FACTORS AFFECTING SUPPLY CHAIN MANAGEMENT STRATEGIES AND
FINANCIAL PERFORMANCE TOWARD THE COMPETITIVE ADVANTAGE
OF SMALL AND MEDIUM-SIZED ENTERPRISES IN KUNMING,
THE PEOPLE'S REPUBLIC OF CHINA

By
Miss Ni CHANG

A Thesis Submitted in Partial Fulfillment of the Requirements
for Master of Engineering ENGINEERING MANAGEMENT
Department of INDUSTRIAL ENGINEERING AND MANAGEMENT
Silpakorn University
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โดย
MissNi Chang

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรวิศวกรรมศาสตรมหาบัณฑิต
สาขาวิชาการจัดการงานวิศวกรรม แผน ก แบบ ก 2 ปริญญามหาบัณฑิต
ภาควิชาวิศวกรรมอุตสาหการและการจัดการ
มหาวิทยาลัยศิลปากร
ปีการศึกษา 2566
ลิขสิทธิ์ของมหาวิทยาลัยศิลปากร

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Title	Factors Affecting Supply Chain Management Strategies and Financial Performance toward the Competitive Advantage of Small and Medium-Sized Enterprises in Kunming, the People's Republic of China
By	Miss Ni CHANG
Field of Study	ENGINEERING MANAGEMENT
Advisor	Noppakun Sangkhiew, Ph.D.

Faculty of Engineering and Industrial Technology, Silpakorn University in Partial Fulfillment of the Requirements for the Master of Engineering
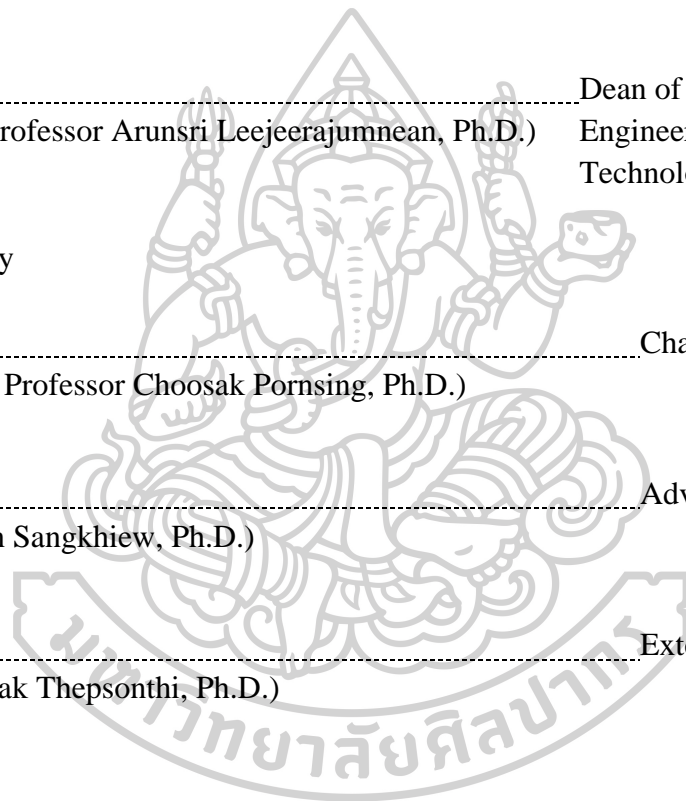
-- Dean of Faculty of
(Assistant Professor Arunsri Leejeerajumnean, Ph.D.) Engineering and Industrial Technology

Approved by

-- Chair person
(Associate Professor Choosak Pornsing, Ph.D.)

-- Advisor
(Noppakun Sangkhiew, Ph.D.)

-- External Examiner
(Thanongsak Thepsonthi, Ph.D.)

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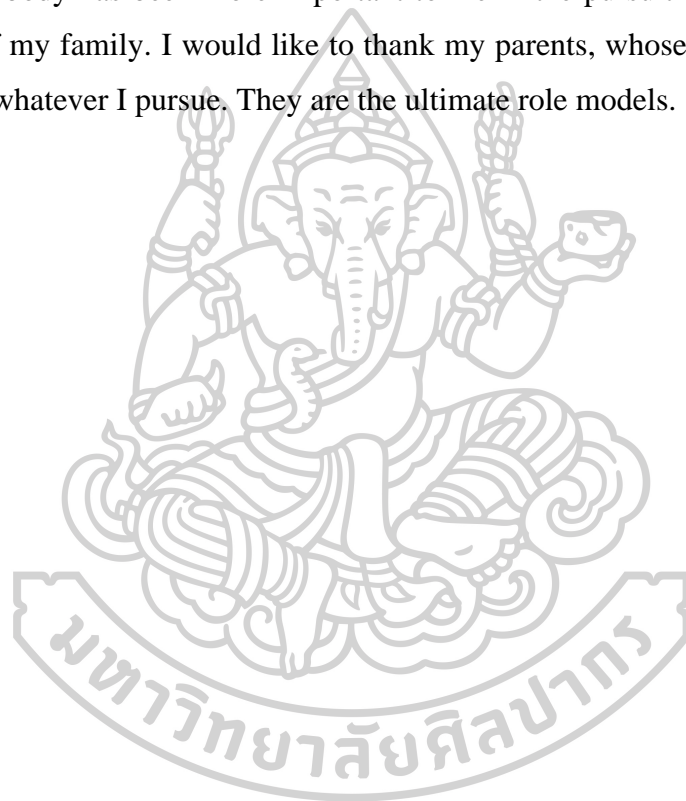
Miss Ni CHANG : Factors Affecting Supply Chain Management Strategies and Financial Performance toward the Competitive Advantage of Small and Medium-Sized Enterprises in Kunming, the People's Republic of China Thesis advisor : Noppakun Sangkhiew, Ph.D.

This study explores the intricate relationships among competitive advantage, financial performance, and Supply Chain Management (SCM) practices within Kunming's small and medium-sized enterprises (SMEs). In a diverse sample of 222 respondents, key insights were uncovered. Gathering data from 222 respondents through an online survey, the study assembled a diverse sample with a balanced gender distribution and predominantly educated and experienced participants. Multiple Linear Regression analysis revealed that SCM-related factors explain approximately 9.38% of the variability in competitive advantage. Cost Efficiency and Employee Skill Training emerged as statistically significant drivers of competitive advantage. A similar Multiple Linear Regression analysis indicated that SCM-related factors, including Profitability, Cash Flow Management, and Debt Management, significantly influence financial performance, explaining about 24.99% of the variation. The Principal Component Analysis (PCA) identified three primary components in SCM; cost efficiency, inventory management, and employee skill training. For financial performance, four principal components were identified: revenue growth, profitability, cash flow management, and debt management. One-Way Analysis of Variance (ANOVA): ANOVA tests reinforced the significance of specific SCM factors, such as cost efficiency and debt management, in explaining financial performance. Practical recommendations for Kunming SMEs, include prioritizing cost efficiency, investing in employee skill training, optimizing debt management, continuous monitoring and adaptation, leveraging technology, exploring collaborative networks, and embracing sustainability practices. In conclusion, this study reveals intricate connections between SCM strategies, financial performance, and competitive advantage in Kunming's SMEs. It underscores the pivotal roles of cost efficiency and employee skill training in shaping competitive advantage while emphasizing the interconnectedness of financial performance and competitive advantage. By adopting these strategies, Kunming's SMEs can navigate the ever-evolving business landscape and secure long-term success.

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Ni CHANG

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CHAPTER 1
INTRODUCTION

1.1 Motivation

Small and medium-sized enterprises (SMEs) play an integral role in the economic ecosystem, where their interdependencies foster mutual reinforcement and growth. Whether they function as product manufacturers for large enterprise groups or establish connections with the local manufacturing sector or community, SMEs exercise unique influence. Their inherent flexibility serves as an antithesis to monopoly by large enterprises. By investing in and producing innovative products, SMEs enrich market diversity and stimulate domestic monetary circulation. Furthermore, these enterprises create employment opportunities, propagate economic prosperity throughout China, enhance the value of domestic raw materials, and contribute to income distribution. This is exemplified by business operators transporting local raw materials across different provinces, fostering a more balanced economic landscape.

Production in each region is a commodity that generates income for the community or local area, as the SME sector is involved in the entire business process, including "upstream" (raw materials and production), "midstream" producing and distributing products, and "downstream" being the storefront, whether online or offline, including exporting to foreign markets. Every entrepreneur will be in every link of the business supply chain, which can increase the country's potential and ability to compete.

SMEs must rely on the potential of the network, working both within and outside the organization, to drive the business to be competitive. This is because companies are constantly subject to fluctuating external conditions. Whether it is economic, social, political, trading partner uncertainty, disruption, innovation, competitors, transnational culture and changes in consumer behaviour, it is difficult to control the operation. Therefore, managers must apply supply chain management in their organizations because it is important for business in this day and age. Moreover, it is the overall process of the flow of materials, goods as well as information and

various transactions to customers or consumers through organizations that act as suppliers, manufacturers and distributors of commodities or raw materials, without SMEs, which have interlinked partners in the adaptation of the organization.

In today's global marketplace, supply chain management has become essential to business success. Resilient supply chains can help companies respond quickly to changing market demands, reduce costs, and improve customer satisfaction. In addition, supply chain efficiency can reduce costs at many points along the way for a product to reach the customer, such as fast delivery to the customer, reducing the need to keep the product in the warehouse for long periods in addition to reasons for custom periods.

Amid the " COVID-19" situation, the most severe crisis in world history it create a chain effect and expands to all sectors whether in public health, economy, business sector, society, and public sector that make changes to the lives of people. It is predicted that many things will change in ways that are no longer the same. However, from the image of the past 1-2 years so far, operators in the SME sector are still in a state of "survival mode", while some are unable to bear the cost. The SME sector eventually had to be closed, further affecting the Labour sector, and the financial performance did not meet the targets set.

The results of the facts show the problems, that small and medium enterprises must face, such as the reputation of business owners, and lack of recognition. The liquidity of the business is relatively low, with a limited business plan. The potential to negotiate with trading partners is relatively low, and personnel lacks of specialized skills. Therefore, to enhance the role of the small-medium size enterprise sector, some business operators are inferior in financial management. Therefore, the performance of SMEs, especially in terms of the financial management of entrepreneurs, will continue to improve and be sustainable. Requires public and private support from stakeholders, whether it is financial strategy training, innovation support to add value, and study visits to successful SMEs. (Pono et al., 2018; Munizu et al., 2019).

According to Jain et al. (2010), a supply chain concept is a group of internal and external stakeholders. It has interacted and engaged in business activities to add value, by sharing and providing accurate information, and by exchanging that

information into applications to provide the final product or service, that consumers want some product. The best way to improve the competitiveness potential, and financial performance of SMEs is the supply chain management approach. Because doing business today is risky, uncertainty in demand raw material price volatility delivery delays, and seasonal demand (Kumar et al., 2013).

Therefore, effective supply chain management is an excellent operational strategic opportunity to gain a competitive advantage over competitors (Heizer & Render, 2010). Strengthen the management and competitiveness of members in the supply chain, members can align operations across all departments, focus on sharing the information needed to streamline operations and focus on utilizing limited resources. Limits of maximum interest. In some cases, supply chain management may not be successful because the internal management system of the enterprise is not good, or the enterprise managers lack leadership in management and the internal communication system of the enterprise is not thorough (Kenneth et al. 2008). This is because various factors in the business will affect the supply chain management of SMEs in the service industry, for example, the decision-making process of members of various departments in the supply chain may have inconsistent opinions in the supply chain, the raw material procurement process, rising inflation has increased the cost of raw materials, climate change is a long-term problem in the supply chain, and the supply chain will be affected. Strength in sourcing raw materials and equipment plays a role (Malik et al., 2014).

Supply chain management strategy focuses on building partnerships with supply chain members to achieve differentiation and process management within the organization. The goal is to make production and service efficient (Frohlich and Westbrook, 2001; Ahmad and Dhafr, 2002). Maat et al.(2020) found that supply chain strategy variables significantly affect competitive advantage and firm performance. In addition, competitive advantage significantly impacts a company's performance. Power chain strategy can also improve enterprise performance through various competitive advantages.

China is vast, especially Kunming, the capital of Yunnan Province. Yunnan Province of the People's Republic of China is the most ethnically diverse province in China, with 26 different ethnic groups. In the long course of development, the history of other peoples has created unique arts and cultures.

As a result, it has a distinctive identity. Including being a major tourist city in southwest China, Kunming has been known as the "City of Spring" and has gained popularity with many people rushing to travel. Therefore, many service businesses have arisen. The transportation business is one of the service businesses supporting Kunming's tourism economy. It was found that nine entrepreneurs operate express delivery businesses that are famous and popular with consumers who use the service, which is quite successful and has been working for a long time (Thai Business Information Center in China, Consulate General, Kunming, 2020).

An effective force chain strategy is essential for every association, but deciding on the correct strategy to ameliorate business conditioning is vastly more delicate than it appears. From the phenomena and empirical studies mentioned above, it is necessary to analyse the impact of elements of the supply chain strategy established by the management team on the competitive advantage and performance of SMEs in Kunming, People's Republic of China.

Under the COVID-19 epidemic, many people work from home according to the policy of the Chinese government. This causes customers to have more behaviours in ordering products online and more customers turning to express delivery services. The service of employees sometimes is not thorough, forcing operators to adjust their strategies inconsistent with the situation, resulting in fewer customers using the service and affecting the financial performance of the express delivery company in Kunming, People's Republic of China. Therefore, from the abovementioned importance and problems, this research study is the origin.

1.2 Research Question

1. How important is supply chain management strategy? Does financial performance tend to be for large and medium-sized enterprises with small competitive advantages?

2. Do the factors affecting the supply chain management strategy and financial performance of Kunming SMEs influence each other?

1.3 Research Objective

1. How important is supply chain management strategy? Does financial performance tend to be for large and medium-sized enterprises with small competitive advantages?

2. Do the factors affecting the supply chain management strategy and financial performance of Kunming SMEs influence each other?

1.4 Research Scope

Research on factors affecting supply chain management strategies and financial performance toward the competitive advantage of small and medium-sized enterprises in Kunming, the People's Republic of China. The researcher classified the scope into 4 aspects as follows:

1. The population scope is the people who are entrepreneurs of 9 express delivery businesses operating in Kunming, the People's Republic of China.

2, The scope of content is to focus on supply chain management strategies and financial performance toward the competitive advantage of small and medium-sized enterprises in Kunming, the People's Republic of China.

3. Area Boundaries. The researcher defined the area in this study as an express delivery company in Kunming, the People's Republic of China. There are 9 companies in Kunming.

4. Scope of time. Data collection is between June 2023 and December 2023.

1.5 Expected Results

1. Know the results of the level of importance of the supply chain management strategies and financial performance toward the competitive advantage of small and medium-sized enterprises in Kunming, the People's Republic of China.

2. Know the factors affecting supply chain management strategies and financial performance toward the competitive advantage of small and medium-sized enterprises in Kunming, the People's Republic of China.

1.6 Research Contributions

1. Express business operators know the importance of supply chain management strategies to bring research results to suggestions and emphasize its application in related industries that work together in the supply chain and the competitiveness of the industry in the future.

2. The partnership committee of the express delivery business uses the research results to plan operational marketing strategies to have a system that is consistent with the supply chain management of the service business which leads to the ability to compete in the long run.

Kunming regional large business promotion office and related organizations can use the research results to plan for promoting investment in the service sector.

1.7 Definition Terms

1. Supply chain management strategies typically consider factors such as the company's product portfolio, customer needs, market demand, available resources, competitive landscape, and a formal approach to creating a streamlined and efficient supply chain that delivers high-quality products or services to meet customer demand at a competitive cost, while also maximizing profitability. A supply chain manager usually develops this strategy with the primary goal of maximizing value across all stages of the production cycle.

2. Financial performance indicators are represented by accounting figures in the financial statements of a business and a complete evaluation of a company's overall standing in categories such as assets (tangible and intangible) , liabilities, equity, expenses, revenue, and overall profitability.

3. Competitive advantage refers to businesses should pursue policies that create high-quality goods to sell at high prices in the market, factors that allow a company to produce goods or services, including the cost structure, better or more cheaply than its rivals, focus on differences, cost leadership, and focus.

CHAPTER 2

LITERATURE REVIEW

2.1 Supply Chain Management

2.1.1 Importance of Supply Chain Management.

Supply Chain Management (SCM) is the process of overseeing and controlling the process of driving goods from production and services to customers. The goal of supply chain management is to improve the efficiency of the supply chain to reduce the cost. The supply chain management process focuses on the following processes:

a. Procurement of raw materials: it will include the source of the goods and services, the agreement held with the manufacturer, and the timing and process of transporting materials to the warehouse, the distribution centre, or the distribution site of the selling site.

b. Size and location of production sites and warehouses: the volume of goods sold through the site can be calculated from the distance from other sites, the cost of transportation is higher and the freight from the manufacturer moves to the site's warehouse at the next stage of the supply chain process.

c. Partnership agreement: supply chain management must ensure that all agreements, with producers, are met seller and sender made to help fix the lag, increased efficiency, and value for money.

d. Transportation: it is a key factor for supply chain management, which could be a potential opportunity to reduce costs and could have a significant impact on supply chain management. It affects the chain from the means of transportation to the uses during transit.

e. The occurrence of an event that does not go according to schedule: it can disrupt the smooth flow of operations, especially in the context of supply chain management. These events encompass any non-recurring events or changes, such as modifications to the delivery times for bulk packages for morning-to-night orders. In such cases, it is essential to have a robust system in place to manage these unexpected occurrences. One effective way to govern these events is through the implementation

of an online bank payment system. Terms of managing the supply chain as such are crucial to understand as they can greatly affect the entire chain.

f. Inventory management: it is the process used for collecting and transporting all inventory that can have an impact on the supply chain and to keep supply chain management on track, attention must be paid to these factors. The length of time that inventory is held can have a big impact on a company's bottom line.

g. Customer order processing: the customer is the starting point of the supply chain, as it arises from customer demand, orders are generated, resulting in another process of material delivery that ends with the product in the hands of the customer. So how to process customer orders is a part of supply chain management.

h. Purchase order delivery process: it's how inventory is removed from the warehouse and processed into purchase orders before they are shipped to customers can affect how quickly customers receive their products as well as the likelihood, that they'll receive items that match their orders. Buy them all without a mistake.

i. Customer order tracking; is the final step in a product's journey which is nonetheless rife with the possibility of delivery delays and hiccups. If issues are discovered, the corporation has control over this and may need to make fixes, even if the seller and the client did not agree to it. Instead, the business should plan how customers will swiftly and effectively receive their goods.

Therefore, the work process of each responsible person is important for the smooth operation of the above nine supply chains. However, many factors can cause problems or create bad attitudes, which can adversely affect a company's business. Carriers should focus on supply chain management processes to increase customer satisfaction (Nugroho et al., 2017). Not only does it allow customers to receive all orders accurately but also shortens processing times, saves costs, and guarantees prompt service according to the supply chain system which will ultimately lead to trust and ultimately repeat purchases.

2.1.2 Supply Chain Management Strategy

Supply chain management is an important part of modern business operations. It is the basis for the seamless integration of logistics systems across different companies. By establishing efficient channels for the flow of raw materials and finished products, supply chain management ensures that businesses can operate smoothly and efficiently. One of SMC's key advantages is increased productivity and the opportunity to launch new products faster. When workflows are streamlined and efficient, businesses can bring innovations to market faster. This not only keeps them ahead of the competition but also opens up new opportunities in untapped markets. By being able to launch new products more quickly, companies can expand their customer base and increase their revenue potential.

The SCM strategy is intricately linked to performance improvements and organizational capabilities, such as research and development. By applying technology to enhance enterprise capacity and marketability, organizations can further strengthen their supply chain operations (Tajbakhsh et al., 2015).

The application of strategies must take into account the specificity for the survival and growth of SMEs is the most important thing. Prioritization is required. During these rapidly spreading changes, it is difficult to achieve a competitive advantage by improving factors alone. Within the organization with changes in the external environment and increasing global competition, companies need to find ways to develop new capabilities to adapt to rapidly changing circumstances and remain competitive (Moon, 2013); implying that corporate supply chain strategy is key. It is important and a mechanism that promotes that promotes creativity, innovation, and efficiency. It suggests that these mechanisms can help companies have outstanding potential, make a difference adapt to tough situations, and help businesses grow. Therefore, SCM strategies can help companies to meet these challenges.

The SCM strategy of demand and supply planning has become an essential aspect of organizational relationships in the supply chain (Kwak et al. 2018).

2.2 Express Delivery Business in China

2.2.1 Introduction

Freight forwarding is a service business that plays an important role in distributing products to domestic and international markets. Freight forwarders are responsible for the transportation of goods at all stages of the supply chain (from raw materials/prefabricated products to intermediate and final products). Therefore, the state of commerce depends on the quantity of goods, and the quantity of goods varies with the economic state of the country. China, in particular, is one of the fastest-growing countries in the cyber world.

The development of modern technology and the adoption of single-chip computers have revolutionized the transportation industry, bringing convenience and modernization to land, sea and air transportation. As infrastructure continues to evolve, we can expect further development of SCM to make transport systems more efficient, sustainable and connected. On the other hand, the Chinese government's policy of improving and organizing transportation tax and customs is aimed at simplifying transportation business and simplifying operations. With the adjustment of tax policies, enterprises must remain vigilant and adapt to changes in government policies and tax systems. By staying informed and proactive, companies can effectively navigate the changing business environment and optimize their transportation operations.

China's logistics development trend is land transport, river transport, sea and integrated transport flow development. The need for efficient domestic and international transport services is driving this shift. The concept of a complete logistics transport company or one-stop service has become a key player in China's logistics sector. The inclusion of various transportation providers in China's logistics industry will have a positive impact on the business landscape in China. By attracting entrepreneurs to work with logistics companies, China can position itself as a popular destination for business cooperation. The participation of different business rivals will help improve the competitiveness and growth of the logistics industry, ultimately benefiting both China and its entrepreneurial partners.

2.2.2 Timeline

Road freight SMEs face several challenges that impede their expansion and growth potential. The intense competition, high labour costs, and rising energy expenses pose significant obstacles to their overall performance. Moreover, the absence of network alliances further restricts their ability to access new markets and gain a competitive edge. To overcome these challenges, road freight SMEs must focus on strategies such as differentiation, cost optimization, and building strategic partnerships to enhance their chances of success in the industry.

In the past, Kunming City had a Kunming Metropolitan Railway Container Centre. This centre was established on November 4, 2006, by China United International Rail Containers Co., Ltd. (CUIRC or Intermodal). The Kunming Metropolitan Railway Container Center was one of 18 road vessel centres in China that were erected by CUIRC in the Kunming profitable and technological development zone. The government of China recognizes the significance of establishing a notable land port in the country to serve as a crucial transportation hub for road connectivity between Yunnan Province and Southeast Asia. This land port is strategically positioned to link China's interior areas with the Southeast Asian region. According to the Thai Business Information Center in China, Consulate General, Kunming in 2020, the land port spans an extensive area of 1239 Mu, which is approximately equivalent to 516 Rai. This significant land area ensures ample space to facilitate efficient transportation operations and accommodate the anticipated flow of goods and vehicles.

Currently, the centre offers direct domestic small and medium-sized enterprises services (Non-stop stations along the way) from Kunming to various cities: Chengdu, Nanning, Guangzhou, Shanghai, Zhengzhou, Jinan, and Harbin. Most of the inbound and outbound goods are from Nanning, Guangzhou, and Chengdu. Most of the major exports are Yunnan's famous products such as fertilizers, sugar, metals, non-ferrous metals, phosphorus, and tobacco.

2.2.3 Types of expresses Delivery Business

China's profitable development in e-commerce is particularly prominent

Industry. Therefore, the current consumer demand also changes with the change in the terrain. Especially in terms of profitability. Measured by express delivery volume, it increased from $20.67 billion in 2015 to $63.52 billion in 2019, indicating that China's express delivery industry is booming and thriving.

In early 2020, the novel coronavirus (COVID-19) epidemic broke out in China, affecting the lives of many Chinese people. Because many local governments in China have begun to shut down their cities. It has made transportation, as well as transportation for Chinese people, difficult, and China's express delivery industry has been greatly affected. From January to February 2020, China's overall express payload volume exceeded $6.54 billion, with on-time performance down 10%. In addition, from January to February 2020, express deliveries from China to overseas countries totalled $188.8 million, an increase of 5.3% as planned. China experienced an outbreak that ended in March 2020. Thanks to the Chinese government's efforts to contain the coronavirus outbreak, many Chinese consumers are gradually increasing their online shopping.

It is convenient and comfortable to live in and reduces the risk of epidemics as well. This has caused the express delivery volume in China to gradually increase. China's express delivery volume from January to August 2020 was $48.05 billion, up 25.4% year over year. There has been some growth in China's express industry.

According to this review of the research, Chinese express delivery companies can be divided into four categories:

1. Foreign-funded express delivery companies such as DHL.

2. State-owned express delivery companies, such as EMS.

3. Large private express delivery companies, such as S.F. Express, and STO Express.

4. Small private express delivery companies.

Top 5 express delivery players in small and medium-sized enterprises in Kunming, China, usually refer to S.F. Express, YTO Express, ZTO Express, Yunda Express, and STO Express.

The findings of previous literature reviews revealed that supply chain management systems were used by express delivery companies. The two most significant expenses in the express delivery sector are labour and freight. The cost of gasoline and diesel fuel is another problem. Which typically declines quickly, and as a result, the cost of the express delivery sector. Due to the fluctuation of oil prices in the global market. There is also a tendency to drop, expenses for express delivery companies will be impacted, although labour expenses are determined by wages, which typically increase slowly. This indicates that the express industry is dealing with expensive labour. The costs imposed for services have increased in recent years.

Two factors can be used to explain why express delivery prices changed in China between 2015 and 2019. Consumer behaviour is evolving, with more people engaging in online purchasing and using their phones for a variety of purposes because they find them to be comfortable and convenient. As a result, China's mobile industry flourished, gradually creating a scale effect that reduced costs and stabilized prices. As the express delivery market has expanded, more express delivery businesses have entered a competitive environment. To increase market share, competitors are developing strategies, and it is anticipated that the price gap will expand, owing to the trend of rising wages and other costs. The average cost of express shipping will marginally go up overall.

2.2.4 Advantages and Disadvantages

Each mode of transportation has its benefits and drawbacks, as shown in Table 1.

Table 1 Advantages and Disadvantages of Transportation Modes

Mode	Advantages	Disadvantages
Air freight	Speed is fast, exact delivery time, lower breakage, able to deliver goods many trips per day, and good safety.	Small capacity, high cost, unable to transport heavy and explosive items, transportation depends on climatic conditions and rules, practices, and procedures for air transport are numerous.
The railway	Large cargo capacity, cargo can be transported in all weather conditions, has low energy consumption, and the cost is low.	Large construction investment, time-consuming, limited flexibility, packaging costs are high because the weight of the product needs to withstand impact, and not good for short items.
Highway	Suitable for short-distance transportation, flexible, cargo can be transported in all weather conditions, delivery service to the destination, and is easy to load.	Long-distance transportation is expensive, easy to pollute the environment, has less cargo, and consumes much energy.
Pipeline	Low transportation costs, reduced energy loss during transportation, extremely efficient mode of transportation, provides a warehouse function, low loss, and damage, low environmental effects,	Slow speed, fixed routes of services, and pipeline transport routes may have natural obstacles, such as through canyons, causing delays, and high fixed costs.

Source: Pedrotti (2021)

2.3 Financial Performance

2.3.1 Importance of financial performance

Financial performance is an indicator of operational success and relates to the degree to which quantitative performance has been achieved or achieved. It is an important part of financial risk management. It is the process of valuing company policies and operations in monetary terms. It measures the overall financial performance of a company over a given period. It can also be used to compare similar companies in the same industry or to compare entire industries. Financial statements are the official record of the activities and financial condition of a business. Financial information is presented on the board of directors and has a clear financial structure (Verma, 2022).

Financial Performance, Indicators of Financial Performance, and Non-Financial Performance, Indicators are tools used to measure or evaluate performance in the financial and other aspects of a business. Performance indicators that are suitable for the business, because this affects the success of the organization good metrics, should be consistent and aligned with the goals and objectives of the business. Depending on management's perspective financial performance indicators are suitable for both banking and financial businesses, service businesses and insurance businesses. Financial performance indicators will give a financial firm an idea of its ability to manage its budget, which can be measured, for example, by the profits of the business. Corporate financial statements take a return on assets, corporate liquidity and asset utilization rate as non-monetary performance indicators. It can indicate that a business should focus on operational efficiencies, such as sales performance, purchases of accounts receivable and payables or product development expenses, market share, and customer satisfaction. Therefore, entrepreneurs should choose indicators suitable for the nature of the enterprise.

2.3.2 Financial Performance Measurements

1) The basic formula of important measurement

Measurement is the process of determining how much or how little a physical quantity has. The volume is the same relative to the reference. However, the scope and application of measurement methods will vary depending on the rules,

discipline, and context, including statistics, social sciences, and behavioural sciences. There are many measurement formulas that operators must know and understand. Therefore, managers need knowledge and understanding of financial measurement. A financial measure is a metric that informs management about events that have occurred in the past. Or, talk about what happened in the past (lagged indicators), but not about the problems and opportunities your organization will face in the future (leading indicators).

Economic value added (EVA) is a measure of how much value is created in a short period, and this increase in value can occur in any activity along the value chain. The rationale is that the income should cover the interest on the debt. The minimum return offsets the company's risk relative to its capital. This is the minimum return investors desire to achieve their goals. EVA is also a measure of financial performance related to shareholder wealth creation. The EVA value expressed in currency is the basis of the reward system. A positive EVA indicates that the company's earnings have exceeded the value of its investments in income-generating assets. In other words, companies can create wealth by creating value which is the aim of the company.

Financial performance of an organization that can operate with cost and resource efficiency, for example, apply technology to reduce waste to zero. This means no high and costly pollution control costs through waste disposal. This means fewer costs to deal with environmental leaks and liability (Feng et al., 2018). Less energy and material costs or waste disposal from the use of hazardous substances with the possibility of increased profit margins and increased market share with lower overall costs through improving financial management efficiency.

Continuing previous research, this study uses the following measures: revenue growth, profit growth, and market share growth to represent financial performance. Research by Green et al. (2012) shows that a company's overall financial results depend on investment in operational marketing for resource efficiency and environmental benefits.

2) Business financial measurement

The return on equity model, Cole's (1972) study applied this framework to business, measuring the return on equity in equity of ordinary shareholders (Return on Equity; ROE) as a measure of profitability from the perspective of ordinary shareholders. ROE equals net income divided by the average attributable to ordinary shareholders or figures at the end of the period, followed by return on assets (ROA), which equals net income, divided by average assets or total assets for profit margin (PM) and asset utilization (AU), Return on assets (ROE). It is a ratio that shows the relationship between net income and owners' equity. This ratio is used to analyze the proportion of returns received from the owner's capital invested. Return on assets (ROA) is a ratio that shows the relationship between net profit and total asset investment of an entity. Except for intangible assets. ROA is divided into two parts: (1) profit margin (PM) and (2) asset utilization (AU).

2.4 Competitive Advantage Theory

2.4.1 Introduction

Competitive advantage means creating superior value over competitors to offer to customers, to achieve satisfaction. It requires business strategies to be consistent with changing situations and external environments, taking into account low costs and differentiation of products or services that are superior to competitors and quick response (Porter, 1980)

Competitive advantage theory suggests maintaining a superior performance over competitors. It depends on the decisions of the management, whether they can organize the activities within the organization well. Because it helps organizations reduce costs depending on the need to use price leadership strategies or make changes or specific designations. Competitive advantage can be achieved at all levels: national, organizational, local, and individual, and businesses should pursue policies, and goals that create high-quality goods to sell at high prices in the market (Porter, 1985). Competitive advantage will be achieved. When an organization needs to develop or change due to a fluctuating environment, executives must adjust their operational strategies in line with the situation and consumer needs, as well as intense

competitive conditions because it will help the organization to outperform its competitors. The development of a theory that explains competitive advantage has attracted interest from stakeholders for the better part of the last half-century (Wang, 2014).

2.4.2 Competitive Advantage Measurements

The competitive advantage can be divided into 3 approaches, namely (1) Overall cost leadership (2) Differentiation, and (3) Focusing because the competitive advantage is a business-level strategy. Work used in business by bringing resources within the organization performance of the business to develop to create a competitive advantage, (Porter, 1980). It consists of the following 3 strategies;

Cost leadership strategy is the cost of producing goods and services lower than competitors. Therefore, the business has an advantage over competitors by being able to sell products and services at a lower price than competitors or sell products at the same price as competitors with the business getting more profits. However, products and services must be of a standard that can be compared to competitors.

Differentiation strategy is to make the product and services not like competitors, have uniqueness, and have value by relying on research on consumer behaviour. That is the company must develop products and services to be able to respond to what consumers want. The characteristics of products and services that are different from competitors such as products have a good image. Excellent service and modern technology are used to work in the organization.

Focusing on customer groups or market niches is the production of products and services to focus on meeting the needs of specific customer groups. By using niche market segmentation, divided by areas of wealth, age, preferences, tastes, including special needs. In addition, businesses must have the resources and competencies that can meet the needs of customers, because it is a specific group of customers. Therefore, the business has a good relationship with customers and can know the changes in tastes and preferences of customers by which businesses can improve products and services to meet customer needs quickly.

2.5 Related Works

A study by Jaitrong and Niruttikul (2021) found that supply chain management practices at that level had a positive effect on the competitive advantage at a significance level of 0.001, and competitive advantage had a positive effect on organizational performance at a significance level of 0.001. Path factor indicates a direct effect of 0.857 and 0.685, respectively. Regarding these findings, entrepreneurs can use them as guidelines to strengthen organizational strategies to achieve competitive advantage as well as effective performance management results in supply chain management practices. The study of Hua, Chatterjee, and Jingliang (2011) found that these strategies have different effects on the competitiveness of different types of processing enterprises. For large enterprises, sourcing capability and strategic alignment are important factors, while for SMEs, sourcing capability and demand management play an important role in supplier competitiveness.

Lu et al. (2021) found that weak ties have a larger impact on the financial performance of SMEs than those of tight bonds. The capacity for information sharing and innovation acts as a mediator between weak and strong relationships, and the financial performance of SMEs. Moreover, the capacity to share information and innovation complement each other and influence the financial performance of SMEs. A weak relationship has a more significant impact on SME financing than a strong relationship. The capacity for information sharing and innovation acts as a mediator between weak and strong relationships, and the financial performance of SMEs. Moreover, the capacity to share information and innovation complement each other and influence the financial performance of SMEs.

2.6 Conclusions

      Accordingly, based on these reviews, SCM strategies have an independent and positive direct effect on the financial performance of a business. However, performance is also dependent on financial performance factors. It is expected that the combination of SCM strategies by the committee team undertaken in pursuit of financial efficiency. This has a direct, positive effect on financial performance, such as business productivity, increased sales, and profits. Therefore, the study attempts to measure these factors, reflecting them as a reference factor in competitive advantage.

CHAPTER 3
RESEARCH METHODOLOGY

In this chapter, the research design and its methods are introduced. The research design was developed based on the research objectives. A figurative illustration is given below;
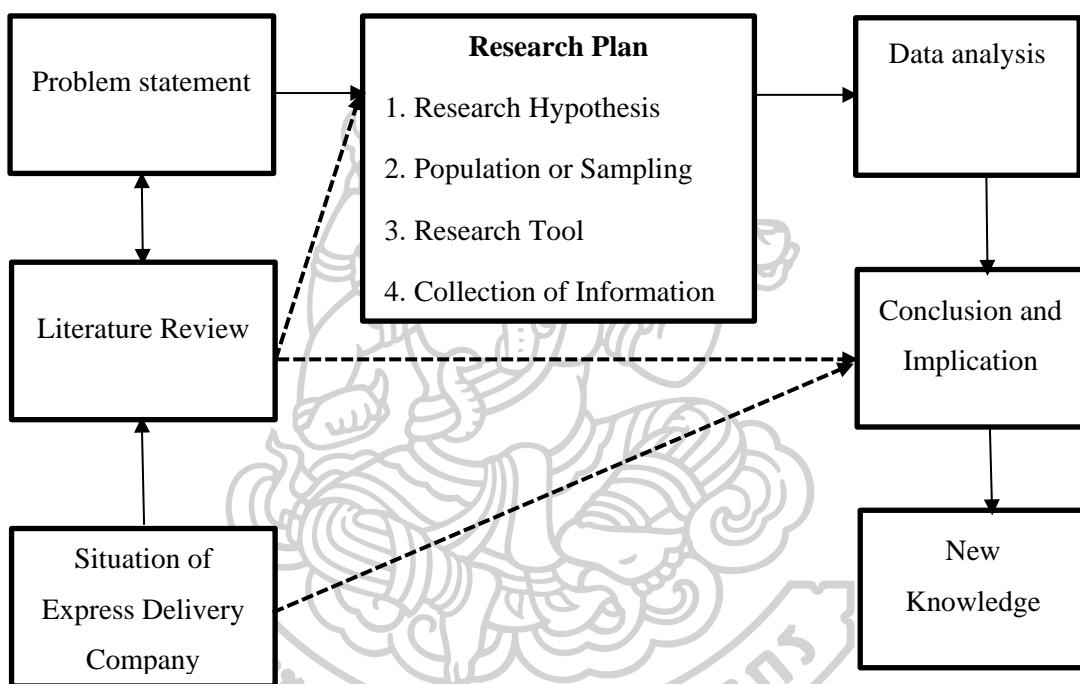
Figure 1 Quantitative Research Process Design

3.1 Research Methodology

This research methodology is divided into 3 parts as follows;

First of all, the study reviews the related works of SCM, supply chain management strategy, financial performance, and the competitive advantage theory. Then, the questionnaire about the SCM strategy, and competitive advantage were used as a data collection tool. The population in this study were entrepreneurs of 9 express delivery businesses operating, including branch managers in Kunming, People's Republic of China.

Secondly, research tools, online questionnaires to entrepreneurs or managers, or committees of 9 express delivery businesses, including branch managers.

As mentioned above, the purpose of this study is to determine the empirical impact of supply chain management strategy and financial performance on the competitive advantage of SMEs based on a review of past literature. According to previous studies, independent variables are supply chain management strategy and financial performance. The dependent variable is the competitive advantage of SMEs.

Supply chain management strategy component; Vendor managed inventory (VMI), Enterprise replenishment Planning (ERP), Collaborative Planning, Forecasting and replenishment (CPFR), Warehouse management systems (WMS), outsourcing, R&D and technology commercialization (Bendoly et al., 2005). In addition, the variables of financial performance are profitability, return on equity, return on assets, return on investment and earnings per share, which are also components of financial performance, and the dependent variable is a competitive advantage.

3.2 Research Tools

The research tool used was an online questionnaire developed from the literature review to check the validity of the contents of the questionnaire. The validity of the content is consistent between the question and the objective. (Index of Item - Objective Congruence; IOC) for three were (1) supply chain management strategy, (2) financial performance, and (3) competitive advantage of small and medium-sized enterprises in Kunming, People's Republic of China.

To validate the internal consistency of the data available, the Cronbach alpha and Covariance tests were carried out. The results are given below:

3.2.1 Internal Consistency of Variables on Factors Affecting Supply Chain Management

Table 2 Test of internal Consistency (co-variance Matrix) among the factors affecting SCM

	Q5_Cost_Efficiency	Q5_Inventory_Management
Q5_Cost_Efficiency	1.0218	
Q5_Inventory_Management	0.5883	1.1140

The correlation matrix for factors affecting supply chain management reveals a moderate positive correlation of 0.551 among these factors, suggesting that they tend to move in a similar direction, although not exceptionally strongly. This indicates a certain level of interdependence among factors such as cost efficiency, inventory management, supplier relationships, technology adoption, and employee skill and training. Furthermore, the Cronbach Alpha value of 0.7104 suggests good internal consistency among these factors, implying that the questionnaire items measuring supply chain management are reliable in assessing this construct. Additionally, the covariance matrix shows positive covariances between specific factors, indicating how they change together. For example, there is a positive covariance of 0.5883 between cost efficiency and inventory management.

3.2.2 Internal Consistency For factors affecting SME's financial performance

Table 3 A: Correlation Matrix of Factors Affecting SME Financial Performance

	Revenue Growth	Q6_Profitability	Cashflow_ Management	Debt Management
Profitability	0.255			
Q6_Cash_Flow_Man	0.378	0.030		
Q6_Debt_Manageme	0.228	-0.257	0.237	
Q6_Market_Share	1.000	0.255	0.378	0.228

Table 4 Covariance Matrix of Factors Affecting SME Financial Performance

	Revenue Growth	**Profitability**	**Cashflow_ Management**	**Debt Management**
Revenue Growth	1.1795			
Profitability	0.2589	0.8716		
Cashflow_ Management	0.2178	0.0148	0.2814	
Debt_ Management	0.0516	-0.0499	0.0261	0.0432
Market Share	1.1795	0.2589	0.2178	0.0516

	Q6_Market_Share
Market Share	1.1795

In the context of SME financial performance, the Cronbach Alpha was 0.6951, the correlation matrix presents insights into the relationships between various factors. For instance, the correlations between these factors, such as profitability, cash flow management, debt management, and market share, are relatively low, with some even close to zero. This suggests that these financial performance factors may not strongly depend on each other and may operate independently to some extent. The covariance matrix for these factors provides a similar perspective, showing the extent to which specific factors change together. While some factors exhibit positive covariances, indicating a tendency to change together, others have lower or even negative covariances, suggesting a diverse set of influences on SME financial performance.

3.3 Data Collection

The questionnaire collected responses from 222 participants, primarily small and medium-sized enterprise (SME) owners or managers in Kunming, China. The demographic information revealed a diverse group, with varying ages, education levels, and years in business. This diversity allows for a comprehensive analysis of how different factors influence supply chain management, financial performance, and competitive advantage within the SME landscape.
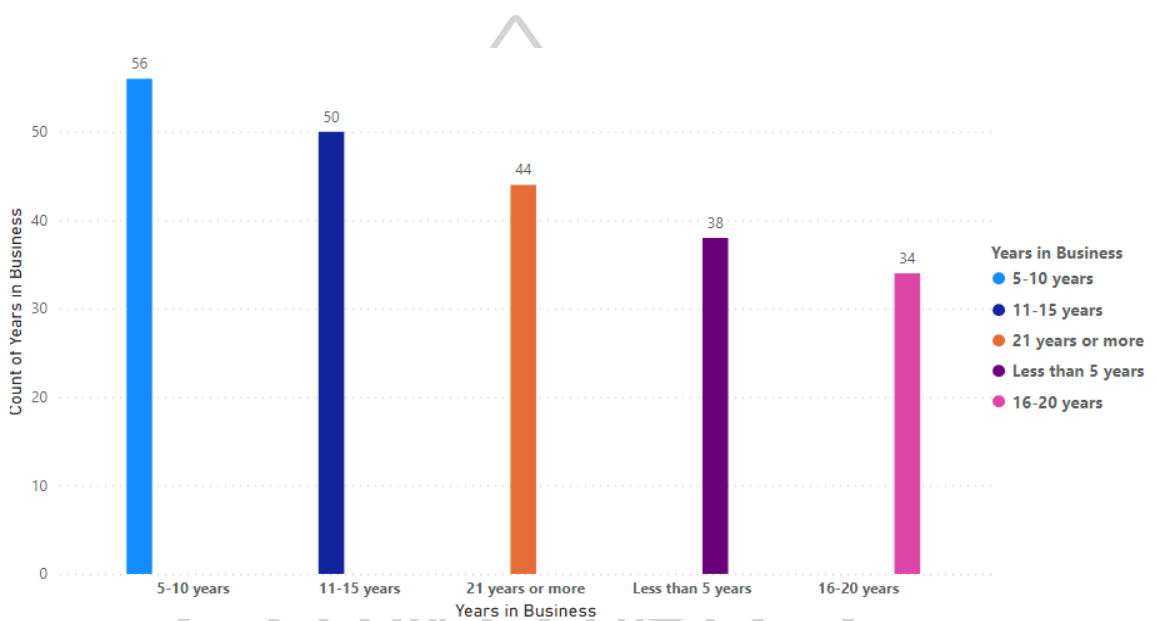

Figure 2 Bar chart showing the Number of years the respondents have spent in business and the age group of respondents

Figure 2 above shows that 56 respondents have spent 5-10 years in their various businesses and the least population of age group (16-20) years are 34 in number.
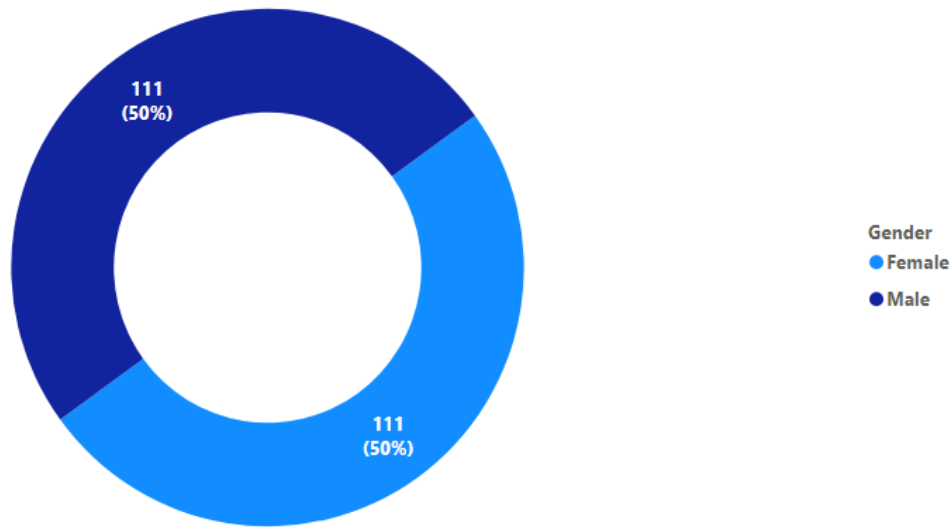
Figure 3 Gender of Respondents

As seen in Figure 3, the gender of respondents is well represented as 111 are male and 111 are female respectively.

Respondents generally demonstrated awareness of the importance of supply chain management for SMEs' competitive advantage, with a majority considering it important or very important. Opinions diverged regarding whether financial performance tends to be better for larger enterprises, indicating a complex competitive landscape. Most respondents believed that effective supply chain management positively impacts financial performance, underlining the perceived link between these two aspects. Furthermore, strong agreement among many respondents suggested that financial performance significantly affects competitive advantage in the market.

3.3.1 The Questionnaire

The Questionnaire (As seen in Appendix 1) seeks to give a complete knowledge of the dynamics driving supply chain management, financial performance, and competitive advantage in the context of Kunming, China's small and medium-sized firms (SMEs). The survey tries to develop a profile of the participants by diving into demographic facts in the first section, collecting essential features such as gender, age, education, position, years in the company, and the sort of construction projects

performed, if available. This demographic information can provide useful insights into how different segments within the SME community view and negotiate the supply chain management and financial performance difficulties.

In the second section, Question One, participants are asked to assess the relevance of supply chain management strategy for their SME's competitive advantage on a scale of "Very Important" to "Not at All." Question 2 assessed Opinions on whether larger firms have better financial performance than SMEs with limited competitive advantages are discussed. "Strongly Agree" to "Strongly Disagree" are the responses. Question 3 asks participants whether they believe good supply chain management has a beneficial influence on SME financial success. The response possibilities vary from "Yes, a lot" to "Not at all." Question 4 investigates the relationship between SME financial performance and market competitive advantage, with response options ranging from "Strongly Agree" to "Strongly Disagree."

Question 5 was measured in the third section. Participants are asked to assess the importance of key variables in their SMEs' supply chain management strategy. Cost efficiency, inventory management, supplier relationships, technology adoption, and employee skill and training are all factors to consider. "Not Significant" to "Highly Significant" is the response possibilities. Participants are asked to assess the amount to which issues impact their SME's financial performance in Question 5, which is similar to Question 5. Revenue growth, profitability, cash flow management, debt management, and market share are all factors to consider. Question 7 asks participants if they feel the elements driving supply chain management strategy and financial success in their SME are connected, with responses ranging from "Yes," "No," to "Unsure."

In this study, the researcher used descriptive statistics and inferential statistics to analyze the data with the following:

1) Descriptive statistics in the analysis of percentage, mean, and standard deviation.

2) Inferential statistics with Multiple Regression Analysis (MRA.) by Enter Selection technique, Analysis of Variance (ANOVA) and Principal Component Analysis (PCA). PC1 appears to be the key component in both SCM and financial

performance, explaining the most variance and including several aspects. PC2 focuses on a different component in each scenario (employee skill training and profitability, respectively). PC3 demonstrates particular correlations in both categories.

Finally, the summary of quantitative research results.

3.4 Data Analysis

In this study, the researcher used statistical software like Microsoft Excel and Minitab to analyse the descriptive statistics and inferential statistics of the dataset collected.

3.5 Research Conceptual Framework

The result of the concept review, theories, and related literature review shows that supply chain management strategy had a direct effect on financial performance, and financial performance had a direct effect on the competitive advantage of SMEs. The research conceptual framework is shown in Figure 4.
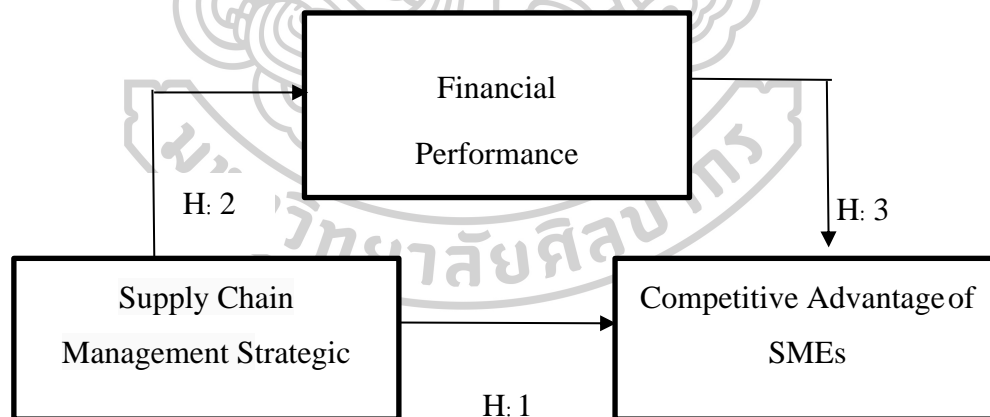

Figure 4 Research conceptual framework

CHAPTER 4
Result and Analysis

Small and medium-sized enterprises (SMEs) are critical supporters of global economic change and imperativeness. These organizations play an important role in defining the local contemporary sector in Kunming of the People's Republic of China. Their path to success is filled with difficulties. The tenuous link between supply chain management (SCM) systems and financial performance is important to SMEs' advantage in Kunming. This study intends to investigate this unplanned relationship and identify the main factors that drive it, therefore determining the final fate of SMEs in Kunming. The fundamental goals of this study are twofold: first, to investigate the significance of SCM strategies and financial performance in determining the competitive advantage of SMEs in Kunming, China; and second, to investigate the many elements that influence these critical dimensions. These goals serve as the foundation for our investigation of the complex interaction between SCM, financial performance, and the competitive advantage of SMEs in this bustling Chinese metropolis.

4.1 Demographic Data

The table below provides a summary of key statistics for the recoded variables, shedding light on the demographics of the 222 respondents. In terms of gender, the mean score of 1.5000 suggests an almost even split between male and female respondents, with 1 likely representing males and 2 representing females. The average age category falls between 31-40 years, as indicated by the mean age score of 2.748. Education levels, on average, align with "Master's Degree" (mean = 2.856), showing a relatively educated respondent group. Lastly, the mean of 4.117 for "Years in Business" suggests an average of approximately 4 years in business for respondents, reflecting the recoded categories.

The summary statistics highlight the demographic characteristics of the respondent group. Notably, the distribution of gender appears relatively balanced. The average age category indicates a middle-aged group of respondents. Education levels

skew toward higher degrees, with an average close to a "Master's Degree." The "Years in Business" variable suggests an average of around 4 years of business experience among respondents. These statistics offer valuable insights into the composition of the respondent pool, setting the foundation for further analysis of their perceptions and responses about supply chain management, financial performance, and competitive advantage.

Table 5 Demographic distribution of respondents

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Gender	222	0	1.5000	0.0336	0.5011	1.0000	1.0000	1.5000	2.0000	2.0000
Age	222	0	2.748	0.102	1.522	1.000	1.000	2.000	5.000	5.000
Education	222	0	2.856	0.110	1.639	1.000	1.000	3.000	5.000	5.000
Position	222	0	27.968	0.756	11.265	1.000	19.750	36.000	36.000	36.000
Years in Business	222	0	4.117	0.111	1.660	1.000	3.000	4.000	5.000	7.000

4.2.1 To study the importance of supply chain management strategies and financial performance toward the competitive advantage of small and medium-sized enterprises in Kunming, the People's Republic of China

The data analysis results in Tables 6 below are a Multiple Linear regression analysis conducted for Research Objective One, which aims to examine the importance of supply chain management (SCM) strategies and their impact on the competitive advantage (Revenue Growth) of small and medium-sized enterprises (SMEs) in Kunming, China.

Table 6 Result of Analysis of Variance between Revenue Growth and SME's Supply
Chain Management

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	3	24.455	8.1516	7.52	0.000
Q5_Cost_Efficiency	1	5.150	5.1500	4.75	0.030
Q5_Inventory_Management	1	2.468	2.4676	2.28	0.133
Q5_Employee_Skill_Training	1	9.467	9.4668	8.74	0.003
Error	218	236.216	1.0836		
Lack-of-Fit	17	166.014	9.7655	27.96	0.000
Pure Error	201	70.202	0.3493		
Total	221	260.671			

The standard error of the regression model is approximately 1.04094. The statistic indicates the proportion of the variance in the dependent variable (competitive advantage in this case) that can be explained by the independent variables (SCM-related factors.

ANOVA was used to test the overall significance of the regression model and its predictors. This section provides information about the overall regression model. It shows that the regression model as a whole is statistically significant, as indicated by the F-value of 7.52 and a very low p-value (0.000). Cost Efficiency, Inventory Management, and Employee Skill Training are the independent variables of (SCM-related factors) included in the model. The ANOVA table breaks down the contributions of each factor. Among them, cost efficiency and Employee Skill Training are statistically significant as their p-values (0.030 and 0.003, respectively) are below the typical significance level of 0.05. This suggests that these two factors have a significant impact on the competitive advantage (Revenue Growth).

Summarily, the regression analysis indicates that the model, which includes SCM-related factors such as cost efficiency, inventory management, and employee skill training, is statistically significant. It explains approximately 9.38% of the

variance in competitive advantage. Notably, cost efficiency and employee skill training are found to have a significant impact on competitive advantage (Revenue Growth), while inventory management does not appear to be statistically significant in this model. The "lack-of-fit" component suggests that there may be unexplained variability in competitive advantage (Revenue Growth) that is not accounted for by the included factors, indicating the need for further investigation or refinement of the model.

Table 7 Analysis of Variance Between Revenue Growth And Financial Performance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	3	65.14	21.7129	24.21	0.000
Q6_Profitability	1	22.57	22.5659	25.16	0.000
Q6_Cash_Flow_Management	1	24.00	23.9971	26.75	0.000
Q6_Debt_Management	1	12.36	12.3599	13.78	0.000
Error	218	195.53	0.8969		
Lack-of-Fit	2	10.73	5.3629	6.27	0.002
Pure Error	216	184.81	0.8556		
Total	221	260.67			

The supplied Analysis of Variance (ANOVA) and Model Summary in Tables 8 and 9 show the findings of regression analysis for research Objective one, which intends to explore the elements linked to supply chain management (SCM) strategies and their influence on financial performance in Kunming, China.

The ANOVA (in Table 9) evaluates the overall importance of the regression model and its predictors. With an F-value of 24.21 and an extremely low p-value (0.000), the complete regression model is statistically significant, showing that the model as a whole has predictive potential in explaining financial performance based on SCM-related parameters.

In summary, the regression analysis for research objective two indicates that the overall model, which includes SCM-related factors such as profitability, cash flow management, and debt management, is statistically significant and has predictive power for explaining financial performance in Kunming's SMEs. All three SCM-related factors are found to be highly statistically significant, suggesting that they significantly influence financial performance.

4.2.2 To study the factors affecting supply chain management strategies and financial performance toward the competitive advantage of small and medium-sized enterprises in Kunming, the People's Republic of China.

Table 8 Eigenanalysis of the Correlation Matrix under Factors Affecting Supply Chain Management

Eigenvalue	1.5792	0.9906	0.4302
Proportion	0.526	0.330	0.143
Cumulative	0.526	0.857	1.000

Table 9 Eigenvectors of Factors Affecting Supply Chain Management

Variable	PC1	PC2	PC3
Q5_Cost_Efficiency	0.677	0.279	-0.681
Q5_Inventory_Management	0.704	0.026	0.710
Q5_Employee_Skill_Training	-0.215	0.960	0.179

Tables 10 and 11 of the supply chain management (SCM) major factor analysis findings show vital information on how the variables (Q5 Cost Efficiency, Q5 Inventory Management, and Q5 Employee Skill Training) relate to the underlying factors or components (Principal Components, PC1, PC2, and PC3).

The Eigenvalues are the proportions of variation explained by each primary component. PC1 has an eigenvalue of 1.5792, suggesting that it explains the greatest proportion of the variation in the data. The eigenvalue of PC2 is 0.9906. The eigenvalue of PC3 is 0.4302. The proportion denotes the percentage of total variation explained by each component. PC1 accounts for 52.6 percent of the overall variation. PC2 accounts for 33.0 percent of the overall variation. PC3 accounts for 14.3% of the overall variation.

The cumulative column displays the total proportion of variation explained. PC1 and PC2 account for 85.7 percent of the total variation, while all three components account for 100 percent of the total variance.

The Eigenvectors (Table B) depict the link between the primary variables (Q5 Cost Efficiency, Q5 Inventory Management, and Q5 Employee Skill Training) and the original variables (PC1, PC2, and PC3). Both Q5 Cost Efficiency and Q5 Inventory Management have positive loadings in PC1, indicating that these two factors have the greatest effect on PC1. The amount of the loading for Q5 Cost Efficiency is greater than that for Q5 Inventory Management, showing that cost efficiency has a significant effect.

Q5 Employee Skill Training has a substantial positive loading in PC2, indicating that employee skill training has the most effect on PC2. PC3 has minimal loadings for all three variables, indicating that it has no significant association with any of the original variables.

Summarily, PC1 appears to be a component linked to supply chain management efficiency, including cost efficiency and inventory management. Within SCM methods, PC2 is generally related to employee skill training. PC3 lacks a clear dominating variable and hence may be less useful in describing the underlying structure of the SCM variables in this scenario.

The primary factor analysis demonstrates that the factors in supply chain management linked to cost efficiency, inventory management, and staff skill training may be summarized into three main components. In the context of the research, these components give an organized manner to comprehend how various factors contribute to the broader notion of supply chain management.

Table 10 Eigenanalysis of the Correlation Matrix for the Factors Affecting Financial
Performance

Eigenvalue	1.5732	1.2649	0.6721	0.4898
Proportion	0.393	0.316	0.168	0.122
Cumulative	0.393	0.710	0.878	1.000

Table 11 Eigenvectors for the Factors Affecting Financial Performance

Variable	PC1	PC2	PC3	PC4
Q6_Revenue_Growth	0.635	0.271	0.299	-0.659
Q6_Profitability	0.110	0.791	0.252	0.546
Q6_Cash_Flow_Management	0.613	-0.014	-0.751	0.244
Q6_Debt_Management	0.457	-0.548	0.531	0.457

Table 10 and 11 shows the findings of a primary factor analysis on financial performance-related variables, which reveal how these variables contribute to the underlying factors or components (Principal Components, PC1, PC2, PC3, and PC4).

Eigenvalues indicate the variation explained by each primary component. PC1 has an eigenvalue of 1.5732, suggesting that it explains the most variation in the data. PC2 has an eigenvalue of 1.2649. PC3 has an eigenvalue of 0.6721. PC4 has an eigenvalue of 0.4898.

The proportion reflects the percentage of total variation explained by each component. PC1 explains 39.3 percent of the total variation. PC2 explains 31.6 percent of the total variation. PC3 explains 16.8 percent of the total variation. PC4 explains 12.2 percent of the total variation. The cumulative column displays the cumulative proportion of the variation explained. PC1 and PC2 explain 71.0 percent of the entire variation, PC1 to PC3 explain 87.8 percent, and all four components explain 100 percent of the whole variance.

Eigenvectors in Table 11 depict the relationship between the primary variables (Q6 Revenue Growth, Q6 Profitability, Q6 Cash Flow Management, and Q6 Debt

Management) and the original variables (PC1, PC2, PC3, and PC4). All four variables exhibit positive loadings in PC1, indicating that PC1 is impacted by all of them. The loading for Q6 Revenue Growth, on the other hand, is very substantial, showing that PC1 is largely connected with revenue growth but is also impacted by other factors. Q6 Profitability shows a substantial positive loading in PC2, indicating that PC2 is mostly related to profitability. PC3 has a significant negative loading for Q6 Cash Flow Management and a positive loading for Q6 Debt Management, indicating that PC3 represents a component where these two variables are inversely connected. PC4 has a very balanced loading pattern across all variables, indicating that it is less dominated by any particular variable.

Finally, PC1 appears to be a component connected to total financial success, with a heavy emphasis on revenue growth but also taking other financial characteristics into account. PC2 is a component that is mostly connected with profitability. PC3 is a component in which cash flow management and debt management are inversely related. PC4 lacks a single dominant characteristic and may provide a more balanced picture of financial performance.

Table 12 Analysis of Variance of Revenue Growth and Cost Efficiency

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Q5_Cost_Efficiency	3	19.00	6.333	5.71	0.001
Error	218	241.67	1.109		
Total	221	260.67			

The Model Summary and Analysis of Variance (ANOVA) results in Tables 12 apply to study question two, which focuses on the link between supply chain management (SCM) techniques, especially cost efficiency, and financial performance in Kunming, China SMEs.

The Analysis of Variance (ANOVA) in Table 12 examined the overall importance of the SCM variable "Q5 Cost Efficiency" in explaining financial performance, ANOVA is utilized. "Q5 Cost Efficiency" has three degrees of freedom

(DF) in this study, suggesting that it was utilized as a categorical variable with multiple levels. For "Q5 Cost Efficiency," "Adj SS" indicates the adjusted sum of squares, and "Adj MS" represents the adjusted mean squares. The F-value is 5.71 and the corresponding p-value is 0.001. This means that "Q5 Cost Efficiency" explains financial performance in a statistically meaningful way. The low p-value indicates that the association between supply chain management cost efficiency and financial performance is statistically significant.

According to the regression analysis, the SCM variable "Q5 Cost Efficiency" is statistically significant in describing the financial performance of Kunming SMEs. It explains around 7.29 percent of the variance in financial performance. The F-value of 5.71 and p-value of 0.001 suggest a statistically significant association between cost efficiency and financial success. This shows that cost-cutting measures within the supply chain management strategy might have a significant influence on the financial performance of SMEs in Kunming. In summary, the study shows that supply chain cost efficiency, as evaluated by "Q5 Cost Efficiency," is a statistically significant factor impacting financial performance in Kunming's SMEs. It is crucial to note, however, that other factors not included in this study may also have an impact on financial success.

Table 13 Analysis of Variance of Revenue Growth and Cost Efficiency

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Q6_Debt_Management	1	13.60	13.600	12.11	0.001
Error	220	247.07	1.123		
Total	221	260.67			

The Model Summary and Analysis of Variance (ANOVA) results in Tables 13 relate to study goal two, which focuses on the association between the supply chain management (SCM) variable "Q6 Debt Management" and financial performance in Kunming, China's small and medium-sized firms (SMEs).

The Analysis of Variance (ANOVA) examined the overall importance of the SCM variable "Q6 Debt Management" in explaining financial performance, ANOVA is utilized. "Q6 Debt Management" has one degree of freedom (DF) in this study, suggesting that it was utilized as a single predictor variable. For "Q6 Debt Management," "Adj SS" indicates the adjusted sum of squares, and "Adj MS" represents the adjusted mean squares. The F-value is 12.11 and the corresponding p-value is 0.001. This suggests that "Q6 Debt Management" explains financial success in a statistically meaningful way. The low p-value significantly confirms the relevance of the association between debt management and financial success in supply chain management.

According to the ANOVA results, the SCM variable "Q6 Debt Management" is statistically significant in explaining financial performance in Kunming SMEs. The F-value of 12.11 and the low p-value of 0.001 shows that this link is significant.

Both the ANOVA and Model Summary results show that debt management in supply chain management, as evaluated by "Q6 Debt Management," is a statistically significant factor impacting financial performance in Kunming SMEs. It is crucial to highlight, however, that other unmeasured factors may also contribute to financial success, and more study may be required to investigate these extra impacts.

CHAPTER 5

5.1 CONCLUSION

This study has provided useful insights into the complex link between supply chain management (SCM) strategies, financial performance, and competitive advantage among small and medium-sized firms (SMEs) in Kunming, China. We arrived at many significant conclusions that provide light on the processes at play in this unique business landscape through careful data analysis and integration of relevant literature.

The findings affirm the significance of SCM strategies as pivotal drivers of both financial performance and competitive advantage in the context of Kunming SMEs. It is evident that the effective management of supply chains, encompassing aspects such as cost efficiency, inventory management, and employee skill training, is not merely an operational concern but a strategic imperative. SMEs that prioritize these aspects are better positioned to achieve higher revenue growth and secure a competitive edge. Furthermore, the empirical evidence underscores the importance of financial performance as both an outcome and a facilitator of competitive advantage. Our study confirms that profitability, cash flow management, and debt management, which are integral components of SCM strategies, play a substantial role in influencing financial outcomes. SMEs that exhibit financial prudence and agility are more likely to not only survive but thrive in the competitive landscape.

The integration of relevant literature into our analysis has enriched our understanding of the broader implications of these findings. Prior research has consistently emphasized the transformative potential of SCM strategies in driving operational excellence and market competitiveness. Our study aligns with these insights and extends them to the specific context of Kunming, China.

The findings of this study underscore the critical importance of SCM strategies in shaping the financial performance and competitive advantage of SMEs in Kunming, China. The empirical evidence presented here serves as a testament to the pragmatic significance of optimizing cost efficiency, employee skill training, and financial management within the supply chain. These findings offer a road map for

Kunming SMEs to negotiate the challenging landscape of global and local competitiveness. As the corporate landscape evolves, embracing these methods and cultivating an adaptation culture will be critical to long-term success. This study adds to the corpus of knowledge on the subject of SCM and provides practical advice for SMEs looking to succeed in changing marketplaces.

5.2 Recommendations

These recommendations are based on the empirical findings of the study and draw from existing literature in the field of supply chain management. Implementing these strategies can help SMEs in Kunming optimize their SCM practices, improve financial performance, and gain a sustainable competitive advantage in their respective markets. Some of the recommendations are:

1. Enhancing Cost Efficiency in SCM: Based on the study's findings, it is recommended that SMEs in Kunming prioritize cost efficiency within their supply chain management (SCM) strategies. Cost efficiency was identified as a significant driver of financial performance and competitive advantage (Minwir, Mallouh, & Al-Shammari, 2023). SMEs should focus on streamlining their SCM processes, optimizing resource utilization, and minimizing waste to achieve cost efficiencies. Implementing lean practices, automating routine tasks, and exploring cost-effective sourcing options can contribute to this goal.

2. Investing in Employee Skill Training: The study highlights the positive impact of employee skill training on competitive advantage and financial performance (Minwir, Mallouh, & Al-Shammari, 2023). Therefore, SMEs should consider investing in ongoing training and development programs for their workforce. This includes both technical skills related to SCM and soft skills that enhance collaboration and adaptability. Training can improve employee performance, innovation, and the overall effectiveness of SCM operations.

3. Optimizing Debt Management: Debt management emerged as a significant factor influencing financial performance within the SCM context (Commander, Natarajan, & Rajiv, 2022). SMEs in Kunming should focus on optimizing their debt management practices. This involves monitoring and managing

debt levels, negotiating favourable terms with creditors, and using debt strategically to fuel growth. Proper debt management can reduce financial risks and ensure a healthier balance sheet.

4. Continuous Monitoring and Adaptation: Given the dynamic nature of the business environment, SMEs should adopt a culture of continuous monitoring and adaptation in their SCM strategies (Sri, Endi, & Farika, 2022). Regularly assess the effectiveness of SCM processes and their impact on financial performance. Be prepared to adapt to changing market conditions, customer demands, and technological advancements. This agility can be a source of competitive advantage (Nilesh & Mate, 2022).

5. Leveraging Technology: Embrace technological solutions to enhance SCM efficiency and effectiveness. Consider implementing SCM software and analytics tools to gain real-time insights into supply chain operations (Ramakrishna, 2019). These technologies can aid in demand forecasting, inventory management, and performance monitoring, contributing to better financial outcomes.

6. Collaborative Networks: SMEs in Kunming can explore collaborative networks and partnerships within their supply chains (Kenneth, 2021). Collaborations can lead to cost-sharing, knowledge exchange, and improved access to resources. These partnerships can enhance SCM capabilities and competitiveness.

7. Sustainability and Green Practices: Given the growing emphasis on sustainability and environmental responsibility, SMEs should also consider incorporating green supply chain practices into their strategies (Louis & Chengedzai, 2018). This not only aligns with global trends but can also enhance brand reputation and attract environmentally conscious customers.

REFERENCES

Andreas, H., , Hendy, Tannady., John, J.O.I., Ihalauw., Christantius, Dwiatmadja., Harijono, Harijono. (2020). "Supply Chain Management for Small and Medium Enterprises at Central Java-Indonesia." **International Journal of Supply Chain Management**, 9, 3: 1136-1140.

"Automotive Parts Supply Chains." **Journal of Business Administration The Association of Private Higher Education Institutions of Thailand**, 12, 1: 172-190.

Ballou, R. H. (1992). **Business Logistics Management**. 4th ed. New Jersey: Prentice-Hall.

Barata, C. (2016). **The Influence of Collaborative Supply Chains on the Company's Operational Performance in Yogyakarta**. Yogyakarta: UIN Press.

Barney, J. (1991). "Firm's resources and sustained competitive advantage." **Journal of Management**, 17, 1: 99-120.

Bendoly, E., and Jacobs, F. R. (2005). **Strategic ERP Extension and Use**. Stanford, CA, USA: Stanford University Press.

Chopra, S., and Meindl, P. (2007). **Supply Chain Management: Strategy, Planning, and Operation**. 3rd ed. New Jersey, USA: Prentice Hall.

Cohen, S., and Roussel, J. (2005). **Strategic Supply Chain Management: The five disciplines for Top Performance**. New York: McGraw- Hill.

Commander, N. k., , Natarajan., Rajiv, Ramarajan. (2022). "An Empirical Study of the Performance of Green Supply Chain Management in Small and Medium - Sized Enterprises." 8, 1: 1-12. doi:10.58419/gbs.v8i1.812201

Damien, J. P., and Sohal, A. S. (2002). "Implementation and usage of electronic commerce in managing the supply chain: A comparative study of ten Australian companies. Benchmarking." **An International Journal**, 9, 2: 190 – 208.

Feng, M., Yu, W., Wang, X., Wong, C., Xu, M., and Xiao, Z. (2018). "Green supply chain management and financial performance: The mediating roles of operational and environmental performance." **Business Strategy and the Environment**, 27, 7: 811-824.

Heizer, J., and Render's, B. (2010). **Operations Management**. 10th ed. Hardcover: Prentice-Hall.

Heriyanto. (2017). *Supply Chain Application in Small and Medium Enterprises in Palembang City*. Paper presented at the Proceedings of National Seminar, Bandung: Maranatha Christian University.

Hua, S., Ranjan Chatterjee, S., and Jingliang, C. (2011). "Achieving competitive advantage in service supply chain: evidence from the Chinese steel industry." **Chinese Management Studies**, 5, 1: 68-81. available from https://doi.org/10.1108/17506141111118462.

Jain, J., Dangayach, G. S., Agarwal, G., and Banerjee, S. (2010). "Supply chain management: Literature review and some issues." **Journal of Studies on Manufacturing**, 1, 1: 11-25.

Jaitrong, R., and Niruttikul, N. (2021). "supply chain management practices, competitive advantage and organizational performance in Automotive Parts Supply Chains." **Journal of Business Administration The Association of Private Higher Education Institutions of Thailand**, 12, 1: 172-190.

Kenneth, W. G., Whitten, D., and Inman, R. A. (2008). "The impact of logistics performance on organizational performance in a supply chain Context." **Supply Chain Management: An International Journal**, 13, 4: 317–327.

Kumar, R., Singh, R. K., and Shankar, R. (2013). "Study on coordination issues for flexibility in the supply chain of SMEs: A case study." **Global Journal of Flexible System Management**, 14, 2: 81-92.

Kwak, D.-W., Seo, Y.-J., and Mason, R. (2018). "Investigating the relationship between supply chain innovation, risk management capabilities, and competitive advantage in global supply chains." **International Journal Operation Production Management**, 38: 2–21.

Lee, R. (2021). "The effect of supply chain management strategy on operational and financial performance." **Sustainability**, 13: 5138. available from https://doi.org/10.3390/su13095138.

Louis, R., , Epoh., Chengedzai, Mafini. (2018). "Green supply chain management in small and medium enterprises: Further empirical thoughts from South Africa." **Journal of Transport and Supply Chain Management**, 12, 12. doi:10.4102/JTSCM.V12I0.393

Lu, Q., Deng, Y., Yu, M., Song, H., and Liu, B. (2021). "Supply chain network and financing performance of small and medium enterprises in China: A survey and quasi-replication using fuzzy-set qualitative comparative analysis." **Baltic Journal of Management**, 16, 5: 785-803. available from https://doi.org/10.1108/BJM-09-2020-0331.

Maat, P., Armayah, S., and Musran, M. (2020). **The effect of supply chain strategy toward competitive advantage, and company performance: A. Case of small-medium industries in West Sulawesi Province of Indonesia**. accessed. available from https://www.revistaespacios.com/a20v41n14/20411416.html

Malik, S. N., Musa, H., Ahmad, S., and Mohamad, N. (2014). "The factors influencing supply chain disruptions on supply chain performance." **Journal of Technology Management and Technopreneurship**, 2, 2: 1-7.

Minwir, Mallouh, Al-Shammari. (2023). "Modeling strategic planning for sustainable competitive advantage in supply chain management." **Business: Theory and Practice**, 24, 1: 102-108. doi:10.3846/btp.2023.17170

Moon, S. M., and Huh, M. G. (2013). "Duet of exploitation and exploration: The multi-dimensional approach of organizational ambilaterality." **Korean Management Review**, 42: 293–320.

Munizu, M., Pono, M., and Alam, S. (2019). "The impact of information technology application on supply chain integration and competitive advantage." **Indonesian Fishery Industry Context. Quality–Access to Success**, 20, 169: 151-156.

Nilesh, R., Mate. (2022). "Transformation of supply chain management to agile supply chain management: Creating competitive advantage for the organizations." **World Journal Of Advanced Research and Reviews**, 15, 2: 575-592. doi:10.30574/wjarr.2022.15.2.0872

Nugroho, A., Surachman, and Rofiq, A. (2017). "Analysis on the application of Krepek supply chain management factors." **Journal of Agricultural Technology**, 18, 3: 153-162.

Pedrotti, S. (2021). **Advantages and disadvantages of the various modes of transporting goods**. accessed. available from https://www.fercam.com/en-int/blog/advantages-and-disadvantages-of-the-various-modes-of-transporting-goods--2-2433.html

Porter, M. E. (1980). **Competitive strategy**. The Free Press.

————. (1990). **The Competitive Advantage of Nations**. London: Macmillan.

Prajogo, D. I., and Sohal, A. S. (2003). "The relationship between TQM practices, quality performance, and innovation performance: An empirical examination." **International Journal of Quality & Reliability Management**, 20, 8: 901-918.

Ramakrishna, Yanamandra. (2019). **A Framework of Supply Chain Strategies to achieve competitive advantage in Digital era**.

Sebastian, Kot. (2018). "Sustainable Supply Chain Management in Small and Medium Enterprises." **Sustainability**, 10, 4: 1143. doi:10.3390/SU10041143

SPono, M., Mappigau P., M., Hamid, N., Amar, M. Y., Munizu, M., Munir, A. R., and Meutia, A. S. (2018). "The strategy of development on core competencies in improving the competitiveness of Cocoa in Mamuju Regency, West Sulawesi Province." **Academy of Strategic Management Journal**, 17, 4: 1-5.

Sri, Wilujeng., Endi, Sarwoko., Farika, Nikmah. (2022). "Triple-A strategy: For supply chain performance of Indonesian SMEs." **Uncertain Supply Chain Management**, 10, 1: 95-100. doi:10.5267/J.USCM.2021.10.007

Tajbakhsh, A., and Hassini, E. (2015). "Performance measurement of sustainable supply chains: A review and research questions." **International Journal Productivity Performance Management**, 64, 2: 744–783.

Thai Business Information Center in China, Consulate General, Kunming. (2020). **Kunming Railway Container Center" China-Europe Railway Link and China-Laos-Thailand Railway in the Future**. accessed. available from https://www.salika.co/2018/08/15/kunming-intermodal-container-transportation/

Verma, E. (2022). **Financial Performance: Understanding the Concepts and Its Areas**. accessed. available from https://www.simplilearn.com/financial-performance-rar21-article

Wheelen, T. L., and Hunger, J. D. (2012). **Strategic management and business policy: toward global sustainability**. 13th ed. New Jersey: USA: Pearson Education.

Yevhen, Krykavskyy. & Nataliya, Hayvanovych. (2019). "Competitiveness of Family SMEs in the Supply Chain." **Journal of Intercultural Management**, 11, 1: 81-103. doi:10.2478/JOIM-2019-0004

Yu, K., Luo, B. N., Feng, X., and Liu, J. (2018). "Supply chain information integration, flexibility, and operational performance: An archival search and content analysis." **International Journal Logistic Management**, 29, 2: 340–364.
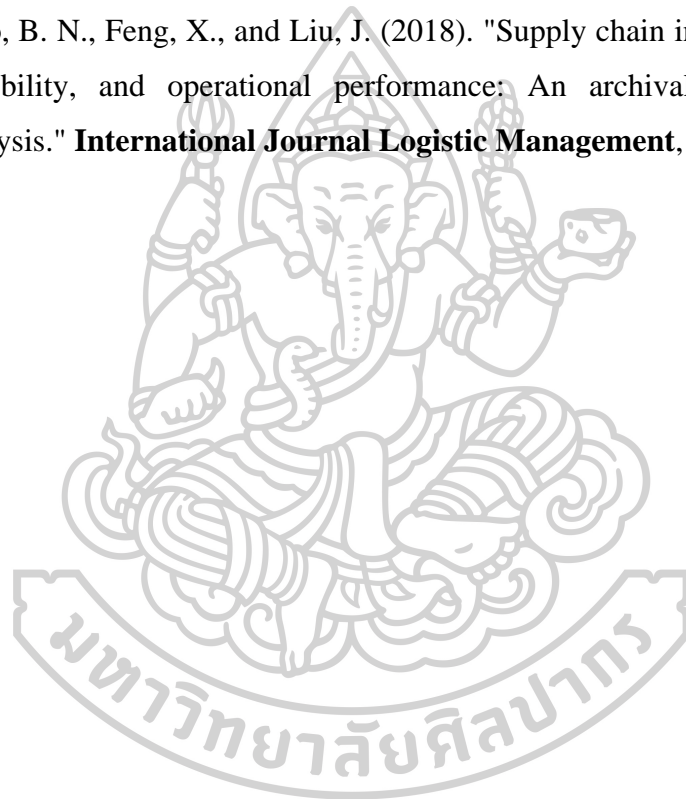
APPNDIX

QUESTIONNAIRE

This questionnaire is designed to gather insights into the factors affecting supply chain management, financial performance, and competitive advantage for SMEs in Kunming, China.

Instructions: Please indicate your response by marking the appropriate box (□).

Part 1: Demographics

1. Gender:

☐ Male   ☐ Female

2. Age: Under 30 years   ☐ 31-40 years   ☐ 41-50 years

☐ 51-60 years   ☐ 60 years or   ☐ older

3. Education: Below Bachelor Degree

☐ Bachelor's Degree   ☐ Master's Degree   ☐ PHD

☐ Other (Please specify) _____

4. Position: Owner/Manager

☐ Other (Please specify) _____

5. Years in Business: Less than 5 years

☐ 5-10 years   ☐ 11-15 years   ☐16-20 years

☐ 21 years or   ☐ more

6. Types of Construction Projects (if applicable): Residential or housing

☐ Commercial   ☐ Industrial

☐ Civil works for public utilities

☐ Other (Please specify) _____

Part 2: Supply Chain Management and Financial Performance

Question 1: How important do you consider supply chain management strategy for your SME's competitive advantage?

☐ Very Important Important   ☐ Neutral   ☐ Not Very Important

☐ Not Important at All

Question 2: In your opinion, does financial performance tend to be better for large and medium-sized enterprises compared to SMEs with small competitive advantages?

☐ Strongly Agree   ☐ Agree Neutral

☐ Disagree   ☐ Strongly Disagree

Question 3: Do you believe that effective supply chain management positively impacts your SME's financial performance?

☐ Yes, significantly   ☐ Yes, to some extent Neutral

☐ No, not significantly   ☐ Not at all

Question 4: Do you believe that your SME's financial performance affects its competitive advantage in the market?

☐ Strongly Agree Agree   ☐ Neutral

☐ Disagree   ☐ Strongly Disagree

Part 3: Factors Affecting Supply Chain Management and Financial Performance

Question 5: Please rate the extent to which the following factors affect your SME's supply chain management strategy:

Factors	Not Significant	Slightly Significant	Moderately Significant	Highly Significant	Not sure
Cost Efficiency					
Inventory Management					
Supplier Relationships					
Technology Adoption					
Employee Skill and Training					

Question 6: Please rate the extent to which the following factors affect your SME's financial performance:

Factors	Not Significant	Slightly Significant	Moderately Significant	Highly Significant	Not sure
Revenue Growth					
Profitability					
Cash Flow Management					
Debt Management					
Market Share					

Question 7: Do you believe that the factors influencing supply chain management strategy and financial performance in your SME are interrelated?

☐ Yes   ☐ No   ☐Unsure

VITA

NAME   Ni Chang