Performance Measurement of 3PL Service Providers for Online Retailers in the Philippines

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Abstract

Third-party logistics (3PL) is an essential player in satisfying the needs of the growing online retail industry. The growing competition in this industry necessitates the demand for 3PL companies to provide fast, reliable, and cost-efficient services to satisfy their customers' needs. This study illustrated the role of 3PL service providers and measured their actual performance in servicing the online retailing sector in the Philippines. Data from four (4) 3PL companies operating in the country were obtained and evaluated based on several criteria or factors such as cost of service, quality of service in terms of on-time delivery, quality of service in terms of errors, quality of service in terms of cost of damages, long-term relationships, flexibility in billing, delivery performance, information technology (IT) capacity, product rating, fixed asset, and market share. Using the analytical hierarchy procedure (AHP), the importance weights of each factor were calculated. Results indicated that the cost of service is considered by the 3PL companies as the most crucial factor, posting the highest importance weight of 0.31. On the other hand, the least important factor, obtaining the lowest importance of 0.01, is fixed asset. 3PL companies are encouraged to revisit their costing strategy to ensure competitiveness and relevance in the logistics industry. They must also improve the quality of service to maintain the customers and build long-term relationships.

Keywords
3PL service provider, selection criteria, analytical hierarchy process (AHP), e-commerce, online retailing

1. Introduction

Logistics is regarded as an essential component of a supply chain regardless of the industry. Customer service, order processing, inventory management, and transportation are the primary components (Lai and Cheng, 2009). Because the activities differ by industry, the logistics concept must be responsive to alter in response to its surroundings (Rushton et al., 2014). Logistics applies to the flow of both raw materials and finished goods, from the supply chain source to the final consumer. As a result of the broader trend of globalization, many companies have been obliged to outsource their logistics functions to third-party logistics (3PL) companies, and this has drawn much attention to critical skills for enterprises that employ 3PLs (Abbasi et al., 2021). 3PL providers handle various logistics tasks, including transportation, warehousing, and information technology (Chopra and Meindl, 2013).

Companies who are committed to using 3PL services expect more efficient and cost-effective processes than if they performed these activities in-house (Batarlienė and Jarašūnienė, 2017). According to Sahay and Mohan (2006), some of the advantages of using 3PL providers include more flexibility, operational efficiency, improved customer service levels, improved supply chain performance, and a better focus on their core activities. Similarly, studies have shown that 75% of companies who use logistics services have experienced reduced overall logistics cost while 98% of 3PL providers expressed that the use of 3PLs has contributed to improved customer service (Langley and Capgemini, 2017). This information proves that the services of 3PL providers will be significantly in demand in the movement of finished goods. As a result, 3PLs are critical in retaining the flexibility of a company's supply chain arrangement (Choi et al., 2016).

Domestic transportation required by most of the local enterprises engaged in e-commerce is the biggest market of 3PL services, accounting for about 74% of shippers (Langley and NTT DATA, 2022). In the Philippines, 3PL outsourcing is expected to reach 40% of the sector's revenue by 2024 (TESDA, 2019). As a result of the Covid-19 health issue, e-

commerce or online selling increased rapidly in the first quarter of 2020, whereas it increased later in Europe and North America (OECD, 2020). In effect, many online sellers choose to stock their products at a 3PL distribution center to shorten the time it takes to dispatch orders after they are placed (Zhang et al. 2015).

This study illustrated the role of 3PL service providers and measured their actual performance in the online retailing sector in the Philippines. Performance measurement is essential for evaluating results (Harrington, 1995) and recalibrating goals (Krakovics et al. 2008). The study also identified the most significant factors that affect the successful operation of the four (4) 3PL companies. The findings of this study may be beneficial to 3PL providers as this will help them evaluate their business performance and aid in their planning and decision-making activities. Identifying the success factors will also help these companies to focus on business areas that need improvements.

2. Literature Review

A supply chain is a system of organizations, people, activities, information, and resources involved in moving a product or service from supplier to customer (Kozlenkova et al., 2015). It is built on five main processes which include inbound logistics, operations, outbound logistics, sales and marketing, and service (Blanchard, 2007). It depicts images of products or supplies traveling along a supply chain from suppliers to manufacturers to distributors to retailers to customers. (Chopra and Meindl, 2013). The most essential in this activity is the movement of products or supplies to the customers, and this is initiated as a customer place an order.

Order delivery or distribution is the primary function of logistics in a supply chain. The growing demand for this type of service gave birth to the emergence of 3PL. Rajesh et al. (2011) proved that 3PL providers in India significantly improve the performance measures of their clients. The study looked at twenty-two (22) performance indicators grouped as process financial, strategic, and marketing performance indicators. Data was collected through a survey distributed to 3PL clients, and the findings were analyzed using SPSS and multiple linear regression. Clients acknowledged that using 3PL services helps improve their business performance. Therefore, these 3PL firms need to increase their capabilities to satisfy their customers' changing and expanding needs and expectations.

Krakovics et al. (2008) highlighted the need for 3PL service providers to thoroughly examine the operation of their logistic systems and the quality of service they provide to their customers. They created a system from the perspective of a 4PL firm hired by a Brazilian chemical corporation to contract and oversee the work of a 3PL. The system had several levels and a hierarchy and considered nineteen (19) indicators. The importance weight of each indication was calculated using AHP. The S-curves were used to generate the goals for each low-level performance indicator, while the established weights were used to determine the goals for higher levels in the hierarchy. Results indicated that the 3PL performance is marked above the acceptable values and beyond the goals. The findings serve as a foundation for defining operational goals for the organization to meet its contractual obligations.

3. Methodology

The selection criteria for performance rating of 3PL providers, shown in Table 1, were lifted from the study of Gupta et al. (n.d.), while the rubrics for performance measurement is presented in Table 2. The criteria or factors include the cost of service, quality of service in terms of on-time delivery, quality of service in terms of errors, quality of service in terms of cost of damages, long-term relationships, flexibility in billing, delivery performance, information technology (IT) capacity, product rating, fixed asset, and market share. The performance data on each of the criteria, covering the year 2019, were obtained through interviews and consultations with the 3PL providers of online retailing in the Philippines. The criteria or factors considered in the study were ranked based on the perceived importance of the service providers. To get the importance weights of each factor, the analytical hierarchy procedure (AHP) (Saaty, 1977), which is a multicriteria decision-making method (Kou et al. 2014), was applied. Each factor's weight enables for evaluation of each element inside the given hierarchy (Vargas 2010). The results lead to the interpretation of the critical factors of a successful 3PL operation (Table 1).

Table 1. Selection Criteria for 3PL Providers

Selection Criteria		Description	Reference
1	Cost of Service	Shipping cost of the product/item	Lynch (2000); Stock et al. (1998); Tam and Tummala (2001)
2 – 4	Quality of Service	Includes on-time delivery, errors, and cost of damages	Razzaque and Sheng (1998); Thompson (1996); Langley et al. (2002)
5	Long-Term Relationships	Shared risk and rewards	Lynch (2000); Boyson et al. (1999)
6	Flexibility in Billing	Flexible billing options	Bradley (1994)
7	Delivery Performance	Speed and reliability of delivery	Stock et al. (1998); Gattoma and Walters (1996)
8	IT Capacity	Goods tracking and information sharing	Anderson and Norman (2002); Langley et al. (2002); Babbar and Prasad (1998)
9	Performance Measurement	Evaluation of the performance (such as product/service rating)	Bhatanagar et al. (1999); Lynch (2000); Langley et al. (2002);
10	Fixed Asset	Size and quality of fixed asset	Hum (2000): Boyson et al. (1999)
11	Market Share	Financial performance, customer satisfaction, and reputation	Thompson (1996)

Table 2. Rubrics for Evaluation

Criteria	5 – Very Good	4 - Good	3 - Neutral	2 - Poor	1 – Very Poor
Cost of Service	2% to %4 of the product price	5% to 7% of the product price	8% to 10% of the product price	11% to 13% of the product price	14%-16% of the product price
Quality of Service (In terms of errors)	0-5% errors	6-10% errors	11-20% errors	21-30% errors	31% and more errors
Quality of service (In terms of cost of damages)	No damages	Minimal damages (1% - 20% cost of damages)	Medium damages (21% - 40% cost of damages)	Large damages (41% to 60% cost of damages)	Severe damages (61% and above cost of damages)
Quality of Service (In terms of on-time delivery)	95-100 % on-time delivery	85-94% on-time delivery	75-84% on-time delivery	65-74% on-time delivery	55-64% (or lower) on-time delivery
Long-Term Relationships	6 years or more	4 - 5 years	2 - 3 years	6 months - 1 year	0-6 months
Flexibility in Billing	Offers five payment options	Offers four payment options	Offers three payment options	Offers two payment options	Offers one payment options
Delivery Performance	1-2 days delivery	3-4 days delivery	5-6 days delivery	7 – 8 days delivery	9 – 10 days delivery
IT Capacity	Offers step by step tracking updates from ship out to successful delivery	Offers a tracking ID to monitor shipment if the parcel is already on the way	Offers to track id number to monitor in the courier website to track the parcel	Offers a contact number to monitor where the parcel is	Does not offer any tracking monitoring system
Performance Measurement (Service Rating)	5 stars	4 stars	3 stars	2 stars	1 star
Market Share	51% or higher market share	31%-50% market share	21% - 30% market share	11%-20% market share	0% o- 10% market share

Fixed Asset	Transportation mode (Large Truck, Medium Truck, Cab, Motorcycle, Bicycle)	Transportation mode (Medium Truck, Cab, Motorcycle, Bicycle)	Transportation mode (Cab, Motorcycle, Bicycle)	Transportation mode (Motorcycle, Bicycle)	Transportation mode (Motorcycles)

4. Results and Discussion

4.1 The Role of 3PL in Online Retailing

3PL plays a significant role in distributing the products purchased by customers through online retailing. Figure 1 illustrates the service blueprint of 3PL's process of delivery of goods acquired through this method. The process begins when a customer creates the order using the online retail platform and ends upon delivery of the items or goods to the customer's preferred delivery location.

Using an e-commerce platform, customers create an order by selecting their desired products or items from various sellers. Then, the preferred delivery time, location, and payment option are identified. The 3PL task arises after the customers place orders. There are two (2) significant responsibilities of the 3PL provider: to pick up items from the sellers and deliver the items to the customers. Picking up the items for delivery from the seller's location or warehouse is the first task. One of the problems that occur in the process is order cancellation of customers due to pick-up delays. The late arrival of 3PL riders on the pick-up locations, in which case is at the seller's warehouse, causes the delay and in effect, the order cancellation. Consumers must be satisfied and certain that their orders will arrive at their preferred time identified in the platform because shopping is done electronically. To illustrate, if a product has already been placed to the cart and is scheduled for shipment and pickup, the 3PL provider must pick up the item within the standard lead time of 1-2 days to avoid automatic cancellation. The second responsibility is to deliver the merchandise to the customers within the time frame specified. Customers must get the proper items from 3PL riders, and proof of acceptance must be provided. When the maximum delivery attempt has been met owing to the customer's unavailability, the item will be automatically returned to the seller, which will then become the 3PL provider's obligation.

4.2 Performance Measurement of 3PL Providers in the Philippines

The 2019 data on each criterion or factor were evaluated using the rubrics presented in Table 2. Each factor's level of importance or weight was obtained through pairwise comparison, specifically, AHP. Table 3 presents the summary of the weights of each criterion (Figure 1).

Table 3. Importance Weight of Each Factor

Factors/Criteria		Weight
Cost of service	C1	0.31
Quality of service (in terms of errors)	C2	0.11
Quality of service (in terms of damages)	C3	0.18
Quality of service (in terms of on-time delivery)	C4	0.14
Flexibility in billing	C5	0.04
Delivery performance	C6	0.09
IT capacity	C7	0.03
Long term relationship	C8	0.04
Service Rating	C9	0.03
Market share	C10	0.02
Fixed asset	C11	0.01
Total		1.00

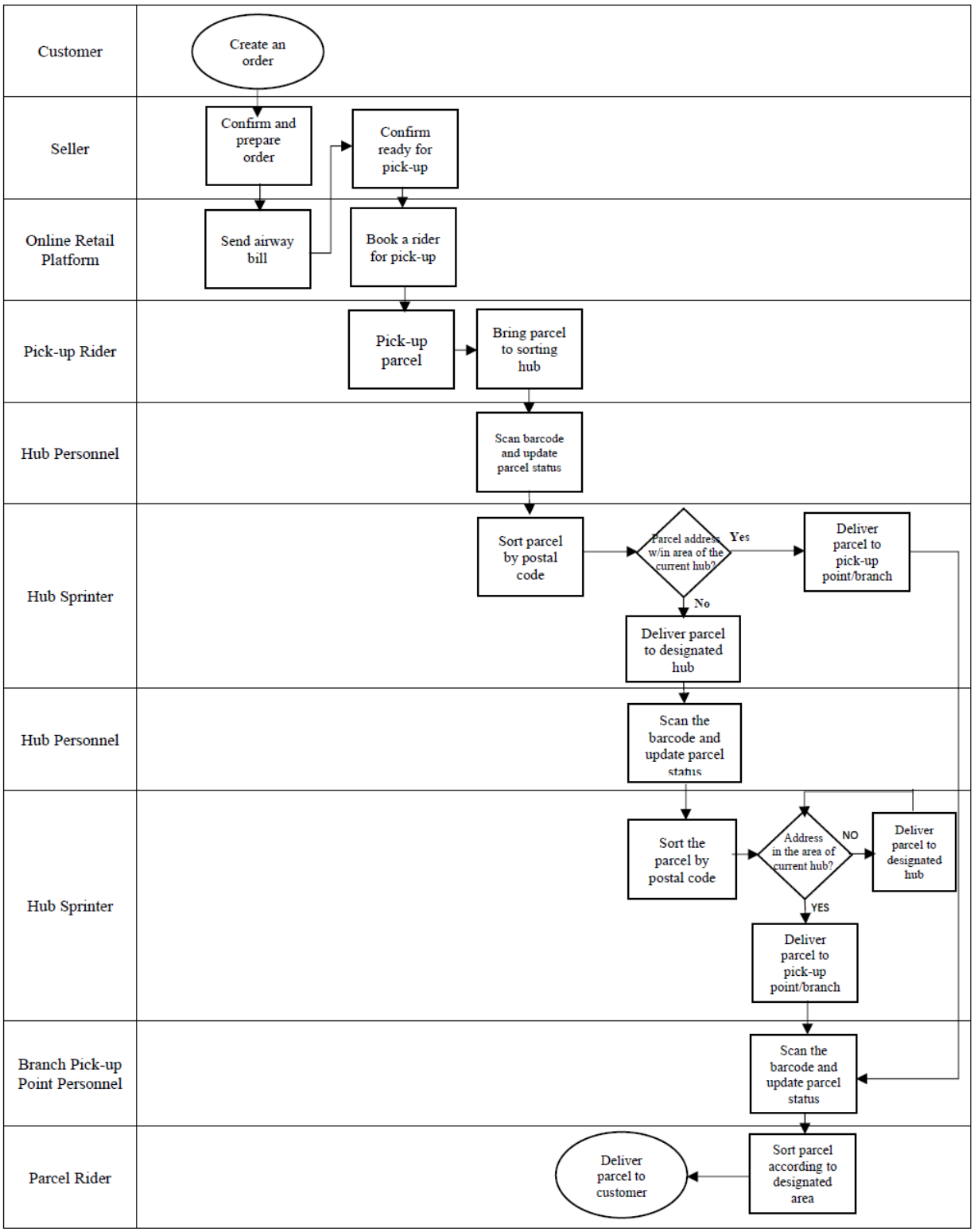

Figure 1. Service Blueprint of a 3PL Provider of Online Retailing

Users of 3PL anticipate their service providers to have some strategic competencies or requirements that will help them improve their business performance (Rajesh et al. 2011). 3PL companies in the Philippines consider service cost the essential criteria, posing the highest weight of 0.31. Bagchi and Virum (1998) support this finding, who expressed that an organization's ability to compete against big competitors based on low cost or price is vital. The second factor with an importance weight of 0.18 is the quality of service in terms of damages. Daugherty et al. (1996) stated that the quality of services produces higher value for clients, making them become loyal customers in the future. On-time delivery and minimal error, the other attributes of quality of service, ranked third and fourth among the factors, with importance weights of 0.14 and 0.11, respectively. Qureshi et al. (2007) emphasized that it is vital for service providers to perform the promised service dependably and accurately. Similarly, increased client satisfaction is ascribed to a 3PL provider's ability to deliver on time and maintain a high level of service (Rajesh et al., 2011). The same finding represents the value of delivery performance which obtained weight of 0.09. Being committed to the promised delivery date and time leads to customer satisfaction and builds up company reputation. Other satisfactory factors are long-term relationship, IT capacity, product rating, market share, and fixed asset, with importance weights of 0.04, 0.03, 0.03, 0.02, and 0.01, respectively.

Table 4 summarizes the performance rating of the four (4) 3PL providers accredited by the country's largest online retail platform. Company 1, established in 2015 and has the most comprehensive coverage in the Philippines, obtained the highest rating of 3.18. The company's most dominant characteristics are excellent quality of service in terms of errors committed, remarkable information technology capacity, and high product rating. Company 4, the flagship partner of the online retailing platform, comes second among the companies. Its cost of service and delivery performance were outstanding as it provided the cheapest shipping cost and fastest delivery time. Company 2, which has the highest service coverage over six countries in the Southeast Asia region, ranked third. Its notable qualities include fast delivery performance, outstanding information technology capacity, long-term relationship with partners, most significant market share, and highest fixed asset. Company 3, the oldest established company but the most recent to be accredited by the online retailing platform, ranked the least. This finding is largely attributed to the company's cost of service, which is considered the most important. Although Company 3 offers an excellent quality of service in terms of cost of damages and on-time delivery, long-term relationship, product rating, market share, and fixed assets, it presents the highest shipping cost among the four companies, making it attain the lowest rating.

Table 4. Summary of Performance Rating for 3PL Providers in the Philippines

Criteria	Weighted Rating			
	Company 1	Company 2	Company 3	Company 4
Cost of Service	0.93	0.93	0.31	1.55
Quality of Service (in terms of errors)	0.44	0.33	0.33	0.22
Quality of Service (in terms of cost of damages)	0.54	0.36	0.72	0.18
Quality of service (in terms of on-time delivery)	0.42	0.28	0.56	0.28
Flexibility in Billing	0.08	0.16	0.12	0.08
Delivery Performance	0.27	0.36	0.27	0.36
IT Capacity	0.15	0.15	0.09	0.12
Long Term Relationship	0.16	0.20	0.20	0.12
Product Rating	0.12	0.09	0.12	0.06
Market Share	0.06	0.10	0.10	0.04
Fixed Asset	0.01	0.04	0.04	0.01
Total	*3.18*	*3.00*	*2.86*	*3.02*

To assess if there are differences among the four (4) companies considered, the one-way ANOVA was performed on the various criteria. Table 5 presents the summary of p-values obtained. Results suggest that there are statistical differences among the companies on all criteria or factors considered since the p-values obtained were less than 0.05.

Table 5. ANOVA Results

Criteria	p-values
Cost of Service	0.010
Quality of Service (in terms of errors)	0.012
Quality of Service (in terms of cost of damages)	0.002
Quality of service (in terms of on-time delivery)	0.030
Flexibility in Billing	0.013
Delivery Performance	0.045
IT Capacity	0.016
Long Term Relationship	0.023
Product Rating	0.018
Market Share	0.006
Fixed Asset	0.010

3PL companies in the Philippines must revisit their costing strategy to ensure cost competitiveness and relevance in the industry, especially that product distribution is essential. The increasing demand for delivery services brought about by online retailing offers a vast opportunity for business owners, making the competition very promising and challenging at the same time. Similarly, service quality should be expanded to maintain the customers and build long-term relationships. 3PL companies must also consider improving information, communication, and technology (ICT) to strengthen their online visibility as this is a vital strategic tool at present times, when digitalization has become a necessity in business operations and client interaction.

Various studies have been conducted to emphasize the impacts of performance measures of 3PL companies. In comparison to the results obtained, Taiwanese and UK customers valued on-time and accurate delivery the most among other operational performance aspects for 3PL companies (Liu and Lyons, 2011). On the other hand, 3PL providers in Istanbul were assessed using AHP, and results showed that the most important criterion was compatibility (Gürcan et al., 2016). Compatibility was defined as the coordination between the provider and systems.

There are numerous selection criteria to be considered in dealing with 3PL providers and companies (Raut et al., 2019). According to Ali et al. (2019), upon using the Structural Equation Modelling, results showed that 3PL functions greatly impact a company's social, environmental, operational, and economic performance. In addition, a study claimed that improved 3PL operational performance equates to increased financial performance (Liu and Lyons, 2011). These claims impose reinforcement towards the necessity to continuously control and measure the performance of 3PL providers (Domingues et al., 2015).

5. Conclusion

The study illustrated the role of a 3PL service provider in the online retailing sector in the Philippines. The historical data of four (4) 3PL companies were gathered and evaluated using the selection criteria of Gupta et al. (n.d.). The factors considered are the cost of service, quality of service in terms of errors, quality of service in terms of cost of damages, quality of service in terms of on-time delivery, flexibility in billing, delivery performance, information technology (IT) capacity, long-term relationships, product rating, market share, and fixed asset. The application of pairwise comparison resulted in determining the level of importance of each factor. 3PL companies regard the five (5) most important factors are the cost of service, quality of service in terms of damages, quality of service in terms of on-time delivery, quality of service in terms of errors, and delivery performance. In addition, among the four (4) companies evaluated, Company 1, which has the most comprehensive coverage in the Philippines, obtained the highest rating of 3.18. The company's most dominant characteristics are excellent quality of service in terms of errors committed, remarkable information technology capacity, and high product rating. Second in the ranked is the flagship partner of the online retailing platform, which is Company 4. The company is notable for its performance in terms of cost of service and delivery performance since it offers the cheapest shipping cost and fastest delivery time. Company 2, which operates in over six countries in the Southeast Asia region, ranked third. The company is distinguished for its delivery performance, IT capacity, long-term relationship, market share, and fixed asset. Finally, the newest

company accredited by the online retailing platform, Company 3, ranked last. Company 3 presented the highest cost of service, the most critical factor, and this had a significant effect on its overall performance rating, outweighing its excellent quality of service in terms of cost of damages and on-time delivery, long term relationship, product rating, market share, and fixed assets. Future researchers may conduct similar performance measurement studies using other criteria not considered in this study, such as reputation, flexibility, order processing, inventory, and other factors. The study may also be expanded and consider other industries or business segments. Finally, other methods or models such as structural equation modeling to measure the company's performance and evaluate the other factors may also be applied.

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Biography

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