, community enterprise employment is characterized by the integration of at least seven community members, in terms of company or non-company, to earn income for self-dependence and community benefits.

Inspiration for the study is the unsuccessful management of several community enterprises in Thailand, regarding suitable business operations and a lack of all-round performance evaluation, resulting in the inability to adjust to the highly competitive market. Community enterprises are channels that generate extra income for group members. Therefore, a question is whether any community enterprise management strategies help organizations sustainably operate their businesses. Referring to the literature review, we found that there is a lack of research on strategic management of community enterprises from the entrepreneurs' viewpoint, including a lack of diverse dimensions such as logistics management, product quality control, community enterprise's organization management, and service quality management. This study has considered factors that have less impact on community enterprise strategy in sustainability measurement models of community enterprise business.

The purpose of this research is to develop a measurement model for key strategies in community enterprise management. To meet these objectives, this study aims to answer the following research questions: RQ1: What factors are part of community enterprise management strategies from the entrepreneurs' perspective? This research question is designed to address the gaps in community enterprise management strategies in Thailand, especially in developing countries such as Thailand. This research supports community economic policy, which is the foundation of the development of a self-sufficient economy, as many community enterprises are at a level that is not ready to compete in business.

Therefore, the government must play a part in supporting them, such as by promoting knowledge by using local wisdom, guidelines for generating additional income, developing organizational management capabilities, and developing community enterprise operating models in order to strengthen the community economic system and develop it into a higher level of entrepreneurship for business units. In terms of theoretical support, it involves the development of a measurement model to assess entrepreneurs' perceptions of community enterprise management strategies. It also increases the theoretical understanding of how community enterprise management strategies are implemented to enable sustainable operations by using advanced statistical methods, such as second-order confirmatory factor analysis, to analyze the components of the internal factors of the management strategy study. In terms of practical support, it provides policymakers with insights and empirical data on effective strategies to increase the number of community enterprises, which supports the creation of more targeted and impactful policies. It provides valuable strategic business insights for community enterprise operations and the implementation of practices for improved sustainability, and it supports the transformation of small-scale economies into sustainability. This policy supports the appropriate use of community capital and community collaboration so that communities are strong and self-reliant.

Our study helps develop two kinds of knowledge: 1) understanding exploratory and confirmatory factor loadings of community enterprise management strategies from the entrepreneur's viewpoint; and 2) promoting the sustainable development of community enterprises in Thailand. Furthermore, we expect that the study indicators can be a method for community enterprises to solve problems and improve the efficiency of their operations to achieve continuous and sustainable development.

This article is organized as follows: Part 2 presents the literature and relevant research reviews. Part 3 provides the research methods, and Part 4 presents the research study results. Part 5 is the discussion, and Part 6 provides the conclusions and recommendations.

## 2. Literature review

### 2.1. Community enterprise

A community enterprise refers to community activities relevant to producing goods, services, or other operations managed by a group of legal or nonlegal people who share a way of life and gather for business operations to generate income and rely on themselves within a family, community, or intercommunity. A community enterprise is a tool to create self-reliance in a community economic system by adhering to the self-sufficiency principle. Moreover, an empirical study in India defined community enterprise as the incorporation of people to seek shared cultural, economic, and social goals through co-owned organizations controlled by a democratic regime. A community enterprise operates several activities, such as production, service provision, and natural resource management. These activities aim to add value to raw materials available locally (for products) and production factors (for services) to respond to consumer demand and add value to a product [11]. In Thailand, community enterprises are a survival strategy against crisis and risk. It is also part of the community income structure of the Thai government as a tool to stimulate self-employment [16]. Thus, a community enterprise is a type of grassroots economic development that creates community entrepreneurs while increasing community capability and roles using existing local resources. They increase employment and transform the production and distribution skills of several products [16,17]. The factors related to the management strategies of community enterprises are as follows.

## 2.2. Product design management

Product design management results from the process that leads to product creation, starting with process management, material selection, production capacity, and resources available in the development of prototyping. Product design in the SME business group is seen as a face-only operation, not planned, not structured, and not as successful as it should be when implemented [18]. However, product research and development have contributed to supporting the improvement of production processes [19]. Product design management is therefore critical to community enterprise operations. Questions such as “Developing products to meet customer needs” and “Improving the development of production processes to improve product quality and reduce production costs” indicate that managing good product design is a necessary strategy for community enterprises that need to find product development or new ways to run a business in order to remain competitive [20].

## 2.3. Production management

Production management produces products and services using the organization’s production resource process and responding to customer demand. Therefore, production management is important to business organizations and the country’s economic development. Production management comprises 1) the process, activity, or arrangement of equipment and material flow that affect product and service creation; and 2) operational organization management. Production management seeks to improve and increase the production process’s efficiency to obtain quantitative results at a low cost [21]. Items such as “our production techniques are adaptable or flexible” reflect the level of production capability to adapt to a variety of product forms. These community enterprise production management strategies can enable organizations to achieve higher production efficiency in order to meet the ever-changing customer demands and limited resources of small businesses [22].

## 2.4. Logistics management

Logistics management means planning, operating, and controlling the efficiency and effectiveness of mobility and storage of products, services, and data from the beginning to the utilization spot by considering customer demand. Effective logistics management can enhance the organization’s ability to provide customer service. Logistics is critical to an administrative department’s supply chain. From the production and service industries’ viewpoints, logistics management is considered a continuous activity that integrates several basic functions such as storage, transporting, circulation, transportation, and data transfer. It is a support activity for production and service [23]. Logistics integration plays a key role in increasing business efficiency [24]. There are six main goals of logistics management, including the right product in a suitable quantity, complete product condition, product delivered to the right place at the appropriate time, and proper cost [25]. Items such as “Packaging, timing, and impact of problems during transportation”. These measurements are aimed at promoting an entrepreneur’s focus on the processes of planning, operating, moving, and storing products and services efficiently, as well as information from the starting point to the point of use, taking into account the needs of the consumer [26].

## 2.5. Quality control and standards management

Quality control management is a process of product and service production with the right characteristics of customer demand that aims to look after, fix, improve, and develop it to meet the standard for the highest satisfaction. Quality should not be regarded as a technique or a physical identity but as a main activity that directly affects consumers, producers, as well as products and services [27]. Efficient quality control must apply several components such as improvement/continuous learning, emphasizing and customer arrangement, capability gain and teamwork, human resource orientation, quality tools, strong management structure, strategic planning and leadership, and supplier support [28]. A highly competitive product in the market strongly affects production quality control [29]. Product Standard Certification is a product certification or certified symbol assigned by laws that must meet consumer safety standards and prevent potential damage to the overall economy and society. Certification of community product quality means a product is quality-certified by the Thai Industrial Standard Institute. The quality criteria are suitable for community products to be credited, accepted, and trusted by consumers for product selection and purchasing by focusing on building sustainable development, enhancing community product quality per the determined standard, and the One Tambon, One Product policy. Product standard certification helps in different aspects such as promoting international access, technology, and innovation development while supporting continuous quality improvement of products and services both at the national and international levels [30]. Quality control and product standards are essential for community enterprises. Questions such as “Quality control and certification of Community Enterprise Product Standards. The use of effective tools to track the quality of our products to the extent that our products are certified is crucial to the success of our community enterprises [31].

## 2.6. Marketing management

Marketing management is a process of administration planning, pricing, sales promotion, and distribution of products and services to create an exchange and meet demand. Marketing is the basic role of the executives who organize and lead business activities. It changes purchasing and customer trends into demand, product and service mobility to the final user, a guarantee of profit creation, and pursues other organizational goals [32]. Online communication is very suitable for marketing techniques [33]. With more social

media, data searching can be performed everywhere as the consumer requires, and it consumes little transaction time. These are more important to an organization's strategy to improve its marketing strategy to suit changing consumer situations [34]. A marketing strategy keeps the entrepreneur's customer base and increases total sales, affecting the organization's profit-making ability [35]. Items such as "I recommend to friends or relatives to buy." Marketing strategies are critical to increasing sales and building consumer awareness [36].

## 2.7. Knowledge management

Knowledge management is the process of obtaining knowledge through identification, creation, sharing, transfer, and organization for efficient production and cost reduction, which must be realized and improved to pursue goals [37]. Knowledge management helps SME entrepreneurs gather knowledge regarding new product creation and helps manage collecting knowledge to make people aware of knowledge management so the organization can compete in the market [38]. Knowledge management is a key business sector management activity, especially in prompt, precise, and in-time decision making to make a difference for an organization [39]. For the top-level executives of an organization, knowledge is the main property. If any organization lacks knowledge management or is used inefficiently, it may cause decision-making problems, which slows the growth of the organization [38]. Indicators such as "collection of knowledge and storage in reporting form". Knowledge management measurements encourage entrepreneurs to store various data by logging, including how to overcome the challenges of community enterprise, to generate benefits for application and learning within the organization, ultimately leading to more efficient information management development [40].

## 2.8. Service quality management

Service quality is intangible, and only the customer can feel it. However, production and service may occur at the same place and time. Service quality management is a process of capacity level service provision that responds to customer demand, compared to customer expectations and the feeling after receiving service [41,42]. Service quality improvement is the most important matter for companies that expect to make a difference in their service in a highly competitive business environment [43]. Service quality is an evaluative factor, including environmental quality, which is when the customer feels the service; responsive quality, which is a correspondence between the customer and service provider; and result quality, which is the perceived evaluation after the service [44]. It specifies that service quality is key to customer repurchasing [45,46]. Indicators such as secure online transactions and my service quickly responded to two requirements at all times. These measurements indicate that quality awareness is important for an organization that needs to be monitored and evaluated consistently, indicating that this strategy can track to the point and level of service that customers need and expect from services received from community enterprises in order to modify the organization's ability to provide services that match what customers want and expect at a level that generates consistent customer satisfaction [47].

## 2.9. Organization management

Organization management is the process of determining the formal organization structure by dividing it into different subunits precisely assigning authority and responsibility to each subunit, and managing and coordinating relationships among those subunits, to support the operation in efficiently pursuing organizational goals. Organization management is important for coordination among different stakeholders, including the well-managed government sector, education institutes, and several businesses that are able to promote co-working and new methods that are beneficial for organizations [48]. The operational concept of each organization depends on its policies, goals, and measures, as well as its ability to compare their results with the performance of other organizations. However, organizational operation differs according to organizational structure and effectiveness [49]. The main change in the organization is the decentralization of the organization's decision making to reduce administrative delays and be more efficient [50]. Entrepreneurial capacity is necessary for coordination and working together with members or several units of an organization to successfully operate new and small businesses. These lists indicate a mission that is of great importance to the organization because the objective of organization and management is to enable the organization to achieve its objectives effectively, i.e., to save time, resources, and labor and to be highly productive through the various steps that follow the organization's objectives efficiently and effectively [31,51].

Referring to Table 1, the literature review of management strategies for community enterprises, we found several research gaps. 1) In Thailand, the studies are mostly in the northern, northeastern, and southern regions, while there are a few in the central region, including Bangkok and its surroundings, and the sample scales are also different. 2) Most of the data analyzing tools are different, except for the research of Mettathamrong, Upping [31] that used exploratory factor and confirmatory factor analyses; 3) Our study on the management strategy of community enterprises consists of various dimensions and a wider boundary than the previous studies, especially service quality management, which is not common in community enterprise studies. 4) The study of the community enterprise strategy of community enterprisers examines the production line of various community enterprise products, which is different from the research of Petcho, Szabo [11], Mettathamrong, Upping [31], who studied and surveyed the data from community enterprises that produced only agricultural products. Therefore, the study of the measurement model of community enterprise strategy includes factors of product design management, production management, logistics management, quality control and standards management, marketing management, knowledge management, service quality management, and organization management. The research tool is the questionnaire, and the analysis methods are exploratory factor analysis and confirmatory factor analysis by using the simple sample random method.

**Table 1**  
Summary of the related study and indicators.

Authors	Location	types	Method	samples	Community Enterprise Management Strategies								
					Product design management	Production management	Logistics management	Product quality and standards management	Marketing management	Knowledge management	Service Quality management	Organization management	
Pholphirul, Kwanyou [71]	Thailand (Nong Khai)	questionnaire	SNA	101	✓	✓	✓		✓				
Cavite, Kerdsriserm [52]	Thailand (Chachoengsao)	focus group	SWOT and TOWS	8	✓	✓		✓	✓				
Počinková, Henninger [72]	UK	semistructured interviews	seven-step guide	18					✓				
Somwethee, Aujirapongpan [9]	Thailand (Phuket)	questionnaires	SEM	329						✓			✓
Kawharu [73]	New Zealand	surveys	informal discussions	–			✓						
Naipinit, Promsaka Na Sakolnakorn [56]	Thailand (provinces in northeast)	Interviews and the focus group	SWOT	25 and 10	✓	✓		✓	✓	✓			
Chotithammaporn, Sannok [54]	Thailand (Samut Songkram)	questionnaires	mean and SD	51			✓						
Kar [74]	India	surveys	narrative enquiry	40						✓			
Promsaka Na Sakolnakorn and Naipinit [53]	Thailand (Songkhla)	survey and in-depth interviews	conducting content analysis and descriptive analysis	30 and 10	✓	✓			✓				
Kerdpitak [13]	Thailand	questionnaires	SEM	340			✓		✓				
Hidayati, Hanif [75]	Indonesia	questionnaire	SEM	149								✓	
Mettathamrong, Upping [31]	Thailand (Sakon Nakhon)	questionnaire	EFA, CFA	400				✓	✓	✓			✓
Petcho, Szabo [11]	Thailand (Uthai Thani)	questionnaire	Binary logit regression	406		✓				✓		✓	
<b>This study</b>	Thailand	questionnaire	EFA, CFA	500	✓	✓	✓	✓	✓	✓	✓	✓	✓

Social network analysis (SNA), Strengths, weaknesses, opportunities, and threats (SWOT), threats, opportunities, weaknesses, and strengths matrix situational analyses (TOWS).

### 3. Research methods

#### 3.1. Survey instrument

This study uses a questionnaire as a survey tool. We developed the questions from the literature review and then checked the congruence index of the questionnaire using the Index of Item Objective Congruence by five experts. The questionnaire comprises two parts. Part 1 includes the respondents' data, such as community enterprise name, gender, age, education level, average income, province of location, and type of community product. Part 2 is about questions about community enterprise's management strategies, including product design management and marketing management modified from Refs. [52,53] Production Management and Logistics Management modified from Refs. [53,54], Knowledge Management and Organization Management modified from Ref. [31], Product Quality and Standard Management modified from Refs. [55,56], and Service Quality Management. Overall question characters will measure community enterprise operation in different dimensions, so they are adjusted to suit the study contexts, i.e., exotic product design, arranging transportation schedules, written records of bodies of knowledge, friendly staff who are willing to serve, advertising to attract new customers, such as printed and online media, etc. The answers are recorded using a seven-point Likert scale, from 1 = totally disagree to 7 = totally agree.

This research is a quantitative analysis. Research data is gathered from registered community entrepreneurs who have run businesses for at least 3- years. For example, local product types are plant production, processed food, food products, beverages, livestock, craft/handmade herbal products, leatherware, woodenware, furniture, accessories, jewelry, etc. from Bangkok, Nonthaburi, Pathum Thani, and Samutprakarn, for a total of 1206 community enterprises. We chose simple randomness as an operation method. The samples used in the Structural Equation Model Analysis suggested by Hair Jr, Babin [57] mentioned that observed variables should be 10–20 times the number of samples, or respondents should be at least 200 samples. However, this study has 500 samples of community enterprises, which is appropriate for data analysis. We contacted community enterprises and explained the research objectives for requesting data support by phone first. When they agreed to provide the data, we sent our team to the community enterprises and asked the respondents in person. Survey data were collected between August and November 2023.

#### 3.2. Data analysis techniques

For data analysis, we used the average score and SD. Exploratory Factor Analysis (EFA) to divide the main factors, extract components, rotate the axes, select the number of components in accordance with the Scree plot, and select the questions with factor loading at 0.60 or higher. For the number of questions, there will be at least two variables per component. The statistic used with the tool's quality analysis is the reliability of both questionnaires, using the  $\alpha$ -coefficient formula of Cronbach. The statistic used with the hypothesis test is the Kaiser-Meyer-Olkin (KMO) to measure suitability if it is appropriate for CFA, while the Kaiser-Meyer-Olkin (KMO) should be higher than 0.6 [58]. CFA is a technique used to examine or confirm the relationship of the created variable or component to see if it is as expected. Data is interpreted by confirmatory factor analysis (CFA) by using parameter estimation, considering standard factor loading among general questions, while the acceptable factor loading is 0.5 or higher [59].

For suitable statistic values used for model construct validity testing, the evaluative criteria are as follows: Chi-squared statistic ( $\chi^2$ ) per degrees of freedom ( $df$ ) should be less than 5 [60]. The root mean square error of approximation (RMSEA) should be less than or equal to 0.07 [61]. The standardized root mean square residual (SRMR) should be less than or equal to 0.08 [62], the Tucker-Lewis coefficient (TLI) should be more than 0.90, and the comparative fit index (CFI) should be more than 0.90 [63]. The Construct Reliability (CR) should be more than 0.70 [64–66], and the Average Variance Extracted (AVE) should be more than 0.5 [64].

#### 3.3. Respondent profile

Questionnaire respondents were 60 % women and 40 % men. Sixty percent of the respondents were 45–50 years old, and the second highest age group was 51–60 years old for 39 %. For education level, most have a high school/vocational certificate at 41 %, followed by 36.6 % with a high vocational certificate/certificate of technical vocational/diploma. Most respondents, 81.5 %, have an average income of 10,000–15,000 Baht. The period of group participation is 6 years for 32.4 % of participants, followed by 5 years for 18.8 %. Most product types are processed food and food products (45.6 %), followed by plant production for 17.4 %, herbal products for 16.4 %, and handicrafts and handmade products for 13.8 %. Nevertheless, community enterprises that answered the questionnaire were mostly female, because in Thailand, women prefer to operate community businesses because they are professional, careful, and cautious about community enterprise administration, consistent with the research of Mettathamrong, Upping [31].

## 4. Results

#### 4.1. Measurement model

The descriptive statistical analysis found that the average observed variables were between 5.438 and 6.444, and the standard deviation analysis of observed variables was between 0.702 and 0.954. For the statistic value used to measure the data congruity, Kaiser-Meyer-Olkin (KMO) is 0.89, which is more than 0.80. For Bartlett's sphericity analysis, chi-square = 23689.611, sig. = 0.000, which is less than 0.05. Therefore, these data can be used for factor analysis. Cronbach's  $\alpha$  analysis of each factor in the measurement model found that the value is between 0.794 and 0.988, which is more than 0.70, according to the suggestion of Nunnally and

Bernstein [67]. Therefore, it presents good internal accuracy. Exploratory Factor Analysis evaluates tools and reduces measurement mistakes to extract the factors. The analysis result found that eigenvalues are between 1.228 and 12.771. Each component can explain variation values of 3.507 and 36.488. The number of loading variables is more than 0.6, so we can summarize that the exploratory factor analysis consists of 35 observed variables, and their groups can be divided into eight components as follows: organization management, service quality management, logistics management, marketing management, production management, product quality and standard management, knowledge management, and product design management, as presented in Table 2. Therefore, the results of each.

Table 3 shows the result of Confirmatory factor Analysis (CFA) by value estimation. It found that the Goodness-of-fit index ( $\chi^2 = 1345.308$ ,  $df = 502$ ,  $p < .001$ ,  $\chi^2/df = /2.679$ ,  $CFI = 0.964$ ,  $TLI = 0.958$ , and  $SRMR = 0.058$ ,  $RMSEA = 0.063$ ). Those statistical values conformed to empirical data, while we considered standardized loading, we found that it is between 0.565 and 0.877, which is acceptable and has to be at least 0.5 [57]. The confirmatory components of this measurement model consist of 8 factors, including Organization Management, with seven observed variables. The highest Standardized Loadings is ( $\gamma = 0.981$ ,  $t = 415.979$ ), "ORM7: There are relation-building activities with customer and supplier." Service Quality Management consists of 5 observed variables. The highest standardized loading is ( $\gamma = 0.986$ ,  $t = 414.180$ ), "SQM3: Staff care for the customer and take an interest in the after-service support when customer has problems." Logistics management includes five observed variables. The highest Standardized Loadings are ( $\gamma = 0.932$ ,  $t = 115.502$ ): "LOM2, Over-expecting in a quick product delivery" and ( $\gamma = 0.932$ ,  $t = 114.346$ ): "LOM3: Suitable packing for shipping and complete product delivery." Marketing Management comprises five observed variables. The highest Standardized Loading is ( $\gamma = 0.894$ ,  $t = 53.554$ ), "MAM1: Increase total sales by Word-of-Mouth." Production management includes three observed variables. The highest Standardized Loadings is ( $\gamma = 0.965$ ,  $t = 151.536$ ), "PRM1: There is flexible production planning." Product Quality and Standard Management consist of 4 observed variables. The highest Standardized Loading is ( $\gamma = 0.880$ ,  $t = 38.472$ ), "PQM2: There is product quality control that meets the required customer demand." Knowledge management comprises three observed variables. The highest Standardized Loading is ( $\gamma = 0.931$ ,  $t = 58.831$ ), "KNM2: There is knowledge transformation of organization development to community enterprise members." Product design management includes three observed variables. The highest Standardized Loading is ( $\gamma = 0.896$ ,  $t = 58.831$ ), "PDM3: Product design can reduce production cost, and make a quality product." For the evaluative check of Construct Reliability (CR), all factor values are between 0.809 and 0.988, which are more than

**Table 2**  
Results of exploratory factor analysis.

Component	Variables	Mean	SD	EFA: Loadings	Eigenvalues			Cronbach's $\alpha$
					Total	% of Variance	Cumulative%	
Organization management	ORM1	5.460	0.717	0.938	12.771	36.488	36.488	0.991
	ORM2	5.476	0.734	0.926				
	ORM3	5.460	0.717	0.925				
	ORM4	5.464	0.717	0.923				
	ORM5	5.438	0.709	0.921				
	ORM6	5.460	0.725	0.929				
	ORM7	5.450	0.702	0.936				
Service Quality management	SQM1	6.404	0.714	0.900	4.392	12.547	49.036	0.988
	SQM2	6.406	0.723	0.924				
	SQM3	6.402	0.711	0.939				
	SQM4	6.404	0.714	0.928				
	SQM5	6.412	0.709	0.936				
Logistics management	LOM1	5.584	0.853	0.855	3.327	9.506	58.542	0.913
	LOM2	5.602	0.893	0.879				
	LOM3	5.596	0.887	0.874				
	LOM4	5.868	0.800	0.726				
	LOM5	5.970	0.680	0.740				
Marketing management	MAM1	5.744	0.815	0.839	2.480	7.086	65.628	0.895
	MAM2	5.758	0.823	0.852				
	MAM3	5.770	0.931	0.806				
	MAM4	5.636	0.863	0.689				
	MAM5	5.546	0.861	0.600				
Production management	PRM1	6.360	0.885	0.868	2.155	6.156	71.784	0.943
	PRM2	6.364	0.875	0.836				
	PRM3	6.372	0.887	0.845				
Product quality and standards management	PQM1	6.022	0.763	0.746	1.703	4.866	76.650	0.794
	PQM2	6.096	0.790	0.750				
	PQM3	6.164	0.916	0.769				
	PQM4	5.950	0.954	0.754				
Knowledge management	KNM1	6.018	0.826	0.864	1.459	4.167	80.818	0.891
	KNM2	6.042	0.845	0.887				
	KNM3	6.002	0.953	0.812				
Product design management	PDM1	5.806	0.788	0.814	1.228	3.507	84.325	0.870
	PDM2	5.942	0.704	0.775				
	PDM3	6.444	0.815	0.565				



**Table 3**  
Measurement model results.

Variables	Standardized Loadings	t-Value	R <sup>2</sup>	CR	AVE
Organization management					
ORM1	0.977	446.125**	0.954	0.809	0.717
ORM2	0.972	382.370**	0.945		
ORM3	0.980	447.050**	0.961		
ORM4	0.968	309.323**	0.938		
ORM5	0.957	256.709**	0.916		
ORM6	0.976	409.578**	0.953		
ORM7	0.981	415.979**	0.963		
Service quality management					
SQM1	0.949	202.425**	0.900	0.988	0.971
SQM2	0.968	273.788**	0.938		
SQM3	0.986	414.180**	0.973		
SQM4	0.969	279.715**	0.938		
SQM5	0.983	362.957**	0.966		
Logistics management					
LOM1	0.905	91.944**	0.819	0.901	0.792
LOM2	0.932	115.502**	0.870		
LOM3	0.932	114.346**	0.869		
LOM4	0.583	19.828**	0.340		
LOM5	0.610	20.478**	0.373		
Marketing management					
MAM1	0.894	53.554**	0.799	0.901	0.801
MAM2	0.872	49.245**	0.760		
MAM3	0.839	46.886**	0.704		
MAM4	0.661	23.539**	0.437		
MAM5	0.603	19.391**	0.364		
Production management					
PRM1	0.965	151.536**	0.931	0.946	0.923
PRM2	0.906	97.379**	0.821		
PRM3	0.898	88.561**	0.806		
Product quality and standards management					
PQM1	0.771	30.307**	0.595	0.833	0.740
PQM2	0.880	38.472**	0.774		
PQM3	0.571	17.136**	0.326		
PQM4	0.738	21.534**	0.544		
Knowledge Management					
KNM1	0.862	58.831**	0.743	0.903	0.869
KNM2	0.931	58.831**	0.867		
KNM3	0.813	47.383**	0.662		
Product design management					
PDM1	0.651	20.653**	0.424	0.820	0.773
PDM2	0.772	27.774**	0.597		
PDM3	0.896	35.502**	0.803		
Community enterprise management strategies					
Product design management	0.727	20.920**	0.529	-	-
Production management	0.701	21.743**	0.491		
Product quality and standards management	0.625	16.726**	0.390		
Marketing management	0.582	14.552**	0.338		
Organization Management	0.575	15.618**	0.331		
Logistics management	0.543	13.935**	0.294		
Service Quality Management	0.522	13.222**	0.273		
Knowledge Management	0.515	12.589**	0.265		

0.70 (Hair et al., 2014), and Average Variance Extracted (AVE) values are between 0.717 and 0.971, which are more than 0.5 [64]. We can conclude that the community enterprise management strategies measurement model conforms to the empirical data presented in Fig. 1.

## 5. Discussion

Community enterprise management strategy is a critical factor of successful business operation, which is not only relevant to trading benefits of community enterprise (such as staff care for customers and taking an interest in the after-service support when customer has problems, knowledge transformation of organization development to community enterprise members, clear division of labor, decentralization of decision making, Over-expecting in quick product delivery, skilled or expertized labor etc.) but also includes production process and logistics management, knowledge collection, and effective organization administration and management, to be able to transform a business to the next generation. Therefore, scholars and operators are more interested in developing this

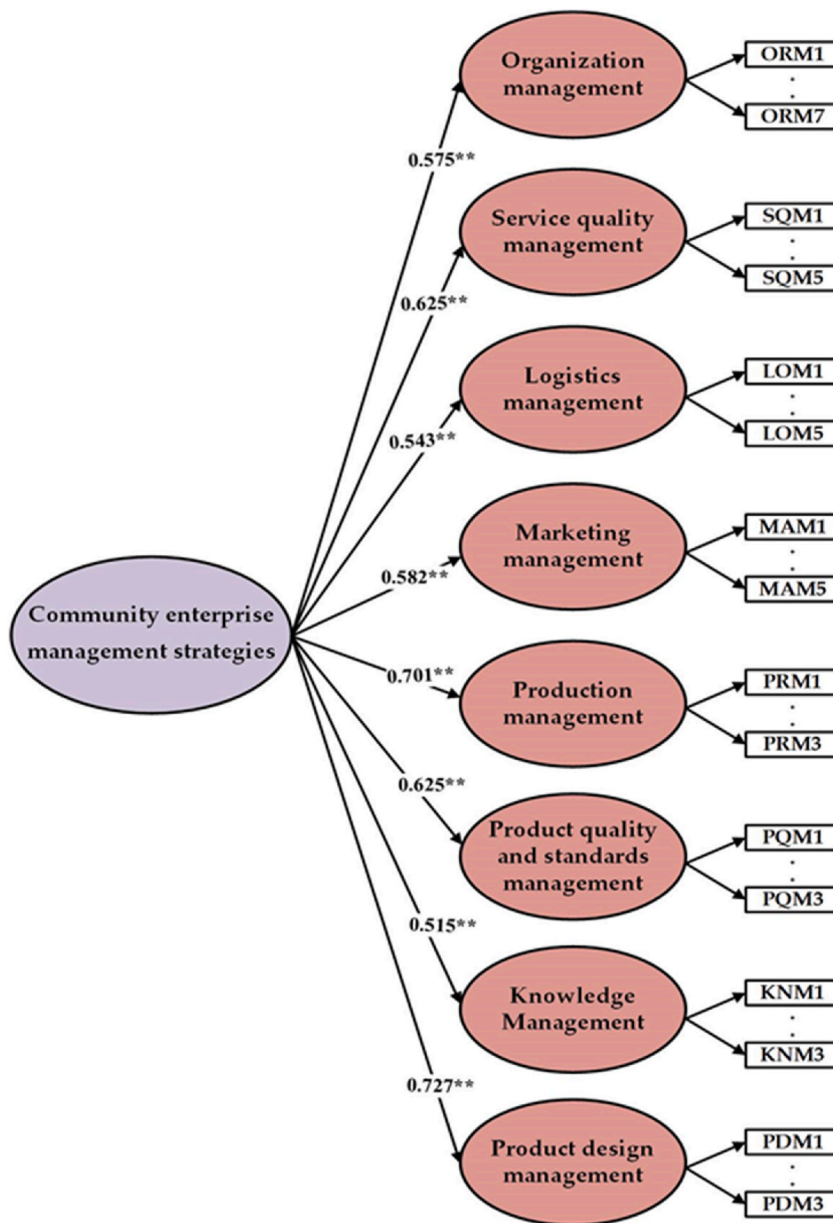


Fig. 1. CFA model of Community enterprise management strategie

measurement model.

This research aimed to develop a measurement model of community enterprise management from the perspective of entrepreneurs with a clear definition and empirical analysis using a structured questionnaire covering various dimensions. The study collected data from 500 entrepreneurs in a community enterprise. The research used advanced statistical techniques, including exploratory factor analysis (EFA) and second-order confirmatory factor analysis (CFA), to analyze the data. How do these methods help in examining the construct validity of community enterprise strategy management? This study provides important insights into the research question RQ1. Our results show that the results of the measurement model study, which is second-order CFA, reveal that the entire structure, which is composed of 8 dimensions, is organization management, service quality management, logistics management, marketing management, production management, product quality and standards management, knowledge management, and product design management, which indicates that community enterprise entrepreneurs view these factors as having an impact on the strategic management of community enterprises.

The results of this study reveal patterns that are consistent with research conducted on community enterprises in other countries, for example: which found that production, product design, marketing, product certification, and quality control factors can strengthen the capability and product development of community enterprises in Thailand [52]. For successful factors of a sustainably modern

business, management and control strategies of knowledge, expertise, and marketing development should help members become experts for the competitive capacity increase and sustainability of small and medium enterprises [68]. Successful factors of community enterprises in Thailand are organization management (systematic division of labor), marketing management, and quality certification. These are all very important, and community enterprises should adjust themselves for business survival [56]. In the Netherlands, research has studied community entrepreneurship and found that organizational factors influence collaborative manufacturing, and the barrier to doing business is the lack of knowledge that the state should support community enterprises in designing, hiring, delivering and evaluating services [69]. In Thailand, research emphasizes the role of governments in promoting production and marketing policies to stimulate farmers to grow organic grain and have a distribution market specifically to generate revenue for community [11]. In the UK, a recent literature review showed that knowledge management and the promotion of specific skills can provide a good foundation for organizations to cultivate and develop from committed experiences such as knowledge interaction, information sharing, team decision-making, and group learning, which will enable organizations from the ground up when they are in trouble [70]. Although the importance of these factors may vary depending on the country's circumstances, the emergence of these common patterns suggests that the results of the study could be more widely implemented depending upon the context of each country in promoting community enterprise.

The government emphasizes community enterprises using local knowledge and resources to produce products and services to increase the potential of the grassroots economy to generate income, distribute income to the community, support community products, and enhance community enterprises to be strong. Adjusting this approach to be consistent with the government support plan that is currently in progress is important for the policy to achieve its goals. The Thai government must try to promote the establishment of more enterprise groups. However, these promotion policies will make it clear that the government can meet the needs and ensure that entrepreneurs meet the planned objectives. This study increases the visibility of community enterprise entrepreneurs' commitment and improves their motivation to implement various strategies. A multi-faceted approach is needed to manage community enterprises and survive. The government can develop community enterprises to develop famous branded products within the next 7–10 years and may enhance cooperation between the Ministry of Industry, private sector, and universities and accelerate community enterprise-related initiatives that demonstrate the government's commitment to increase income generation from community enterprises that can be self-reliant as a whole. Improve incentives to attract interested community members to join community enterprise establishments. In addition, the government can provide a low-interest loan program for community enterprise groups to use as capital to develop their businesses, which shows the government's intention to promote these policies.

In terms of policymakers, the study highlighted the importance of community entrepreneurship promotion from an entrepreneur's point of view, showing that policymakers should emphasize key factors in promoting community enterprise competitiveness, such as developing online marketing promotion, developing service quality, and promoting product standard certification to build consumer confidence. The crucial impact of community enterprise management strategies emphasizes the need for more interaction to enable community enterprises to rely on themselves. Furthermore, the study also emphasizes the importance of regular corporate evaluation, which may use developed measurement models to maximize the impact on implementation. By looking at guidelines, policymakers can increase the effectiveness of their community enterprise management strategies, which will lead to increased performance in sustainable operations.

## 6. Conclusions and recommendations

This study develops a measurement model for community enterprise management. This study attempts to create empirical data on community entrepreneurs' expectations. We surveyed 500 community enterprises. The community enterprise's product types in this survey are processed food and food products, plant production, herbal products, and handicrafts/handmade in Bangkok and the surrounding areas. Results of the confirmatory factor analysis found that there are eight factors in total, including product design management, production management, logistics management, product quality and standard management, marketing management, knowledge management, service quality management, and organization management.

The observed variables obtained from the literature review regarding the management strategy of community enterprises are similar to those in other research. For example, for Quality Control and Standards Management factors, the observed variable is "Register the certificate of Thai community product standard" of [56]. For our study questions, "There is a registration for domestic product standard certification," and observed variables that are different from other research regarding the service quality management factor, samples of observed variables are "There are various customer communication channels, such as SMS, email, application, and line@," and "There is a safe product and service payment. For the Logistics Management factor, the sample of observed variables is "suitable packing for shipping and complete product delivery." and "product was delivered to the customer in good condition".

In addition, research results can be used to prioritize when an entrepreneur improves and fixes the organization's operation efficiency by considering standardized loadings. Results of Confirmatory Factor Analysis found that PDM's value is the highest for ( $\gamma = 0.727$ ), and while considering observed variables, it was discovered that PDM2: "Research and development of new products to respond to customer demand" for ( $\gamma = 0.772$ ). Second is the factor of production management for ( $\gamma = 0.772$ ). Second is the factor of production management for ( $\gamma = 0.701$ ), and while considering observed variables, PRM1: "There are flexible planning and production" for ( $\gamma = 0.695$ ). Third is the factor of product quality and standards management for ( $\gamma = 0.625$ ), and while considering observed variables, it found that PQM3: "There is a registration of domestic product standard certification for ( $\gamma = 0.986$ ). Referring to the prioritization result on factors of product design management, production management, and product quality and standards management, these are the main problems of community enterprises regarding the improvement of research and development promotion of new products and services to be competitive in the market by using local materials in the community. Such products must

pass product standard certification by certified domestic agencies. Therefore, the results of this study can be used by other community enterprises to develop and improve community enterprises' effective business operations. For the government sector, the results of this study can be used to determine policy-making methods to promote and develop a sustainable community enterprise.

The study provided insights into the management strategies of community enterprises from the perspective of entrepreneurs. The findings have implications for government policy, emphasizing the need for increased community enterprises. It confirms that strengthening the member groups of community enterprises, starting with opportunities for entrepreneurs to present ideas for developing community enterprises, is beneficial for community-level economic development. The research results also serve as an incentive for collaboration among members in learning and transferring technology, as well as supporting the enhancement of products and services of community enterprises in terms of setting standards, inspection, and certification to gain international recognition. Promote investment in communities to create jobs by developing systems and mechanisms, as well as fostering professional groups based on the potential of local residents. This aims to distribute economic opportunities fairly among community members and locals, share benefits equitably, reduce economic disparities, and decrease the rate of migration for work in urban areas. Support the establishment of community enterprises according to the readiness and potential of each area, and leverage the digital economy to enhance development while promoting community learning. Including support for the strengthening of community enterprises through technology by developing community entrepreneurs to possess skills in modern business management, innovation creation in production processes, product or service presentation, and marketing. They should also be capable of applying digital technology more effectively to their business operations. All of the above will lead to the creation of sustainable success for community enterprises and motivate members who are coming together to establish new community businesses in the future.

## 7. Limitations and future research

Although this study provides insights into community enterprise management strategies, focusing on a single country may limit the summary to other countries with different cultural, economic, social and political contexts. Popularity specifics in commodity consumption. State promotion policies. In ways different from other countries. Future research may study these limitations by comparing from multiple countries. For comparing different policy approaches will help identify which aspects of the study are specific to Thailand's context and what aspects may be applicable in multiple areas. Furthermore, future studies may explore how community business strategies influence competitiveness, satisfaction, or customer loyalty. How the presentation of community enterprise management strategies could influence the effectiveness of state policies. It is important to note that the model in this study did not consider controlling variables such as age, sex, educational level, or income. It suggested that population factors may influence community business management strategy, so future studies may add to these factors to enhance understanding by incorporating such controlled variables into analysis.

## Funding statement

Faculty of Business Administration for Society, Srinakharinwirot University (SWU), Thailand. (Grant number: 111/2566).

## Data availability statement

The data presented in this study are available on request from the corresponding author.

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Additional information

No additional information is available for this paper.

## Institutional review board statement

This research has been approved by the Human Research Ethics Committee at Srinakharinwirot University, Code SWUEC-128/2566E

## CRediT authorship contribution statement

**Jarin Jarusen:** Validation, Supervision, Project administration, Funding acquisition, Conceptualization. **Ekkapong Cheunkamon:** Writing – review & editing, Writing – original draft, Visualization, Resources, Methodology, Formal analysis, Data curation, Conceptualization.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Acknowledgements

The researchers would like to thank all volunteers who participated in this study.

## Appendix A

Code	Item
Product Design Management	
PDM1	An exotic product design is a good image for a community enterprise.
PDM2	Research and development of new products to respond to customer demand.
PDM3	Product design can reduce production cost, cause less waste, and produce a quality product.
Production Management	
PRM1	Flexible planning and production.
PRM2	Skilled or expert labor.
PRM3	There is working improvement to increase the number of products.
Logistics Management	
LOM1	There is transportation schedule.
LOM2	Over-expecting quick product delivery.
LOM3	Suitable packing for shipping and complete product delivery.
LOM4	Product was delivered to the customer in good condition.
LOM5	There are channels of complaint regarding product delivery.
Product quality and standards management	
PQM1	There are product standard specifications.
PQM2	Product quality control meets the required customer demand.
PQM3	There is a registration for domestic product standard certification.
PQM4	We provide high-quality products for our customers.
Marketing Management	
MAM1	Increase total sales by Word-of-Mouth, suggestion, review, or social media sharing.
MAM2	Increase total sales by adding various product options such as color, size, type, and price.
MAM3	Advertise to attract new customers, e.g., printed, online, or broadcast media.
MAM4	Provide promotions to increase total sales, e.g., price and volume promotions, coupons, and reward points.
MAM5	Suitable price adjustment to persuade customers to make more sales targets.
Knowledge Management	
KNM1	Knowledge determination of organization development.
KNM2	Knowledge transformation of organization development and product development for community enterprise members.
KNM3	There is the storage or record of knowledge of organization development in writing.
Service Quality Management	
SQM1	There are various customer communication channels, such as SMS, Email, Application, and Line@.
SQM2	There is a safe product and service payment.
SQM3	Staff care for customers and take an interest in after-service support when customers have problems.
SQM4	Good manner and mellifluous sales staff.
SQM5	Sales staff is willing to provide service.
Organization Management	
ORM1	Organization management uses a strategic plan.
ORM2	There is a clear division of labor and decentralization of decision making.
ORM3	There is a product comparison with other community enterprises to improve the product and service.
ORM4	There are indicators of members' performance.
ORM5	There is teamwork.
ORM6	The evaluation is considered for the continuous improvement of the production process and administration.
ORM7	Training for community enterprise members.

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