The importance of the warehouse in the 3PL buying process: the perspectives of logistics providers and shippers

Baglio M.*, Colicchia C., Creazza A.*, Dallari F.***

** School of Industrial Engineering, LIUC – Università Cattaneo, Corso Matteotti 22, 21053 – Castellanza (VA) – Italy (mbaglio@liuc.it, acreazza@liuc.it, fdallari@liuc.it)*

*** Department of Management, Economics and Industrial Engineering, Politecnico di Milano, Via Lambruschini 4/B, 20156 - Milano – Italy (claudia.colicchia@polimi.it)*

Abstract: As the demand for logistics outsourcing has grown over time, third-party logistics (3PL) providers need to find solutions to achieve sustainable competitive advantage in an increasingly crowded market. First, 3PL providers need to find a way that helps them to be attractive when they are presenting themselves to the marketplace. Second, they need to improve their customer retention. Adopting the theoretical lens of the Resource Based View (RBV) theory, one of the critical resources for 3PL providers consists of physical assets, which include warehouses. Notwithstanding the relevance of warehouses as key physical assets within the logistics processes, literature does not explore their importance as a source of competitive advantage for 3PL providers. To fill this gap, the present research aims to investigate the importance of the warehouse among the selection criteria used in the 3PL buying process to improve the 3PL's attractiveness and the level of customer retention, taking into account the perspectives of 3PL providers and shippers in a dyadic relationship. Semi-structured interviews were carried out to collect perceptions and opinions from the participants in each dyadic relationship, and the selection criteria were ranked with the Best-Worst Method (BWM). Results show that warehouses have a limited importance in the 3PL buying process according to both 3PL providers and shippers. However, warehouses affect the 3PL evaluation indirectly due to their impact on the main selection criteria: 'expertise and reputation', 'costs' and 'service quality'.

Keywords: Third-party logistics provider, outsourcing logistics, 3PL buying process, competitiveness, warehouse

1. Introduction

The outsourcing of logistics activities has reached global revenues for more than 950 billion US$ in 2018, and it is forecasted to exceed 1 trillion US$ in 2025 (Armstrong & Associates, 2019). The "third-party logistics" (3PL) market has continuously grown, thanks to the increasing demand for outsourced logistics services (Hofmann et al., 2017). Nowadays, an increased number of companies are looking to externalise logistics activities to achieve a higher performance and survive in a strong competitive environment (Raut et al., 2018). Selecting the right 3PL provider is a crucial decision to reach the expected benefits, such as costs reduction, improved logistics performances and service level (Marchet et al., 2018).

As outsourcing demand has grown, 3PL providers need to find solutions to achieve a sustainable competitive advantage in an increasingly crowded market (Rajesh et al., 2012). In other words, 3PL providers need to find a way that helps them to increase their value in the eye of the customer in the short and long term (Tian et al., 2010). First, they should appear as attractive - i.e., the shippers' perception of the 3PL provider is higher compared to that of other competitors (Andreassen, 2008) - when they are presenting themselves to the marketplace. Second, they should improve their customer retention - i.e., the measurement of the shippers' attitude towards their 3PL provider with regards to repeat purchasing intentions for the same service (Wallenburg, 2009). According to the literature, the main sources of competitive advantage for 3PL providers are resources and capabilities (Liu et al., 2010). The resource-based view (RBV) theory, which was first introduced by Penrose (1959), is especially useful to analyse 3PL competitiveness (Zacharia et al., 2011). Using the theoretical lens of the RBV theory, the warehouse is a "valuable, rare, inimitable, and non-substitutable" resource that could generate competitive advantage for 3PL providers. However, the literature does not specifically address the importance of the warehouse as a source of competitive advantage. The objective of the present study is to fill this gap. To do so, the paper focuses on the 3PL buying process, as per Marchet et al. (2018), where the customer chooses from among several 3PL providers, also including the current provider. This process includes both attractiveness and customer retention. Therefore, the present research aims to answer the following research question: *How important is the warehouse among the selection criteria used in the 3PL buying process to improve the attractiveness of the 3PL and customer retention, according to both 3PL provider and shippers?*

The unit of analysis of the study is the dyad (i.e., 3PL provider and a customer) in order to deeply understand the relationship between buyers and sellers. The analysis of the two perspectives gives an in-depth understanding of the importance assigned to the warehouse by both 3PL providers and shippers. The dyad opinions were collected through semi-structured interviews, and the selection criteria were ranked adopting the Best-Worst Method (BWM). Its application is in line with the scientific literature referring to the 3PL selection problem, which is solved through multi-criteria decision-making (MCDM) methods, like the BWM (Aguezzoul, 2014). The remainder of the paper is organised as follows. The literature review is provided in Section 2. The methodologies adopted are described in Section 3, and the

findings are then presented in Section 4. Afterwards, Section 5 presents the discussion and conclusions, with recommendations for further studies in the field.

2. Literature review

2.1 The warehouse as a source of competitive advantage

According to the literature, the primary sources of competitive advantage for 3PL providers are both capabilities and resources, but scholars have focused their attention more on capabilities. They have studied in details the importance of IT capabilities (Hofmann and Osterwalder, 2017); operational and overall performance (Kayakutlu and Buyukozkan, 2011; Liu and Lee, 2018); service quality (Liu et al., 2010); innovation capability (Binti Mohd et al., 2017) and relational capability, e.g. collaboration, trust and communication (Liu and Lee, 2018). From among the resources, scholars have mainly focused on the importance of human and knowledge resources (Aguezzoul, 2014). Few contributions cited the importance of physical assets (e.g. material handling equipment, warehouses, and logistics hub) even if their quality and quantity have an important influence on the overall performance of 3PL providers and the service level offered (Liu et al., 2010). Assets - such as warehouses - are considered one of the dimensions of logistics service quality measurement frameworks (Rafele, 2004). Nevertheless, warehouses have been generally skimmed over, even if they are critical for 3PL providers, as also theorised by the RBV theory (Rajesh et al., 2012). Using the theoretical lens of the RBV theory, the primary sources of competitive advantage are the resources of an organisation that are "valuable, rare, inimitable, and non-substitutable" (Penrose, 2009). Warehouses can be a source of competitive advantage: they are valuable since they are large capital assets (Mattarocci and Pekdemir, 2017). They are rare, as it is challenging to find an available warehouse given the low vacancy rate in the logistics real estate market (Prologis, 2019). They are inimitable because they are equipped with automated systems and facilities responding to specific operative needs (Baker, 2007). Moreover, the dyadic relationships between buyers and suppliers may enhance the barriers of resource imitation (Halldórsson and Skjøtt-Larsen, 2004). Finally, warehouses are difficult to substitute given the high switching costs (e.g. closure cost, moving costs, new investments for new utilities and facilities), possible service disruptions (e.g. lower performance due to the start-up), and social impact on employees (Melachrinoudis and Min, 2007).

2.2 3PL buying process

The 3PL buying process is a long and challenging practice because the identification of the right provider is critical to gain the expected benefits. As the variety of logistics services and the level of outsourcing logistics have grown over time (Hofmann and Osterwalder, 2017), the purchasing process has become increasingly complex (Andersson and Norrman, 2002). According to the literature, the 3PL buying process is structured in four main phases that present similarities to generic purchasing frameworks (Baily et al., 2005). The phases are reported below (Aghazadeh, 2003; Andersson and Norrman, 2002; Sink and Langley, 1997).The first phase is the *'definition of the service outsourced'*. It includes the specification of the service (qualitative characteristics) and definition of weights/volume (quantitative characteristics). These activities are fundamental to build shared internal knowledge on the expected service, choosing the 3PL providers that respond appropriately to the service requirements internally shared and accepted (Halldórsson et al., 2004), but also to give providers a fair opportunity to develop accurate proposals (Andersson et al., 2002). The second phase is the *'screening process'*. During this phase, the buyer defines the first list of potential providers through a market survey and sends a request for further details (i.e., a request for information or RFI). The information collected is used to confirm or delete a provider from the potential candidate list according to the fulfilment of some criteria (named 'order qualifiers'). The third phase consists of *'evaluation and selection of 3PL providers'*. The buyer sends out a request for proposal (RFP) to qualified providers resulted from the screening process. Consequently, 3PL providers are approved to submit an offer that is compliant with the service requirements, forecast volumes, and handling characteristics defined in the first phase. In this stage, several selection criteria can be adopted by the buyer (in this case one talks about 'order winners'). The fourth phase is *'negotiations and contracts'*. In this stage, the buyer and the winning 3PL provider negotiate the final prices and constraints on services. Finally, a detailed contract is written and signed by both parties. The third phase of the 3PL buying process has been extensively discussed by scholars. Aguezzoul (2014) provides an extensive literature review on the selection problem related to 3PLs, identifying the most commonly used selection criteria and providing a classification of them and the methodologies applied, mostly MCDM methods. Starting from his considerations, we performed an analysis of the selection criteria used in the recent contributions.

- *Cost*: refers to the total cost of logistics outsourcing, and includes attributes such as price, distribution cost, expected leasing cost, operation cost, warehousing cost (Asian et al., 2019; Pamucar et al., 2019; Ecer, 2018; Marchet et al., 2018; Roy et al., 2018; Mathiyazhagan et al., 2018; Bajec et al., 2017; Hwang et al., 2016)
- *Financial position*: Refers to the financial performance of the 3PL (Asian et al., 2019; Pamucar et al., 2019; Ecer, 2018; Marchet et al., 2018; Roy et al., 2018)
- *Service range*: Related to characterisation/ specialisation of services, geographical coverage, variety/breadth of available services (i.e., customer services, and value-added services) (Asian et al., 2019; Pamucar et al., 2019; Ecer,

2018; Marchet et al., 2018; Roy et al., 2018; Hwang et al., 2016)

- *IT capabilities*: Corresponds to information and communication system and includes elements such as technology capabilities, information accessibility, digitalisation level, information security, and tracking/tracing systems (Asian et al., 2019; Pamucar et al., 2019; Jovčić et al., 2019; Ecer, 2018; Marchet et al., 2018; Bajec et al., 2017; Hwang et al., 2016)
- *Experience and reputation*: characterised by attributes such as expertise, professionalism, competence, reputation, and experience in the industry. (Asian et al., 2019; Pamucar et al., 2019; Ecer, 2018; Marchet et al., 2018; Roy et al., 2018; Mathiyazhagan et al., 2018; Bajec et al., 2017; Hwang et al., 2016)
- *Quality*: Includes compliancy to ISO standards, environment issues, certifications, and risk management (Asian et al., 2019; Ecer, 2018; Marchet et al., 2018; Roy et al., 2018; Hwang et al., 2016)
- *Service quality*: includes elements like availability, on-time delivery, complete orders, accurate orders, arrival of undamaged products, consistent order cycle time, delivery information (Asian et al., 2019; Jovčić et al., 2019; Ecer, 2018; Marchet et al., 2018; Roy et al., 2018; Mathiyazhagan et al., 2018; Bajec et al., 2017; Hwang et al., 2016)
- *Flexibility*: defined as the ability to adapt to changing shippers' requirements and circumstances (Asian et al., 2019; Pamucar et al., 2019; Ecer, 2018; Marchet et al., 2018; Roy et al., 2018; Bajec et al., 2017; Hwang et al., 2016)
- *Proactivity*: defined as the 3PL's ability to suggest continuous improving practises to increase the customer service level (Asian et al., 2019; Pamucar et al., 2019; Hwang et al., 2016)

In the recent scientific literature on the 3PL selection problem, the warehouse is often mentioned but not explicitly investigated. For example, in the works of Hwang et al. (2016), Bajec et al. (2017) and Marchet et al. (2018), the warehouse is included in a group of criteria and its specific importance in the selection process is not detected. Among all the criteria usually used in literature to select a 3PL provider, the role of the warehouse has been scarcely addressed so far. In scientific research, attention is focused on the performance of the 3PL provider, even if they are challenging to effectively measure a priori. Moreover, the literature neither distinguishes selection criteria in 'order winner' or 'order qualifier', nor highlights how the evaluation of the same type of criterion changes according to the phase of the 3PL buying process considered. Finally, the comparison of shippers and 3PL provider's perspectives has not been deeply investigated so far. The analysis of the two different points of view is an approach that is different from, but complementary to, prior works that have tried to identify the way logistics service resources can be leveraged to create value. This analysis is important because the strategic alignment between the two perspectives leads to better performance (Gattorna, 1998).

3. Methodology

The research methodology was divided into three main steps. In Step 1, a structured literature review was performed to identify the list of the most relevant selection criteria and some insights from the 3PL buying process that are useful to discuss the results obtained. Specifically, the analysis was based on 51 peer-reviewed papers published in international journals and three books, covering the time from 1997 to 2019. In Step 2, the objective of this stage was to develop a protocol to be used in the empirical stage of the research. The protocol was developed to ensure the reliability of the study, taking into account as a primary driver the objectives of the present research combined with the insights that emerged from the literature review as in Rossi et al. (2013). In order to build the protocol, the results of Step 1 were validated through interviews with members of an advisory board. We set up an advisory board composed of three experts: a member of an Italian logistics association, a professor working in an academic observatory related to the 3PL industry, and a consultant with more than 15 years of expertise in the 3PL buying process. The obtained protocol consisted of a mixture of open-ended questions (to explore the buying process) and closed-questions (to assess the relevance of the selection criteria). The final output of this phase was a comprehensive analysis of the 3PL buying process, the lists of the main selection criteria, and a formal protocol used in the following phase of the methodology. In Step 3, the lists of selection criteria were used to assess the importance of the warehouse in the 3PL buying process. The present research uses the dyad as a unit of analysis to focus on key constructs from the perspective of both sides of the buyer–seller relationship. The dyads were selected using different inclusion and exclusion criteria. First, we focus on the two industries with the higher level of logistics outsourcing in Italy. According to the data provided by the Contract Logistics Observatory of Politecnico di Milano, the highest levels of outsourcing logistics are in fast-moving consumer goods (FMCG) and the pharmaceutical industry (Contract Logistics Observatory, 2019). Second, we contacted the leading 3PL companies specialised in these two industries, involving one 3PL provider for each industry in the research. Third, starting from the customer portfolio of each 3PL provider, we selected two companies according to these criteria: (1) the firms must have a structured 3PL selection process (in order to compare similar processes); and (2) the duration of the buyer-seller relationship must be different (long versus short relationship). This last aspect allows for a deeper understanding of the impact of selected criteria on the customer retention. Finally, data on four dyads were gathered: two dyads for the pharmaceutical industry, and two dyads for the FMCG industry. Semi-structured interviews – following the formal protocol defined in Step 2, which includes 11 questions – were carried out with the logistics managers of the companies in the dyads who were involved in the last 3PL buying process with the current shipper/3PL provider. They were called to: (i) explain the characteristics of the 3PL buying process that involved the other member of the dyad; and (ii) to assess the selection criteria through a ranking. The authors interviewed 6

logistics directors from September to December 2019. The BWM, first developed by Rezaei (2015), was used by the authors to process the data related to ranking of the selection criteria gathered from the interviews. The BWM is a comparison-based MCDM method, i.e., a methodology that chooses the best alternative by considering a number of criteria (Rezaei, 2015), and it is widely applied in the logistics stream of literature (Rezaei et al., 2018). The application of the BWM is also in line with the scientific literature referring to the 3PL selection problem, which is solved through MCDM methods (e.g Coltman et al. (2011); Pamucar et al. (2019)). The BWM requires respondents to make a selection from a group of criteria by choosing the "best" (e.g. the most desirable or important criterion) and the "worst" (e.g. the least desirable, or important one), and then compare the best criterion to the others and all the other criteria to the worst one. The two comparison vectors are then used to find the optimal weights and consistency ratio through a linear model built using a comparison system, as explained in Rezaei (2016). The linear BWM is preferred since it gives a unique solution, which can be directly compared with others (Rezaei, 2016). The results of Step 3 were used to compare the perspectives of 3PLs and shippers and determine the importance of the warehouse in the 3PL buying process.

4. Results

4.1 The 3PL buying process

The information collected from interviews was used to design a framework of the 3PL buying process, integrating and updating the information discussed previously in the Literature Section. The 3PL buying process is organised in six main phases and three evaluation moments. *First phase 'service requirement definition'*. The buyer collects data on the specifications (quantitative and qualitative) of the outsourced service. According to the interviewees, the information collected varies: the current logistics network (e.g. warehouse location, geographical coverage), the logistics flows (e.g. volume, weights, seasonal peak), description of the products (e.g. palletised unit load dimensions), description of logistics procedures, logistics service level requirements (e.g. lead time, accuracy), compliance with legislation (e.g. Good Distribution Practices (GDP) for the pharmaceutical industry) or required quality, health, safety and environmental certifications, and definition of specific areas of interest (e.g. environmental sustainability, innovation). This stage is critical because it identifies the buyer's internal requirements (considering the needs of the different departments) and the benefits that the company wants to achieve from the relationship (e.g. cost reduction, high level of service). The activities mentioned above "can last up to 1 year" (Shipper A) and "a cross-functional team may be involved" (Shipper B). Planning is essential to reduce risks in the start-up period: if the potential suppliers underestimate or overestimate the requested service, an inappropriate 3PL could be chosen. Consequently, the outputs of this phase are: (i) the technical specifications of the logistics services; (ii) the order qualifier criteria to adopt in the following screening process; and (iii) the order winner criteria to use in the final stage of 3PLs evaluation. *Second phase 'screening process'*. The first activity is to define an extended list of potential candidates who can be invited to the tender. Third parties may be involved in carrying out a screening of the logistics market (Shipper A). Otherwise, the list can be drawn using the information already present in the company: "the names of the 3PL providers with great experience in the industry have always been the same ones for years" (Shipper C), thus, "you can count them on the fingers of one hand" (Shipper B). However, sometimes new providers are added to the list to see something novel or to have inspiration (Shipper D). Starting from the extended list, the buyer sends out an RFI to gather detailed information on the 3PL (e.g. general presentation, mission, vision), customer portfolio (e.g. number of clients, size, market share), experience in the industry, financial indicators, and description of the logistics network (e.g. warehouse location, type and number of transportation means, number of warehouses available, logistics partners). After receiving the response of all 3PL providers who are willing to take part in the tender (some candidates can decline the opportunity, as reported by 3PL provider FCMG), the buyer applies the order qualifier criteria identified in the previous stage of the process. Therefore, the buyer reduces the number of possible candidates, and the extended list becomes a shortlist of a maximum of 10 suppliers. Usually, the number of candidates is limited to 5 for the pharmaceutical industry, since there are so few specialised providers (3PL Pharma). *Third phase 'evaluation and selection process'*. This phase aims to go from a shortlist of candidates to the final winner.

Table 1: Dyads features: relationship and service characteristics

	3PL Pharma		**3PL FMCG**	
	Shipper A	Shipper B	**Shipper C**	**Shipper D**
Procured logistics services	Warehousing, value-added services	Warehousing, transportation, value-added services	Warehousing and value-added services	Warehousing, transportations and value-added services
Contract length	6 years (3+3)	3 years	5 years (3+2)	5 years (3+2)
Relationship length	From 2014 (5 years)	From 2007 (12 years)	From 2014 (5 years)	From 2007 (12 years)

The buyer sends out the RFP to the 3PL providers in the shortlist, to which a document is attached with all the data gathered in the Phase 1, and sometimes the Request For Quotation (RFQ), according to the number of rounds this stage lasts. During this period, the buyer and 3PL providers meet and discuss the technical specifications and details within the RFP. Meetings are fundamental to explain how the proposal should be prepared, especially if the 3PL provider has to suggest the type of logistics network (e.g. location and number of warehouses). Moreover, buyers can visit, or even audit (Shipper B and R), the warehouses that will host the products. Once all the proposals have been received, the suppliers are evaluated on the order winner criteria. In the case of more than one round of proposal/quotation, some buyers can meet the suppliers to discuss the proposal received, giving feedback (Shipper D). Finally, the 3PL provider who has the highest score wins the competition. *Phase 4*, *'negotiation and contract'*. The buyer and winning supplier negotiate the terms of the contract and sign it: the service can be implemented. *Phase 5*, *'service implementation'*. During the on-going service, the buyer continuously monitors the 3PL provider, keeping track of its performance in terms of service level and costs. Alignment with the operative requirements and service level agreement (SLA) throughout the contract period is critical to take a decision in the following phase. *Phase 6*, *'contract renewal or termination'*. Once the contract has expired, the buyer must decide whether to renew or cancel. Usually, the provider is confirmed if he has kept faith with what was defined during the selection phase (Phase 2), demonstrated flexibility and reliability, respected the terms of service, and proposed initiatives to improve the service (Shipper D). These are considered 'retention factors', as they enable renewal of the contract. Otherwise, the buyer will decide to change suppliers if they are unprofessional and do not meet key performance indicators (KPI), ask to modify tariffs, do not carry out the suggested projects and their facilities are not consistent with the requirements defined (Shipper C). Other reasons to start a new 3PL buying process include: (i) revision of the logistics network (due to changes within the company, such as the launch of new products, shift in distribution channels, etc.); (ii) the search for cheaper providers; or (iii) the decision taken and forced by the headquarter. In these latter cases, the actual 3PL provider can be invited to compete in the tender again. The buyer will switch to a new supplier only if the new candidates propose solutions that are cheap enough to cover disservice risks and start-up costs.

4.2 The selection criteria

The nine main criteria identified from literature were adjusted by the advisory board and then classified according to their use in different phases of the 3PL process as the output of Step 2 of the methodology (Figure 1). Three classes of selection criteria were identified. The first, 'order qualifiers', are the attributes a 3PL provider must have to take part in the 3PL process, and they include 'Financial position', 'Service range', 'Expertise and reputation', and 'Quality'. The second is 'order winner': the higher the quality of these attributes, the higher the possibility the 3PL providers will win the competition. These are 'Cost', 'Service range', 'IT capabilities', 'Expertise and reputation', 'Quality', 'Service quality', 'Flexibility', and 'Proactivity'.

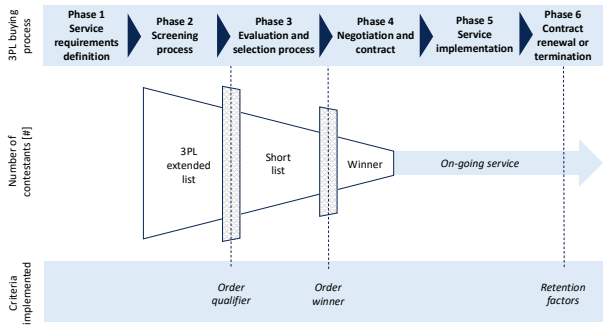

Figure 1: 3PL buying process

The third group, 'retention factors', are all those elements that allow 3PL providers to be reconfirmed at the end of the contract period. These include 'Cost', 'Service range', 'Service quality', 'Flexibility', and 'Proactivity'. Finally, the 'warehouse' criterion was added to the list and considered in all the three moments of 3PL provider evaluation. The 'warehouse' refers to the quality of the logistics building (i.e., a set of features that affect the overall assessment of the warehouse). As far as the order qualifiers are concerned (Figure 2), 'expertise and reputation' and 'quality' are the most important criteria (i.e., have the highest weights). The result is affected by the type of industry analysed: the FMCG and pharmaceutical industries have to cope with strict regulations and several logistics constraints to handle the products correctly. Therefore, long experience in the industry means th at 3PL providers know and manage the challenges of these specific products (e.g. temperature for transportation and storage, management of the expiry date). 'Warehouse' is not critical in this phase: the expertise of the 3PL provider ensures that it respond to the minimum standard required, and it can be revisited and audited in the following phases of the 3PL buying process. 'Financial position' and 'service range' are less relevant.

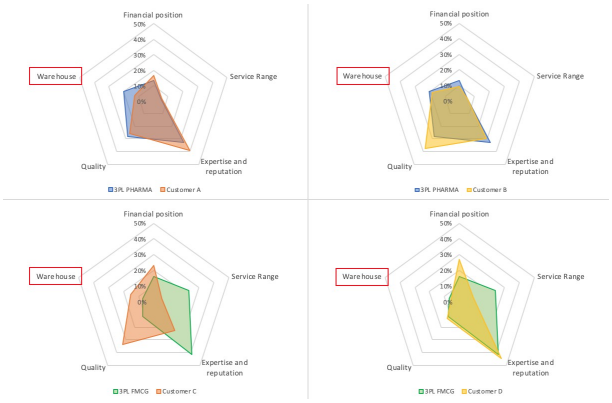

Figure 2: Order qualifiers: comparison of perspectives within the dyads

The 'financial position' is usually linked to the reputation of the 3PL provider: "We assessed the financial position only for those 3PL providers unknown to us" (Shipper C). As expected, long-standing dyads (i.e., the ones having a

longer relationship, with the shipper coloured in yellow in Figure 1) provide scores more similar than those returned by recently established dyads. Moreover, the '3PL Pharma' is more aligned to the shippers' perspectives than the '3PL FMCG', due to the fact that the pharmaceutical industry is a more stable sector than the FMCG, which is affected by new logistics challenges, such as omnichannel distribution and green supply chain practices (Colicchia et al., 2017; Perotti et al., 2012).

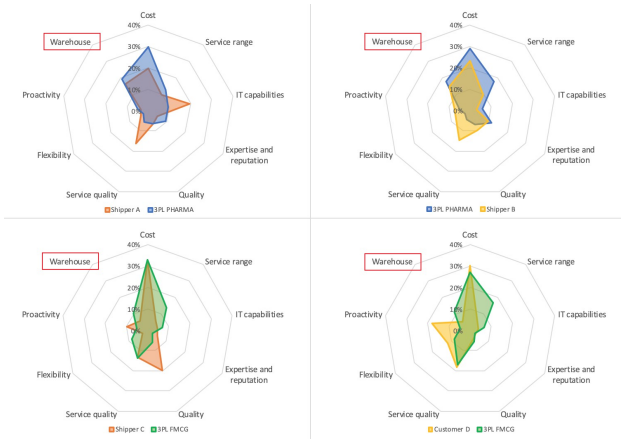

Figure 3: Order winners: comparison of perspectives within the dyads

Even for the order winners (Figure 3), 'warehouse' is not a crucial selection criterion. For the FMCG industry, it is not relevant at all. However, it is more significant for the pharmaceutical industry, where the factor ranks third.

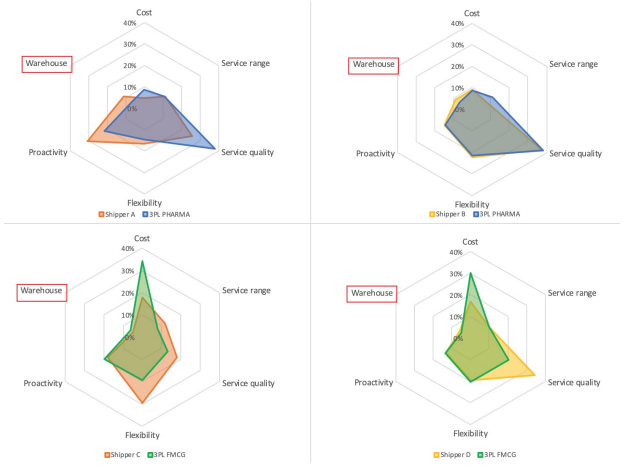

Figure 4: Retention factors: comparison of perspectives within the dyads

This result is due to the attention and efforts that pharmaceutical companies placed in the analysis of compliance of the facilities used to store and transport products. On the other hand, due to the higher volume and number of available specialised 3PL providers in the industry, together with lower revenues, the FMCG companies focus more on costs. Despite the low importance assigned, both 3PL providers admitted during the interviews that warehouses can be "marketing tools". During the audits/visits of Phase 3, "The potential shipper can see the quality and the values our company has through our warehouses: they are clean, organised, flexible, with all the areas required and qualified personnel" (3PL Pharma). The 3PL FMCG agreed: "A recent multi-client warehouse with high clear building height, large floor space and automation is really appreciated by shippers and gives the idea of an innovative and efficient company". Shippers confirm this feeling: "Our business does not need a new warehouse, but an organised and clean building equipped with modern technologies that show the capability of a 3PL provider" (Shipper D). Moreover, according to Shipper B, the warehouse has a direct impact on costs: "The higher the quality level of the warehouse, the higher the costs implied". All the dyads provide similar results, and choose 'cost' as the most important selection criteria, in line with the findings reported in Literature Section: why? According to the '3PL Pharma', cost is considered to determine the winner among 3PLs with the same level of quality (i.e., having the same score in all other criteria). Therefore, it is a crucial point in the final decision. The '3PL Pharma' manager explained that immediately sharing correct information is fundamental for the company that is in the middle between the 3PL provider and the transportation companies. 'Flexibility', 'proactivity', and 'service quality' are not so important because shippers are not able to measure these elements directly (Ecer, 2018). Typically, they are "proven by showing the KPI reports of other shippers and accepting service level agreements in the contract linked with penalties in case of lower performance" (3PL FMCG). Regarding 'service range', it is more significant for 3PL providers rather than shippers. 3PL providers see "a large number of services as an opportunity to meet different shipper's needs" (3PL FMCG), but shippers usually are "reluctant to remunerate for service not required" (Shipper C). Finally, expertise and reputation are no longer relevant: they are the first requirements (i.e., order qualifiers) and are left out from the following phase of the 3PL buying process. Looking at the 'retention factors' (Figure 4), the warehouse is no longer considered by both industries. The interviewees explain this by claiming that facilities are now taken for granted and "considered part of the service quality" (Shipper B). Indeed, "a good warehouse affects the performance of the 3PL provider positively" (3PL Pharma). In the pharmaceutical industry, 'service quality', 'proactivity', and 'flexibility' are the drivers to improve the shipper's loyalty. The 3PL provider also shares these results, and the perspectives are aligned. However, in the FMCG industry, the point of views of the 3PL provider and its shippers are in contrast. On one hand, shippers are more focused on service quality, in line with the reason behind the renewal or termination of a contract. On the other, the 3PL provider is convinced that 'cost' is the most critical factor: "Being able to carry out optimisation projects and sharing the benefits with the shippers to reduce their tariffs are key to increasing loyalty".

5. Discussion and conclusions

Even if logistics is presented as a strategic function given its evolution in recent years (Asian et al., 2019), the warehouse still seems to be considered a mere accessory. The theoretical lens of the RBV allows for isolating physical assets, such as warehouses, as critical resources that should be considered important – specifically as far as

this research is concerned in all phases of the 3PL buying process, enhancing attractivity and retention of the 3PL's customers. Nevertheless, the results of our study only partially confirm the view of the RBV, showing that the warehouse is important for the 3PL buying process, but not as much as the theory would suggest. Why has this result been obtained? Two main considerations have emerged. On one hand, the interviews highlight that shippers are not able, or do not have the competence, to clearly define what determines quality of the warehouse. During the visits, they look at the level of "cleaning" and "organising" as warehouse features, while 3PL providers see structural factors, such as the clear building height, floor space, flexibility, and the presence of automation as indicators of the "quality" of the warehouse. The two perspectives, even if similar in the final evaluation, are not aligned. Further research could better define the concept of "warehouse quality" by allowing companies to evaluate it accurately. Indeed, this topic has been skimmed over in academic literature. On the other hand, it seems that 3PL providers cannot "value and promote" their warehouses. This logistics building may not be seen as critical to their competitive advantage because it might not be fully able to support their current and prospective operative needs. In fact, warehouses are usually designed, built, and owned by real estate companies, which adopt approaches in the development of logistics facilities closer to the strategic views of the industrial real estate sector rather than to try to satisfy the 3PL providers' specific requirements. Further research could analyse the logistics real estate sector, looking at the alignment between warehouse features and the needs of 3PL providers. In conclusion, the warehouse has been confirmed by our results to be an important asset for 3PLs, in line with the RBV theory. However, the strategic relevance of the warehouse could be strengthened by overcoming two main issues, as discussed above: 3PLs cannot adequately promote warehouse value to shippers and, in turn, customers are unable to evaluate the warehouse appropriately during the 3PL buying process, also because they do not have the required competences/instruments to do so. There are several contributions the present research makes. First, the research fills the literature gap, analysing the role of the warehouse in the 3PL buying process. This topic has not been widely addressed, even if the logistics real estate has changed in recent years, and logistics buildings have gradually evolved from being conventional to becoming more complex facilities, deserving more attention from scholars. Second, the paper extends the current theory on the 3PL buying process by identifying six different phases and three 3PL evaluation moments. Moreover, for each moment, the selection criteria adopted were found, distinguishing among "order qualifiers", "order winners" and "retention factors". The paper provides new insight thanks to the comprehensive analyses, which were excluded by the present literature that focused only on a part of the 3PL buying process (i.e., the selection problem). Third, the comparison of the viewpoints of both the shipper and the 3PL provider allows for new considerations and suggestions for future research, too. Indeed, the two perspectives appear to be scarcely investigated jointly, even if they are strictly related. Although this study produced interesting results and findings, limitations do exist. First, the number of dyads involved in the research should be increased to strengthen the findings. Dyads from other industries should be added to the present sample to collect more insight on the 3PL buying process and allow for generalisation of the results. Second, customer retention is used as a measure of loyalty. However, further studies should also consider additional dimensions of loyalty, such as customer extension and customer referrals. Third, the warehouse quality criterion could be associated to other criteria, such as: (i) expertise for the order qualifiers; (ii) costs for the order winners; and (iii) service level and costs for the retention factors. Future studies should investigate the impact of the warehouse on other criteria in the 3PL buying process.

References

Aghazadeh, S.-M., (2003), How to choose an effective third party logistics provider, *Management research news*, Vol. 26 No. 7, pp. 50–58.

Aguezzoul, A., (2014), Third-party logistics selection problem: A literature review on criteria and methods, Omega, Vol. 49, pp. 69–78.

Andersson, D. and Norrman, A. (2002), Procurement of logistics services—a minutes work or a multi-year project?, 10th Annual IPSERA Conference, Vol. 8 No. 1, pp. 3–14.

Baily, P., Farmer, D. and Jessop, D. (2005), *Purchasing Principles and Management*, Pearson Education.

Bajec, P. and Tuljak-Suban, D. (2017), Selecting a logistics service provider: a definition of criteria that consider the requirements of an external competitive environment, *Transport Problems*, Vol. 12, pp. 157–168.

Baker, P., (2007), An exploration of warehouse automation implementations: cost, service and flexibility issues, *Supply Chain Management: An International Journal*, Vol. 12 No. 2, pp. 129–138.

Colicchia, C., Creazza, A. and Dallari, F. (2017), Lean and green supply chain management through intermodal transport: insights from the fast moving consumer goods industry, *Production Planning & Control*, Vol. 28 No. 4, pp. 321–334.

Coltman, T.R., Devinney, T.M. and Keating, B.W. (2011), Best–Worst Scaling Approach to Predict Customer Choice for 3PL Services, *Journal of Business Logistics,* Vol. 32 No. 2, pp. 139–152.

Ecer, F. (2018), Third-party logistics (3Pls) provider selection via Fuzzy AHP and EDAS integrated model, *Technological and Economic Development of Economy*, Vol. 24 No. 2, pp. 615–634.

The full list of references is available in the Appendix, available at:
https://www.dropbox.com/s/7g9am99dt6l19kj/Submission%2050%20appendices.doc?dl=0