

Innovation in Logistics from 1PL toward 10PL: Counting the numbers

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Abstract. This paper illustrates the rational understanding by defining the services provided by 1PL or first party logistics service provider toward 10PL in the Supply Chain environment. In Malaysia, Innovation for the logistics industry is still lacking although efficient logistics is critical to the country's trade competitiveness. Therefore, the need of innovation in LSP services offered to their customer is prerequisite for business sustainability. Hence, LSP need to improve performance in accelerating more cost-effective structure and profitability gained through technology investment. This paper addresses the categories of 1PL toward 10PL from their nature of logistics services. This clarification could assist stakeholders advancing in the logistics practices. Thus, this complexity could avoid miss-communication and maintaining good relationship in their business collaboration. This paper is a review from literature based on thesis, journal article, proceedings, conferences, reports, handbook and whichever related to the keywords and research area. The specific research on future LSP is dearth and more intensive research on innovation in logistics of LSPs are required. This paper outlines theoretical features of research stream on logistics innovation and evolution of 1PL to 10PL. The review is limited to article written in English and published in academic journal with related research area. In-future, this research should be facilitated by an empirical research in-particular a qualitative or quantitative method.

Keywords: logistics service provider (LSP), innovation, supply chain, halal logistics, aviation management, malaysia

1. Introduction

This paper illustrates the rational understanding by defining the services provided by 1PL or first party logistics service provider toward 10PL in the Supply Chain environment. In Malaysia, Innovation for the logistics industry is still lacking although efficient logistics is critical to the country's trade competitiveness. [1]. The important of logistics management toward economy, trade facilitation, cost-saving in business and enhance productivity as highlighted in the Logistics & Trade Facilitation Masterplan 2015-2020 [2]. As viewed in this paper, the LSPs organizational entities core business is the logistics services which innovation is required for business sustainability. Therefore, the definition of innovation should be carefully understood namely "innovation in logistics", "logistical innovation", and "logistics innovation". In the LSPs organization, the innovation in logistics could happen through logistics operation or in others activities along the process[3].

LSP need to be innovative looking into continuous improvement facing challenges and increasing competitive pressure. Innovation in logistics is implementation of best practices to reduce cost and enhance productivity. LSP commitment are crucial in managing the flow of product /services or good in the complexity of the supply chain network.

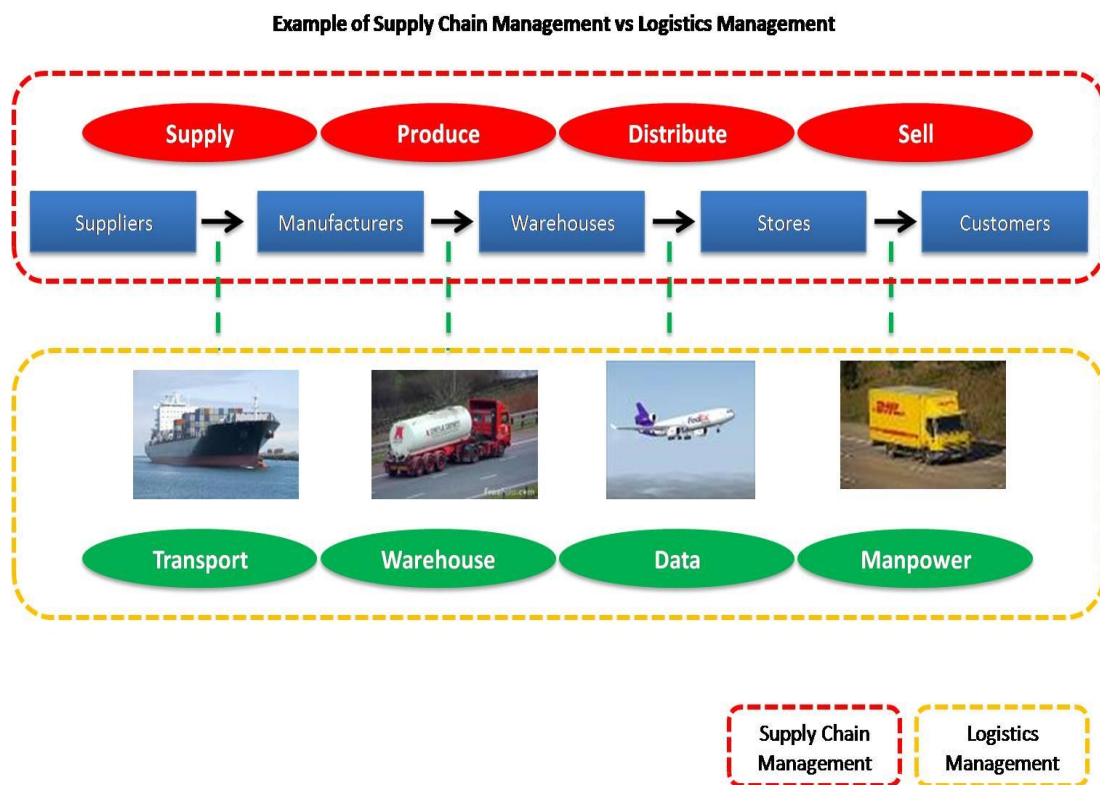
The objective of innovation from a logistics perspective is to concentrate on total customers satisfaction by rendering high productivity and lowering the operating cost. The level of innovation could be relatively in the aspects of non-technological and technological. With the era of industry 4.0, innovation in new production methods and new product are highly

demanded to be more competitive internally or externally [4]. A comprehension logistics evolution and innovation are the main concern as the rapid growth in the logistics sector for sustainability.

2. Logistics Management

The understanding of logistics should be comprehended among the stakeholder to avoid confusion and miss-understanding in the business communication. An exemplary dynamic development in the scope of logistics due to constant expansion in the range of logistics services, from dominant physical activities, focussed cross-functional tasks, integration and coordination of processes as well as coordination and customer-oriented leadership tasks[5].

Figure 1: Example of Supply Chain Management vs Logistics Management [16]



The above figure 1 is example a comparison process of activities between the supply chain management and logistics management. Logistics is part of supply chain process that is plan, implement and control the efficient, effective flow and storage of goods, services and related information from the origin to consumer purchase as defined by the Council of Supply Chain Professional.

The process of logistics inclusive of transportation the goods inbound and outbound, storing in the warehouse and return of unwanted material which also known as reversed logistics and concern on green environmental matters. Since 1900s to 2000, the logistics system had undergone a dramatic change. In the transportation industry solution (2004) emphasise on the deregulation, privatisation, consolidation, containerization, utilisation of technology and internationalisation. This logistics evolution enhances firm improvement on productivity and reducing the logistics operational expenses. Build greater relationship with more sophisticated

partnerships. The LSPs collaboration are seen positively in bridging the gap among the practitioners and academia as it driven to scrutiny the important matters for sustainability [6].

3. Logistics service provider (LSP)

LSP are the main contribution to business success as they are companies engaged in trade facilitation at national and international level. Their direct involvement on-behalf of business entities on importation and exportation in international trade is important for competitive advantages. LSPs facilitate the logistics services on the organization of shipment and / or delivery of goods. The complexity in supply chain and the increasing business processes encourage LSPs outsourcing due to the difficulty to manage all activities on one's own. Therefore logistics intermediaries are qualified to manage certain areas of business operations.[7].

LSP are normally known as third party (3PL) plays a paramount role in planning, implementing and control efficiently and effective on behalf of their customer's inbound or outbound consignment. In-addition, transportation services from the farms to the destination using selected mode of transport (Air, Land – Road or Rail, Sea – Vessel and pipeline). Selection mode of transport based on the movement of good pertaining to customers demand. Delivery on time with cost effective, safe, right quality and quantity of commodity purchased. With the increasing competition in the supply chain, it is crucial to choose the best LSP to coordinate the flow of product/good toward the Seven Right (7Rs); The right customer, product, time, place, condition, quantity and cost (CSCMP 2011).

LSP are a company also known as 3rd-party logistics providers, or TPLs, act on behalf of their customers in international transportation, customs clearance and in liaison of international logistics activities. LSP are key expertise in this supply and demand activities. In-addition, LSP need to be creative and improvised constantly by offered innovative solution to their customers[8]. One of the most commonly outsourced in a business activity is logistics. LSP providers will offer an integrated service from a single transaction arrangement into a long-term partnership. The increase in the complexity of supply chain networks are forcing LPS to become an intermediaries of global networks operation. Firms aim to reduce costs in their operational process through managing global streams from origin to consumer purchase efficiently [9].

Scope of Logistics operation include warehousing, storage and inventory management services not limited to packaging, labelling or re-packing. Logistics operation are an involvement of freight forwarding / customs clearance on documentation declaration using invoice, packing list, insurance as well as shipping services. Furthermore, also include Integrated Logistics Services (ILS) or International Integrated Logistics Services (IILS) for efficient product on-time delivery or traceability as preferred Customers satisfaction for one-stop-solution centre. For perishable good or good that required cold temperature storage, logistics operation do offer Cold Chain Facilities.

Table 1: Scope of Logistics Operation (drawn by author)

Logistics Service Provider Act on behalf of customer
Parties Involved: ➤ Farm / Exporter ➤ Factories / Manufacturers ➤ Trader /3rd Parties / Logistics ➤ Consumers / Importers ➤ Interested Parties to Appoint LSP

Logistics Operation: • Warehousing • Storage • Inventory Management • Packaging • Labelling • Labour Supply • others	Integrating Operation • Coordinate Import / Export Booking • Transportation (Selection: Sea / Land / Air/ Pipeline) • Cross-Docking • Shipping Arrangement • Customs Documentation • Port Clearance • Others Government Agencies • Application of Permit / Fumigation /others
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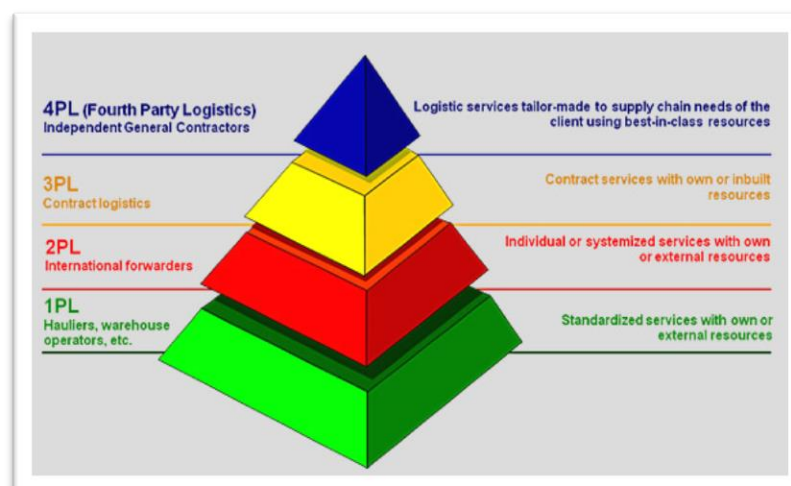
However, scope of logistics operation is not only limited to the above services as logistics service provider are continuously upgrading their skill and knowledge to increase productivity in the dynamic competition to serve their customers for sustainability.

4. Review on n-party logistics

From the review of the previous study since 1980s to 2010, third party or 3PLs is also known as Third Party Logistics Provider (TPLP). It is apparently an emerging area to define TPLP and Logistics Service Provider (LSP). The comprehended of TPLP or LSP definition in literature is significance, as practitioner or academia may encounter difficulty in optimising the various processes of Logistics innovation.

The primary reasons for firm to engage TPLPs are to give priority to their core businesses and competency. This is highly important as they do not have expertise and own a logistics capabilities, they need to concentrate on their key businesses toward customers satisfaction [10]. LSP are required toward strategic management and uphold greater responsibility in offering a value-added service and administrative services. LSP increase responsibility for the entire transaction for importation and exportation of their customers supply chain network [5].

Figure 1: Evolution of 1PL to 4PL [17]



The above Figure 1 illustrate the categories of logistics service provider evolution from 1PL to 4PL. Initially 1PL offered standardized service with own or external resources as haulier, warehouse operators etc.

2PL or Second-party logistics is either an individual or systemized service with own or external resources as international forwarders. As business growth 1PL transformed into 2PL by appointing of subcontractor to perform logistics activities on their behalf.

3PL or TPLP served their customers with own or inbuilt resources as contract logistics. 3PL is being outsource to companies for partial or all the supply chain management function. The strategic tool of engaging and outsourcing concern on financial implication for cost reduction and improve profitability [11]. Due to the rapid changes in the logistics landscape, 3PL rise to become 4PL (fourth Party Logistics) as an independent general contractor.

4PL offered customise logistics services using best-in-class resources to meet their customers demand in supply chain. What are the differences of 3PL compared to 4PL? 3PL are defined as integrated logistics activities served to their customers inclusive of transportation or warehouse management. 4PL provider should have strong and effective customer relationship management to be successful. 4PL considered as an orchestra provide consultancy and managing their customers logistics management by looking into the customers need and demand [7].

Table 2: Definition of 3PL definition from various authors [18]

Authors	Definition
Lied (1992)	Logistics function perform by an external company which was previously done internally. An appointment of 3PL to perform selected logistics activities.
Anderson (1997)	An integration within shipper's procurement and LSP resulted in a long-term relationship.
Murphy and Poist (1998)	3PL and shipper relationship had more customised logistics functions compared to basic services. Build longer term of relationship and mutually benefited to both parties.
Vab Laarhoven et al. (1999)	LSP that act of behalf of a shipper and managed the transportation (including: Tracking and Tracing) and warehousing (Including: inventory management) activities. Value-added services including Supply chain management.
Berglund (2000)	Firm outsource external party in intention for long term relationship formal or informal agreement for mutual beneficial on the logistics requirement.
Bask (2001)	Build shorter or longer relationship through the supply chain 3PL on the logistics services from basic to customised solution for efficient and effectiveness.

Bigger responsibility for 5PL as the demands of 3PL is aggregated by their key function. 5PL did the negotiation with airline and shipping companies toward favourable rates on a bulky volume for logistics solution.

In-line to the industry 4.0, the six-party logistics (6PL) are the LSP that focused into the realm of artificial intelligence or referred as the AI driven supply chain. The term of AI is use in the aggregation toward big amount of data analysis. Where this data is used operationally, improvement and managing the processes of supply chain activities. For example, the ordering patterns will be learned by AI and gave instruction to the upstream activities to be triggered proactively.

In Seven-party logistics (7PL) service, only one logistics service provider will be engaged to manage the entire logistics chain. 3PL plus 4PL is a combination of the 7PL to offer solution in undertaking of turnkey project under one roof dealing with one stop centre (one contract, one

bill concept). Company should emphasis on strong bonding on customer relationship management for successful logistics outsourcing [19].

As shown in the Table 3 below, the level of Logistics Service Provider and there was inadequate information except one-line definition of each nPL from 1 to 10. It shown 1PL is known as a Shipper followed by 2PL as the traditional transportation service provider. In addition, the 3PL seem to be the integrated logistics service provider. On the other-hand, the 4PL are the firm dealing with higher level of logistics activities such as IT consultation.

5PL is considered as High-level logistics or IT consultants. 6PL will serve the Company with artificial intelligence (AI) driven supply chain management. An autonomous competitor was created in 7PL to test alternative of supply chain strategies. A super committee was formed in 8PL to analyse a competitor's results. Followed by 9PL which was name as crowd sourced managed logistics strategy.

Lastly not least is the 10PL where a supply chain becomes self-aware and runs by itself. 10PL concept was raised based on Council of Supply Chain Management Professionals (CSCMP) Group discussion on LinkedIn. What is a 10PL and why go from 3PL and 4PL all the way to 10PL? why stop at 10PL which defined as: Supply Chain becomes self-aware and run itself. Example: Supply chain was managed by robot such as the ERP becomes self-aware and takes control from human being. No human touch and management needed as the supply chain is self-aware and runs by itself. With the evolution of IT, information was instantaneously available across the supply chain integration of logistical services.

Table 3: The Level of 10PL Represent [12]

Types of PL	Definition	Logistics Role/Authority
1 PL	1PL offered standardized service with own or external resources as haulier, warehouse operators etc.	Fully
2 PL	Second-party logistics is either an individual or systemized service with own or external resources as international forwarders. 2PL - Traditional Transportation Provider	Semi-Fully
3 PL	Served their customers with own or inbuilt resources as contract logistics. 3PL is being outsource to companies for partial or all the supply chain management function. 3PL - Integrated Logistics Service Provider	Outsource
4 PL	4PL orchestra resources, capabilities and technology of its own or other organization to build, design or run supply chain solutions. 4PL – Dealing with High Level Logistics / IT Consulting	Subcontract
5 PL	Negotiator for greater / bulky volume (Airlines or Shipping Companies) 5PL – High level logistics / IT Consultant	Outsource
6 PL	Toward realm of Artificial Intelligence also referred to as an AI Driven Supply Chain. 6PL – Artificial Intelligence Driven Supply Chain	Outsource

	Management	
7 PL	An autonomous competitor created to test alternative supply chain strategies.	Outsource to only one
8 PL	A super committee created to analyses competitor's results	No ownership
9 PL	Crowd sourced managed logistics strategy	No ownership
10 PL	Where a supply chain becomes self-aware and runs by itself	No ownership

LSP need to offer up-to-date value-added service in maintaining a competitive cost structure. 3PL new skills improvement are deem necessary to cater the customers requirement by assurance of holistic customised solution. This initiative on innovation perspective will increase customers satisfaction and enable a long-term relationship and be competitive in the industry [13].

5. Conclusion and Future Scope

Summing up, the supply chain management (SCM) involving the flow of goods from the origin to end-user and logistics management is part of the SCM. Firm outsourced and engaged the logistics service provider (LSP) to concentrate on their core-competency business. LSP should be responsive in handling the logistics activities on behalf of their customers [14]. Anticipated the three (3) revolution challenges in the business of logistics. Firstly, the globalization of trade as it becoming infinity, secondly; the growing era of information and thirdly, the rapid changes of consumer preferences as the customers demand are increasing[15]. Therefore, LSP need to be innovative and add-value to their customers for business sustainability.

This paper is firstly, to facilitate further research on LSPs innovation and evolution. Secondly to dispersed body of knowledge on LSPs definition from first logistics service provider (1PL) to 10PL. Thirdly, as reference for future research in the same field. The available definition should be an advantage to conduct an empirical quantitative or qualitative methodology of LSP case study research. The worldwide competition in the logistics future projection is the improvement of logistics system both in the government and private sector.

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