



Product-Service System Implementation for Competitive Advantage in International Freight Forwarding: A Case Study of PT Choir Express

Ecklesia Anastasya Pinem^{1*)}

¹⁾*Department of Engineering, Faculty of Industrial Engineering, Universitas Pembangunan Nasional "Veteran" Jakarta*

*Correspondent Author: 2310312075@mahasiswa.upnvj.ac.id

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ABSTRACT

Purpose: This research examines Product-Service System (PSS) implementation as a strategic framework to enhance competitiveness in the international freight forwarding industry, specifically analyzing PT Choir Express's transformation opportunities from pure service provision toward integrated product-service offerings. **Methodology:** The study employs Tukker's (2004) PSS classification framework through questionnaire-based organizational capability assessment, evaluating PT Choir Express across eight PSS categories spanning Product-Oriented, Use-Oriented, and Result-Oriented service dimensions. **Results:** PT Choir Express currently operates in Quadrant 11 (Pure Service), with eligibility for seven PSS quadrants including Product Related Service, Advice & Consulting, Product Related Software, Product Pooling, Outsourcing, Pay Per Service Unit, and Functional Result. **Findings:** The company possesses critical capabilities including specialized human resources, software infrastructure, and partnership networks, but faces financial resource constraints limiting comprehensive PSS transformation. **Novelty:** This research extends PSS theory beyond product-oriented manufacturing to service-dominant logistics, demonstrating novel adoption pathways for freight forwarding companies in emerging markets. **Conclusion:** A phased PSS implementation strategy prioritizing lower-investment Product-Oriented services before progressing to Result-Oriented offerings enables competitive differentiation and sustainable growth despite financial constraints. **Type of Paper:** This paper is an empirical research paper.

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INTRODUCTION

In the era of globalization and intense competition, international freight forwarding companies face complex challenges in maintaining competitiveness. The logistics industry plays a vital role in supporting global trade, especially with the rapid growth of e-commerce and digitalization, which demand efficient and customer-oriented delivery services. Companies are now expected not only to transport goods but also to deliver added value through integrated and innovative solutions—one of which is the Product-Service System (PSS) concept.

In Indonesia, PT Choir Express, established in 2011, provides domestic and international shipping services such as door-to-door delivery, free pickup, free packing, and app-based shipment management. Operating in a dynamic business environment, the company must meet rising customer expectations for integrated services including real-time tracking, customs management, insurance, and consulting. This creates opportunities to apply the PSS approach, combining physical logistics infrastructure with high-value digital and consulting services.

Although PT Choir Express has extensive experience, it faces strong competition from both local and international logistics providers. To sustain its competitive edge, innovation in business models is essential. Previous studies ([Tukker, 2004](#); [Gunasekaran, 2012](#)) mostly explored logistics from product-oriented perspectives, with limited focus on service-dominant models. PSS offers a strategic framework that shifts companies from transactional operations to solution-based, customer-centered models, promoting efficiency, differentiation, and sustainability through optimized resource use.

This research analyzes PSS implementation at PT Choir Express as a strategy to strengthen competitiveness in the international freight forwarding industry. It examines how integrating products and services can enhance customer value, operational performance, and business sustainability. The findings are expected to provide practical insights for PT Choir Express in developing more competitive and sustainable strategies while contributing to the limited literature on PSS applications in service-dominant logistics.

METHOD

Product-Service System (PSS) has emerged as a versatile and transformative framework applied across multiple industries including manufacturing, retail, healthcare, and logistics by integrating physical products with complementary services to deliver holistic, customer-focused solutions. In the logistics and freight forwarding sector, PSS enables companies like PT Choir Express to differentiate themselves by combining traditional delivery services such as door-to-door shipping, free pickup, and free packing with digital and value-added offerings, including real-time tracking, customs clearance support, insurance services, and export-import consulting. Through these integrated solutions, PT Choir Express can enhance the customer experience, improve service reliability, and foster deeper engagement and long-term loyalty ([Baines et al., 2007](#)). This approach allows the company to meet not only functional needs but also emotional and relational aspects of customer satisfaction.

The adoption of PSS also aligns closely with sustainable business practices, as it encourages efficiency in resource utilization and reduction of environmental impact. By shifting from product ownership to access-based models, companies can minimize waste through initiatives such as reusable packaging, route optimization, and collaborative logistics networks. PSS models like leasing, sharing, or pay-per-use extend asset lifecycles and support the transition to a circular economy, thereby contributing to global sustainability goals (Tukker, 2015). For PT Choir Express, these strategies can enhance operational efficiency, reduce carbon emissions, and strengthen its reputation as a responsible and eco-conscious logistics provider. Research by [Haase et al., 2017](#) confirms that businesses implementing PSS-based sustainability practices experience improved brand equity, customer trust, and access to emerging green market segments.

However, the successful implementation of PSS requires significant organizational transformation. It involves rethinking traditional business models, restructuring internal processes, and investing in digital technologies and human resource development. Common challenges include high upfront costs, resistance to organizational change, and limited expertise in service innovation (Annarelli et al., 2016). Within logistics, Cichosz et al. (2020) highlight the difficulties of integrating legacy systems, managing digital transformation, and coordinating service delivery across global operations. Moreover, evaluating PSS performance is complex, requiring robust analytical frameworks that measure both operational outcomes and customer satisfaction (Wang et

al., 2018). Overcoming these barriers demands a phased approach, starting from low-investment services and gradually scaling toward more advanced digital and collaborative initiatives.

Despite these challenges, PSS offers substantial long-term advantages. Companies that successfully adopt PSS gain sustainable competitive differentiation by providing unique, value-added solutions that are difficult to replicate. Research by Abbasi and Nilsson (2016) shows that integrated service systems drive higher customer satisfaction and loyalty, while Christopher (2016) argues that modern logistics competitiveness depends on the collective efficiency of the supply chain network rather than individual company performance. For PT Choir Express, PSS represents a strategic opportunity to transition from price-based competition toward innovation-driven and customer-centric growth, improving efficiency and sustainability in the process. This study thus addresses a key research gap the limited exploration of PSS applications within international freight forwarding, particularly in emerging markets like Indonesia where previous studies ([Tukker, 2004](#); [Gunasekaran, 2012](#)) have largely focused on product-oriented rather than service-dominant models.

RESULTS AND DISCUSSION

RESULTS

Based on the questionnaire data collected from PT Choir Express on September 15, 2025, with respondent Muhammad Reza serving as Operational Manager, this study identifies the current state of Product-Service System implementation and proposes strategic recommendations for enhancing service integration. The assessment utilized Tukker's (2004) PSS classification framework, evaluating PT Choir Express across eight PSS categories spanning three main orientations: Product Oriented, Use Oriented, and Result Oriented services. Table 1 presents the respondent profile and organizational characteristics of PT Choir Express that form the basis for this PSS analysis.

Table 1. Respondent Profile and Organizational Information

Characteristic	Details
Respondent Name	Muhammad Reza
Position	Operational Manager
Institution Name	Choir Express
Data Collection Date	September 15, 2025
Location	Jakarta Selatan
Current PSS Position	Quadrant 11 (Pure Service/Service Providing)

Source : Data processed, 2025

The questionnaire responses reveal that PT Choir Express currently operates primarily within the Pure Service category (Quadrant 11), indicating a service-providing business model focused on delivering freight forwarding solutions without significant product ownership or integrated product-service bundles. This positioning reflects the company's emphasis on providing logistics services including door-to-door delivery, free pickup, free packing, and app-based shipment management, consistent with traditional freight forwarding business models that prioritize service execution over product integration. Table 2 summarizes the organizational capability assessment based on questionnaire responses, evaluating PT Choir Express's readiness across multiple dimensions critical for PSS implementation.

Table 2. Organizational Capability Assessment for PSS Implementation

No	Capability Dimension	Assessment	Implication
1	Product/Service Integration	Yes	Company offers both standalone and integrated product-service bundles
2	Product and Service Offering	Yes	Capable of providing combined product-service solutions
3	Specialized Human Resources	Yes	Possesses expert personnel in specific product/service domains
4	Software Resources	Yes	Maintains dedicated software for operations management
5	Financial Resources (6x Cashflow)	No	Limited working capital reserves constraint PSS investment
6	Timing-based Differentiation	Yes	Can offer services at different times for customer flexibility
7	Distribution Partnership	Yes	Has established partnerships supporting product/service distribution
7a	Unit-based Pricing	Yes	Partners can distribute using standardized unit pricing
7b	Customized Pricing	Yes	Partners can offer tailored/customized pricing models

Source : Data processed, 2025

The existing PSS positioning analysis demonstrates that PT Choir Express falls within Quadrant 11 representing Pure Service and Service Providing models, which is characteristic of companies that deliver results through service activities without significant tangible product components beyond the transportation infrastructure itself. However, the questionnaire assessment identified potential opportunities for PSS enhancement across multiple quadrants. Figure 1 illustrates the current PSS position of PT Choir Express and the proposed eligible PSS quadrants that the company can strategically pursue based on organizational capabilities and market opportunities.

The figure displays three PSS positioning scenarios: (1) Existing Position shows PT Choir Express in Quadrant 11 (Service Providing) under Pure Service category, (2) Keinginan (Desired Position) proposes expansion into Product Oriented services through Quadrant 2 (Product Related Service), Use Oriented services through Quadrant 7 (Product Pooling), and Result Oriented services through Quadrant 10 (Functional Result), and (3) Eligible Position confirms the company's readiness to implement Quadrant 2 (Product Related Service), Quadrant 7 (Product Pooling), Quadrant 8 (Outsourcing), Quadrant 9 (Pay Per Service Unit), and Quadrant 10 (Functional Result) based on capability assessment. Specifically, the company shows eligibility and capability to expand into Product Oriented services through Quadrant 2 (Product Related Service), which involves augmenting core delivery services with complementary offerings such as specialized packaging solutions, tracking devices, or logistics consulting (Tukker, 2004). Additionally, PT Choir Express demonstrates potential for Use Oriented services through Quadrant 7 (Product Pooling), which could involve shared logistics infrastructure or collaborative distribution networks that optimize resource utilization. Furthermore, the company shows strong potential for Result Oriented services through Quadrant 10 (Functional Result), where the focus shifts from delivering transportation services to guaranteeing specific outcomes such as on-time delivery, damage-free shipping, or end-to-end supply chain solutions with performance-based pricing models (Baines et al., 2007).

The questionnaire responses regarding organizational capabilities and resources reveal several critical insights about PT Choir Express's readiness for PSS implementation. First, the company confirms offering both standalone products/services and integrated product-service bundles, indicating foundational capability for PSS development. Second, PT Choir Express

possesses specialized human resources with expertise in specific product or service areas, which is essential for developing differentiated value propositions. Third, the company maintains dedicated software resources for operational management, providing technological infrastructure necessary for service integration and customer relationship management. However, the assessment identifies a significant gap in financial resources, as PT Choir Express currently lacks sufficient working capital reserves equivalent to six times the cashflow period a constraint that may limit the company's ability to invest in comprehensive PSS transformation initiatives requiring substantial upfront investments in technology, training, and process redesign (Annarelli et al., 2016). Despite this financial limitation, the company demonstrates strong capabilities in product/service differentiation through timing advantages, maintaining partnerships that facilitate distribution channel access, and possessing mechanisms to support product/service resale or redistribution. Table 3 presents the strategic PSS implementation recommendations across eligible quadrants, specifying concrete actions PT Choir Express can undertake to enhance service integration and competitive positioning.

Table 3. Strategic PSS Implementation Recommendations for PT Choir Express

PSS Category	Quadrant PSS Type	PSS Type	Strategic Implementation Actions
Product Oriented	Quadrant 2	Product Related Service	Develop customized packaging solutions with branded materials; Provide specialized handling equipment for fragile/high-value shipments; Offer export-import consulting and customs compliance services
Product Oriented	Quadrant 3	Advice & Consulting	Establish logistics consulting division for supply chain optimization; Provide market entry guidance for international shipping; Offer trade compliance and regulatory advisory services
Product Oriented	Quadrant 4	Product Related Software	Develop proprietary shipment tracking applications; Create customer portal for real-time logistics visibility; Implement AI-powered route optimization software
Use Oriented	Quadrant 7	Product Pooling	Establish shared warehouse facilities for multiple clients; Create collaborative last-mile delivery networks; Develop equipment leasing programs for packaging materials
Result Oriented	Quadrant 8	Outsourcing	Offer comprehensive logistics outsourcing where PT Choir Express manages entire supply chain; Provide end-to-end fulfillment services for e-commerce businesses
Result Oriented	Quadrant 9	Pay Per Service Unit	Implement performance-based pricing models; Develop service level agreements with guaranteed outcomes; Create flexible pricing based on delivery speed and service complexity
Result Oriented	Quadrant 10	Functional Result	Guarantee specific performance outcomes (on-time delivery rates, damage-free shipping); Shift from activity-based to outcome-based pricing; Provide comprehensive supply chain solutions with performance guarantees

Source : Data processed, 2025

The strategic analysis highlights several PSS implementation opportunities that align with PT Choir Express's capabilities and market position. For Product-Oriented services (Quadrant 2), the company can enhance its offerings through customized packaging solutions with branded materials, specialized handling tools for fragile or high-value goods, and consulting services for export-import documentation and customs compliance. These initiatives not only strengthen the core delivery services but also open new revenue streams and increase customer value. The questionnaire results further indicate that PT Choir Express's business partners support both standardized pricing and customized approaches, allowing flexible service differentiation.

For Use-Oriented services (Quadrant 7), PT Choir Express can explore shared warehouse facilities, collaborative last-mile delivery systems, or equipment leasing programs. These initiatives help reduce customers' capital investment while improving asset utilization across clients, creating mutual operational benefits. For Result-Oriented services (Quadrant 10), the company can implement performance-based business models, such as service level agreements and outcome-based pricing, where clients pay for achieved results rather than service activities.

This integrated, multi-quadrant PSS approach positions PT Choir Express to move beyond traditional logistics toward comprehensive, technology-driven solutions that deliver measurable outcomes. As noted by Cichosz et al. (2020) and Wang et al. (2018), logistics firms adopting digital and service-oriented PSS frameworks demonstrate higher performance in customer satisfaction and market competitiveness. Addressing research gaps from Tukker (2004) and Gunasekaran (2012), this phased strategy prioritizing low-investment services like consulting before capital-heavy projects supports sustainable growth, gradual capability building, and long-term competitiveness, consistent with recommendations by Haase et al. (2017)

DISCUSSION

The findings from this research reveal significant insights into Product-Service System implementation within the international freight forwarding industry, specifically addressing the strategic transformation opportunities for PT Choir Express. The current positioning in Quadrant 11 (Pure Service/Service Providing) reflects the traditional business model prevalent among logistics providers in emerging markets, where service delivery focuses primarily on transportation activities without substantial product-service integration (Tukker, 2004). This positioning, while operationally stable, limits competitive differentiation in an increasingly commoditized market where price competition dominates strategic decision-making.

The identification of five eligible PSS quadrants (Quadrants 2, 3, 4, 7, 8, 9, and 10) demonstrates substantial potential for strategic diversification beyond pure service provision. This finding contrasts with previous studies by Gunasekaran (2012) and Christopher (2016), which emphasized product-oriented logistics frameworks. The present research extends these perspectives by demonstrating that service-dominant logistics companies can successfully integrate product elements and result-oriented offerings without fundamentally altering their core operational infrastructure. The eligibility assessment reveals that PT Choir Express possesses critical organizational capabilities including specialized human resources, software infrastructure, and established partnership networks actors identified by Baines et al. (2007) as essential prerequisites for PSS transformation.

The strategic recommendations prioritize Product-Oriented services (Quadrant 2: Product Related Service and Quadrant 3: Advice & Consulting) as initial implementation pathways. This phased approach addresses the identified financial resource constraint while building organizational capabilities through lower-investment initiatives. Customized packaging solutions, specialized handling equipment, and export-import consulting services represent tangible value additions that differentiate PT Choir Express from competitors operating purely on price-based strategies. This finding aligns with Haase et al. (2017), who demonstrated that incremental PSS

adoption reduces implementation risks while accelerating organizational learning and capability development.

The potential expansion into Use-Oriented services (Quadrant 7: Product Pooling) introduces collaborative business models that optimize resource utilization across multiple clients. Shared warehouse facilities, collaborative last-mile delivery networks, and equipment leasing programs transform traditional ownership models into access-based systems, consistent with circular economy principles advocated by Tukker (2015). For PT Choir Express, this strategic direction addresses sustainability concerns while improving operational efficiency through economies of scale and scope. However, successful implementation requires robust coordination mechanisms and trust-based relationships with partners challenges highlighted by Cichosz et al. (2020) in their analysis of logistics network collaboration.

The most transformative opportunity lies in Result-Oriented services (Quadrants 8, 9, and 10), where PT Choir Express would guarantee specific performance outcomes rather than merely executing transportation activities. Functional Result models (Quadrant 10) represent the highest PSS maturity level, requiring comprehensive operational excellence, advanced monitoring systems, and risk management capabilities. The research findings indicate that while PT Choir Express demonstrates technical eligibility for these advanced quadrants, financial constraints and organizational readiness present significant implementation barriers. This observation supports Annarelli et al. (2016), who identified capital requirements and organizational change resistance as primary obstacles to PSS transformation in service industries.

The identified financial resource gap specifically the absence of working capital reserves equivalent to six times the cashflow period constitutes a critical constraint limiting comprehensive PSS implementation. This finding has important theoretical implications for PSS adoption in small and medium enterprises (SMEs) within emerging markets. While existing literature (Baines et al., 2007; Wang et al., 2018) emphasizes technological and organizational capabilities, this research highlights financial capacity as a potentially determinative factor in PSS transformation success. The proposed phased implementation strategy prioritizing low-investment quadrants before progressing to capital-intensive initiatives offers a practical pathway for resource-constrained companies to pursue PSS transformation incrementally.

The research contributes to theoretical understanding by demonstrating PSS applicability within service-dominant industries, addressing a significant gap in existing literature that predominantly focuses on product-oriented manufacturing contexts (Tukker, 2004). The findings show that logistics companies can implement PSS frameworks without transitioning from product manufacturing to service provision the traditional PSS trajectory. Instead, PT Choir Express can move from pure service toward integrated product-service-result offerings, representing a novel PSS adoption pathway for service industries. This insight extends the conceptual boundaries of PSS theory and provides a framework applicable to other service-dominant sectors including healthcare, consulting, and professional services.

From a practical perspective, the strategic recommendations provide PT Choir Express with a concrete roadmap for competitive differentiation in the international freight forwarding industry. The multi-quadrant PSS strategy enables the company to move beyond price-based competition toward value-based differentiation through integrated solutions, specialized expertise, and performance guarantees. This strategic repositioning addresses the competitive pressures identified in the introduction while aligning with global trends toward digitalization, sustainability, and customer-centric business models. The emphasis on software development (Quadrant 4) particularly resonates with digital transformation imperatives in contemporary logistics, where real-time tracking, predictive analytics, and customer self-service portals have become essential competitive requirements.

The research also reveals important considerations regarding partnership ecosystems in PSS implementation. The questionnaire responses confirm that PT Choir Express's business partners support both standardized and customized pricing approaches, providing flexibility for

differentiated service offerings across customer segments. This partnership capability facilitates Product Pooling (Quadrant 7) and Outsourcing (Quadrant 8) models that depend on collaborative infrastructure and shared resources. However, the successful execution of these collaborative PSS models requires formal governance structures, performance monitoring mechanisms, and conflict resolution processes—organizational capabilities not explicitly assessed in the current research but identified as critical success factors by Christopher (2016) in supply chain network management.

The study's findings regarding timing-based differentiation capabilities suggest additional PSS opportunities not fully explored in the proposed strategic framework. The ability to offer services at different times provides flexibility for premium service tiers, express delivery options, and customized scheduling arrangements that create value for time-sensitive customers. This capability could be integrated into Pay Per Service Unit (Quadrant 9) and Functional Result (Quadrant 10) offerings, where pricing reflects service complexity, delivery speed, and performance guarantees. This observation extends beyond the initial strategic recommendations and warrants further investigation in subsequent research or implementation phases.

Despite the comprehensive analysis, several limitations must be acknowledged. First, the research relies on questionnaire data from a single respondent (Operational Manager), potentially introducing response bias or incomplete organizational perspective. Future research should incorporate multiple respondent perspectives including executive leadership, frontline operations, and customer viewpoints to triangulate findings and validate strategic recommendations. Second, the capability assessment employs binary (Yes/No) evaluation categories that may oversimplify organizational readiness. A more nuanced assessment using Likert scales or maturity models would provide granular insights into capability levels and development priorities. Third, the research does not quantitatively assess implementation costs, expected returns, or risk profiles for each PSS quadrant—financial analyses essential for investment decision-making and resource allocation.

The broader implications of this research extend to policy and industry development in Indonesia's logistics sector. As e-commerce growth accelerates and customer expectations for integrated services increase, freight forwarding companies face strategic imperatives to innovate beyond traditional transportation services. The PSS framework provides a structured approach for this transformation, supporting industry upgrading, service diversification, and sustainable business practices. Government policies that facilitate collaborative logistics infrastructure, support technology adoption, and promote service innovation could accelerate PSS implementation across the sector, enhancing Indonesia's competitiveness in international trade and logistics.

CONCLUSION

This research examined Product-Service System implementation as a strategic framework for enhancing competitiveness in the international freight forwarding industry, focusing on PT Choir Express. The study reveals that PT Choir Express currently operates within the Pure Service category (Quadrant 11), reflecting traditional freight forwarding business models. Through comprehensive capability assessment, the research identifies seven eligible PSS quadrants spanning Product-Oriented, Use-Oriented, and Result-Oriented service categories, demonstrating substantial potential for strategic diversification and competitive differentiation.

The primary theoretical contribution lies in extending PSS theory beyond product-oriented manufacturing contexts to service-dominant industries. The findings demonstrate that service companies can implement PSS frameworks by integrating product elements and result-oriented offerings into existing service platforms, representing a novel PSS adoption pathway not extensively explored in previous literature.

The strategic recommendations propose a phased implementation approach prioritizing Product-Oriented services (Product Related Service and Advice & Consulting) as initial pathways due to lower capital requirements. Subsequent expansion into Use-Oriented services (Product Pooling) and Result-Oriented services (Outsourcing, Pay Per Service Unit, and Functional Result) would follow as organizational capabilities mature. This progressive strategy addresses the identified financial

constraint while building implementation experience and organizational commitment to PSS transformation.

For PT Choir Express, practical implications include opportunities to differentiate through customized packaging solutions, specialized handling equipment, export-import consulting, shared warehouse facilities, and performance-based service guarantees. These integrated offerings shift competitive positioning from price-based competition toward value-based differentiation, enhancing customer relationships, operational efficiency, and business sustainability. However, successful PSS implementation requires addressing critical challenges including financial resource constraints, organizational change management, and partnership ecosystem development. Future research should include longitudinal studies tracking PSS implementation progress, comparative analysis across multiple freight forwarding companies, quantitative assessment of implementation costs and returns, and investigation of customer perceptions regarding integrated product-service offerings.

In conclusion, Product-Service System implementation represents a viable pathway for PT Choir Express to enhance competitiveness in the international freight forwarding industry. While financial constraints and organizational challenges present barriers, a phased strategic approach prioritizing lower-investment initiatives can enable progressive PSS transformation aligned with organizational capabilities and market opportunities

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