

## Spillover Effects of Logistics Platforms: A Literature Review

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#### **ABSTRACT**

With increased complexity and competition among the supply chain and extended enterprises, logistics systems and technologies play critical roles in ensuring the flow of tangible and intangible goods and information. Logistics platforms which can integrate the resources and match demand & supply are acting as complementary and central elements with different ways of supply chain. This paper aims at providing a review of literatures related to the spillover effects or external effects of logistics platforms. The economics perspective in this context calls for improved performance assessment, evaluation and strategies of these platforms, evolving around issues related to human capital, intellectual capital and knowledge capital. A total of 25 articles were filtered from 2008 to 2018 to review the works proposed by different authors on this topic, make possible suggestions to some problems found and as well come up with areas for future research.

**Keywords**: Literature review, Spillover effects, Logistics platforms.

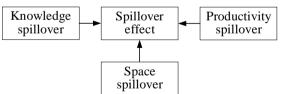
### 1. INTRODUCTION

Logistics is sometimes defined as the art of achieving the "five rights": getting the right things (or people), in the right quantity, at the right time, in the right condition and at the right price [1]. It is therefore a way of managing organizations so that the organizational aims are achieved in the most efficient and effective way. This is done by ensuring that the desired outcome is achieved by all possible means, establishing and controlling the best sequence within a number of operations, making sure these operations are carried out at the best time and above all these must happen at the best place [2]. Logistics will not be effective with the absence of platforms to facilitate the movement of goods, information and services [3].

A logistics platform is a defined area with which all activities relating to transport, logistics and the distribution of goods, both for national and international transit, are carried out by various operators [4]. It is run by a single body, either public or private, and is equipped with all the public facilities to carry out the above-mentioned operations. Based on the Internet trading market, logistics platforms provide matching services for the transport industry. It provides information such as logistics, supply and demand

information, matching business, online management, vehicle tracking and other services.

This therefore means that platforms act as complementary and central elements with different ways of supply chain. The logistics platforms are beneficial for the productivity improvement, knowledge sharing and coordinated development with logistics industry [5]. The spillover effect can be categorized into three types: productivity spillover, knowledge spillover and space spillover, see Figure 1.



**Figure 1** Three types of spillover effect of logistics platforms

Dothang et al. (2012) look at a spillover as an economic event in one context that occurs because of something else in a seemingly unrelated context. For example, externalities of economic activity are non-monetary spillover effects upon non-participants [6]. Odors from a rendering plant are negative spillover effects upon its neighbors; the beauty of a homeowner's



flower garden is a positive spillover effect upon neighbors. In the same way, the economic benefits of increased trade are the spillover effects anticipated in the formation of multilateral alliances of many of the regional nation states: e.g. SAARC (South Asian Association for Regional Cooperation), ASEAN (Association of South East Asian Nations). In an economy in which some markets fail to clear, such failure can influence the demand or supply behavior of affected participants in other markets, causing their effective demand or effective supply to differ from their notional (unconstrained) demand or supply. Another kind of spillover is generated by information. For example, when more information about someone generates more information about people related to her, and that information helps to eliminate asymmetries in information, then the spillover effects are positive (this issue has been found constantly in the economics and finance literature). "Things like that make you realize how interdependent these supply chains are" (Tanel, President of CATTAN Services Group and Chair of the ISM Logistics and Transportation Group). "Nobody plans for those things but it certainly was a wakeup call". So, to say logistics platforms are exposed to positive, as well as negative external effects that could have a vital impact on its operations and services.

Looking at spillover effects in logistic platforms, we will mostly be concerned with all the factors that externally could affect the activities, internal interactions, processes and efficiencies of these platforms. Figure 2 shows the factors affecting supply chain management, which of course will be directly reflected in the overall logistics.

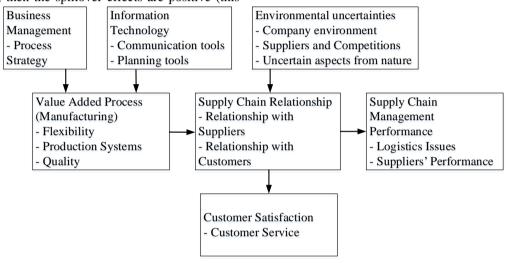


Figure 2 Factors affecting supply chain management

The globalization of factor and logistics markets, developments modern information communications technologies, and increasingly demanding customers are just a few mega trends in the last decade. Logistics platforms are there to make supply chains more efficient. To cope with the challenges coming up with globalization, many firms reengineered their internal operational organizational processes to cut costs, increase product and service quality, and remain agile in fast changing environments. But to stay innovative and competitive many firms recognized that internal improvements are too myopic. Therefore, the management of supply chains (SCM) has become very prominent since 1980s and is now widely regarded as one of the main critical success factors and considered as a key enabler of strategic change and source of strategic advantage for organizations (Alexandre D., Dmitry I., Boris S, 2018) [7].

of spillover effects in logistics platforms, as well as their contributions to the evolution and further research on the said topic. This work has been organized in four parts: the first part is the introduction, secondly the methodology, thirdly a categorization and analysis of the selected literatures, and lastly conclusions and suggestions.

This study summarizes the existing literature on

spillover effects in logistic platforms based on selected

themes and various sub headings. The article is intended

to help future researchers to know about the external effects that logistics platforms are subjected to, in return be able to carry out further research in this area and of course contribute more to the existing literatures. The review entails a three-stage methodology as seen in

Table 1.

The objective of this paper is to make a review of relevant literature that have been presented on the issues

Table 1. Stages involved in the selection of articles for this study

## 2. METHODOLOGY



Stage	Details	Number of Records
Stage 1: Keyword search	Keywords: Logistics platforms, spillover effects in logistics, external effects in logistics. Search Databases: International Journal of Logistics Management, International Journal of Logistics Research and Application, International Journal of Logistics Systems and Management. Article Type: Only articles applicable to the Business field. Time Range: Articles published from January 1, 2008 to December 31, 2018.	1386
Stage 2: Selection and Sorting	Selection Criteria: articles published in journals dedicated to logistics. articles available for free download journals featuring in SCI Mago ranking. exclusion of duplicate articles	78
Stage 3: Refined Selection	Selection Criteria: - only articles written in English. articles related to external effects in logistics platforms or supply chain excluded conference papers, business reports, news reports, editorials and market reports.	25

Stage 1: keywords search.

During the research process, only academic/scholarly peer-reviewed journals published over a 10-years-time frame, from 2008 to 2018 were selected. This was to make sure that we used only literatures that have been given trends on current issues concerning logistics. The keywords used were "logistics platforms", "spillover effects", "external effects", "supply chain". Publications were searched from a variety of databases such as the International Journal of Logistics Management, Journal of Supply Chain Management, Journal of Business Logistics, International Journal of Shipping and Transport Logistics, International Journal of Retail, and Distribution Management, International Journal of Logistics Systems and Management, Research Gate, CSIRO Publishing, Business, IOSR Journal of Business and Management, The World Trade Report and the electronic library from East China Jiaotong University, Nanchang city, China. After using filters such as keywords, time range and search within various databases gave us a total of 1386 articles to review. It should also be noted that the selection was made from journals published under the subjects of Economics, Finance, Business and Industry for the above-mentioned period.

#### Stage 2: Selection and Sorting.

At this stage only articles published in journals dedicated to logistics and supply chain management were selected. This involved sorting articles available to the researcher, based on their title, abstract and keywords such as "logistics platforms" and "external effects in logistics". It was also ensured that these articles had high standards of perceived quality of relevance and readability, and featuring in the SCI Mago ranking. At the end of this stage we were narrowed down to 78 articles.

Stage 3: Refined selection and sorting.

Inclusion criteria at this stage involved filtering articles that were available for free on the databases, then they were downloaded for reading, after which a selection of 25 articles dedicated to external effects in logistics platforms or supply chain were chosen. Keen attention was paid to journals published only in English language. Exclusion was made on conference papers, business reports, news reports, editorials and market reports.

Table 2 will give us a ranking of the journals reviewed in this paper, which was carried out in SCI-Mago Journal Rank (SJR). International Journal of Logistics Management - SJR is a measure of scientific influence of journals that accounts for both the number of citations received by a journal and the importance or prestige of the journals where such citations come from. It measures the scientific influence of the average article in a journal. In this review, we made sure that only articles having such prestige were selected so as to give more relevance to this piece of research.

# 3. CATEGORIZATION AND ANALYSIS OF SELECTED LITERATURE

With the plethora of literature reviews found on logistics and logistics platforms, it was difficult to find a study that covers all research areas with an updated literature review on spillover effects in logistics platforms or strictly on external effects in logistics platforms. Most of the studies focus on specific topics in logistics, and issues related to the said topic. Table 3 gives us a break down of the articles which were selected for this review. This involves mentioning the article, the author, the journal and the year in which they were published.



Table 2. SCI Mago Journal Rank (SJR) and H Index of the journals included in the paper

SJR	Title	Articles	H Index	Best Quartile
5.02	Journal of Supply Chain Management	1	71	Q1
2.09	Journal of Business Logistics	1	25	Q1
1.99	Supply Chain Management	3	91	Q1
1.82	International Journal of Physical Distribution and Logistics Management	3	85	Q1
1.68	Transport Reviews	2	59	Q1
1.43	International Journal of Production Research	4	107	Q1
0.77	International Journal of Logistics Research and Applications	2	20	Q1
0.74	International Journal of Retail and Distribution Management	1	61	Q1
0.71	International Journal of Logistics Management	2	60	Q1
0.42	International Journal of Shipping and Transport Logistics	1	16	Q2
0.37	International Journal of Logistics Systems and Management	1	23	Q2
0.29	Journal of Business-to-Business Marketing	1	26	Q3
0.26	Supply Chain Forum	3	5	Q3
0.31	Digital Policy, Regulation and Governance	1	23	Q2



**Table 3.** Details of literature reviews leading to external effects of logistics platforms

Ref No.	Source	Publication	Journal
1	Alan Amling and Patricia J. Daugherty (2018)	Logistics and distribution innovation in China [3].	International Journal of Physical Distribution and Logistics Management
2	Alexandre et al. (2018)	Ripple effect in the supply chain: an analysis and recent literature [7].	International Journal of Production Research
3	Andreas et al. (2016)	Accounting for external turbulence of logistics organizations via performance measurement systems [8].	Journal of Supply Chain Management
4	Alan et al. (2009)	Traffic congestion, reliability and logistical performance: a multi-sectoral assessment [9].	International Journal of Logistics Research and Applications
5	Boschian et al. (2013)	A global freight business ecosystem based on low carbon end-to-end transport and logistic services [10].	International Journal of Advanced Logistics
6	Claudio et al. (2018)	Implementation of a software platform to support an ecodesign methodology within a manufacturing firm [11].	International Journal of Sustainable Engineering
7	Dominik et al. (2015)	The performance impact of supply chain agility and supply chain adaptability: the moderating effect of product complexity [12].	International Journal of Production Research
8	Elcio et al. (2015)	How "smart cities" will change supply chain management [13].	Supply Chain Management: An International Journal
9	Eleonora et al. (2018)	Making sense of consumers' tweets: sentiment outcomes for fast fashion retailers through big data analytics [14].	International Journal of Retail and Distribution Management
10	Henry et al. (2012)	Critical factors affecting supply chain management: a case study in the US pallet industry [15].	In Tech - Pathways to Supply Chain Excellence
11	Ivan et al. (2018)	Environment impacts of cold chain distribution operations: a novel portable refrigerated unit [16].	International Journal of Logistics Systems and Management
12	Jason Monios (2015)	Identifying governance relationships between intermodal terminals and logistics platforms [17].	Transport Reviews
13	Jesus Cambra-Fiero and Rocio Riuz-Benitez (2009)	Advantages of intermodal logistics platforms: insights from a Spanish platform [18].	Supply Chain Management: An International Journal
14	Mariam et el. (2018)	How logistics performance is affected by supply chain relationships [19].	The International Journal of Logistics Management
15	Mario et al. (2013)	Impact of reverse logistics on supply chain performance [20].	International Journal of Physical Distribution and Logistics Management
16	Mervi Rajahonka (2013)	Views of logistics service providers on modularity in logistics services [21].	International Journal of Logistics Research and Applications
17	Miluše Tichavska and Beatriz Tovar (2017)	External costs from vessel emissions at port: a review of the methodological and empirical state of the art [22].	Transport Reviews
18	Pounder et al. (2013)	A review of supply chain management and its main external influential factors [23].	Supply Chain Forum - An International Journal
19	Photos M. Panayides (2011)	Effects of organizational learning in third-party logistics [24].	Journal of Business Logistics
20	Priscilla et al. (2018)	Greening logistics by introducing process management - a viable tool for freight transport companies going green [25].	Supply Chain Forum - An International Journal



<b>Table 3.</b> Details of literature reviews leading to external effects of logistics platforms (Continued	<b>Table 3.</b> Details of literature	e reviews leading	to external effects of	of logistics	platforms (	(Continued)
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Ref No.	Source	Publication	Journal
21	Rochdi et al. (2014)	Interconnected logistics networks and protocol: simulation-based efficiency assessment [26].	International Journal of Production Research
22	Sameer Kumar and Michael Sosnoski (2009)	The effect of China's economic growth on domestic and international supply chains: Assessing the risks [27].	Supply Chain Forum - An International Journal
23	Salvatore et al. (2017)	Open collaborative innovation and digital platforms [28].	Production Planning and Control
24	Theo E. Notteboom (2018)	The impact of changing market requirements on dock labour employment systems in Northwest European seaports [29].	International Journal of Shipping and Transport Logistics
25	Tim Grundmann and Stefan Seuring (2018)	Explaining logistics social responsibility from a dynamic capability perspective [30].	The International Journal of Logistics Management
26	Yaroslav et al. (2018)	Digital platforms in Russia: competition between national and foreign multi-sided platforms stimulates growth and innovation [31].	Digital Policy, Regulation and Governance
27	Ying Liao and Erika Marsillac (2015)	The role of supply chain network-oriented flexibility and organizational awareness [32].	International Journal of Production Research
28	Yubing Yu and Baofeng Huo (2018)	Supply chain quality integration: antecedents and operational consequences [33].	Supply Chain Management: An International Journal

According to Andreas B. et al. (2016), organizations need to critically review the readiness of their performance measuring system (PMS) monitoring of external negative effects [8]. If supply chain risk metrics are not used in their organization, they may want to re- consider PMS design, including their own role in selecting and prioritizing the mix of measures. One context in which supply chain risk metrics often lack are a strong focus on score keeping, whereas accounting for new SCM requirements in PMS design is easier when management is trying to gain a broader perspective. Although upper management's mindsets and hence the focus of control in an organization will not change overnight, moving towards an attention focusing PMS use will gradually prepare an organization against supply chain risks. Here, it will be of pivotal importance to involve front-line managers and employees with a sound understanding of risk monitoring needs in daily operations.

Mariam C. S. A. et al. (2018) made mention of the fact that supplier selection has the strongest effect on logistics collaboration, and relationship history has the strongest effect on logistics performance [19]. Rather than meetings and operational features, the elements of interpersonal skills, organizational culture, and communication appear to be the most important contributors to logistics performance achievements; relationship history leads to better performance.

Henry Q. et el. (2012) said that manufacturers should be aware of how critical it is to communicate, and to plan jointly with suppliers [15]. Increasing the importance of supply chain relationships and understanding the significance of this concept will increase customer satisfaction. Practitioners must realize that the flow of information in a coordinated manner, access to information and data interchange greatly improve customer and supplier relationship. This identifies information technology as a potential area for improvement. Also creating an awareness in the fast changes in customer demand, globalization of markets, and changing of technology require companies to focus their efforts on improving competitiveness by trying to achieve customer satisfaction through adding more value to their products. The implementation of process strategies will improve manufacturing performance and supply chain management performance.

Elcio et al. (2015) emphasized that researchers should investigate to what extent smart cities and big data shift the power structure within supply networks [16]. Smart cities and big data may have a significant role in altering power distribution within supply networks, for example by providing firms with critical data on consumption patterns. According to a study by McKinsey Global Institute, big data will provide enormous opportunities for firms that are in the middle of large information flows, that process millions of transactions or that interface with large number of consumers (Mervi R et al, 2013) [21]. Under this scenario, large retailers could use this data to better fit distribution strategies and detailed segmentation, increasing margins streamlining processes. Moreover, it will provide a mechanism for the transit operator to both buy and sell data, as well as to publish open data for use by 3PL (Rochdi S, 2014) [26]. To examine how this will affect power relations within supply networks seems to be an



auspicious research line. Photis M. P. (2011) pointed out that "logistics service providers face significant digital hardship from new technologies such as autonomous vehicles and 3D printing as well as from platform-based business models and the sharing economy". They used Porter's five forces to elaborate on these external disruptions by mentioning that "We see the following changes in the competitive arena: First, 3PLs focusing on standard services may lose significant market share in the near future [24, 25]. Second, management-related 3PL activities seem to be increasingly offered by new external competitors, which may downgrade 3PLs to simple forwarders. Third, digitalization enables the forward or backward integration of 3PL customers and suppliers when they establish their own services" [29, 34].

Figure 3 describes the operation pattern of highway freight platform.

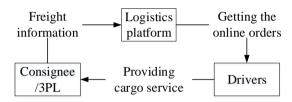


Figure 3 Operation mode of logistics platform

#### 4. CONCLUSIONS

This paper aimed at providing a review of literatures related to the spillover effects or external effects in logistics platforms, as well as making an analysis of previous articles written in this area and providing areas for further research. From the findings made, very few articles have been published on this issue. Most scholars focused on areas related to logistics and supply chain, without quite mentioning the main spillover effects in logistics platforms. Papers were analyzed based on the keywords used and valuable information obtained in this process.

The various suggestions proposed were for logistics platforms to be keen on the factors affecting the growth and evolution of this service industry. Special attention to be paid to the customization of standardized logistics services, logistics infrastructure development, platformbased training and information sharing, mitigation of natural hazards, cooperate social responsibility, government intervention, rivals' competition, technological evolution and market changes.

Further research should be carried on the qualitative and quantitative assessment of the impact of logistics platforms business on the logistics industry. Also, research should be carried out on the influence factors and mechanism of logistics platforms.

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