



Heriot-Watt University
Research Gateway

Environmental Sustainability in the Follow-Up and Evaluation Stage of Logistics Services Purchasing

Citation for published version:

Bahr, W & Sweeney, E 2019, 'Environmental Sustainability in the Follow-Up and Evaluation Stage of Logistics Services Purchasing: Perspectives from UK Shippers and 3PLs', *Sustainability*, vol. 11, no. 9, 2460. <https://doi.org/10.3390/su11092460>

Digital Object Identifier (DOI):

[10.3390/su11092460](https://doi.org/10.3390/su11092460)

Link:

[Link to publication record in Heriot-Watt Research Portal](#)

Document Version:

Publisher's PDF, also known as Version of record

Published In:

Sustainability

Publisher Rights Statement:

© 2019 by the authors. Licensee MDPI, Basel, Switzerland.

General rights

Copyright for the publications made accessible via Heriot-Watt Research Portal is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

Heriot-Watt University has made every reasonable effort to ensure that the content in Heriot-Watt Research Portal complies with UK legislation. If you believe that the public display of this file breaches copyright please contact open.access@hw.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.

Article

Environmental Sustainability in the Follow-Up and Evaluation Stage of Logistics Services Purchasing: Perspectives from UK Shippers and 3PLs

Witold Bahr * and Edward Sweeney

Aston Logistics & Systems Institute, Aston University, Birmingham B4 7ET, UK; e.sweeney@aston.ac.uk

* Correspondence: bahrw2@aston.ac.uk; Tel.: +44-(0)-121-204-3000

Received: 25 March 2019; Accepted: 18 April 2019; Published: 26 April 2019



Abstract: The purpose of the research described in this paper is to investigate the role played by the green agenda and sustainability in the follow-up and evaluation stage of the purchasing of logistics services. This stage is relatively under-explored in the extant academic literature. However, there is some evidence of a divergence between the perspectives of shippers and forwarders in this area. In this context, therefore, two carefully selected groups of UK-based supply chain management professionals—from shippers (i.e., manufacturers and retailers) and third-party logistics (3PLs)—were investigated using semi-structured interviews. The interviews were based on a data collection guide informed by the authors' three overall research objectives. Data from the interviews were analysed using a combination of content analysis and grounded analysis. The findings suggest that, while shippers and 3PLs recognise a positive link between cost savings and the development of green initiatives, there is considerable room for improvement in this area in order to reorient the focus of the follow-up and evaluation stage from price and service levels towards sustainability. The authors' exploratory research leads to the identification of a number of potentially fruitful areas for future research.

Keywords: sustainability; green logistics; logistics services; 3PL

1. Introduction

Traditionally, decisions about purchasing logistics services have been driven by cost reduction and customer service improvement targets [1]. As supply chains have become more global and more complex in nature (see, for example: [2]), the concept of sustainability and the green agenda are being incorporated into business objectives with the attendant increased focus on reducing, or even eliminating, the impact of their products and operations on the natural environment [3]. In recent years, companies have come under increasing pressure to look at their logistics operations as there are several ways in which they may be a threat to the environment: impairing air quality; source of noise and vibration; cause of accidents; and, an important contributor to climate change [4]. As a result, a number of ways to make logistics more environmentally sustainable have been proposed and applied within the field (see, for example: [5,6]). The outsourcing of logistics services, which allows companies (shippers) to focus on their core competencies, leads to an increased reliance on the third-party logistics (3PLs) service providers for sustainable and green initiatives [7,8]. On the other hand, 3PLs only deliver services that they are contracted for, leaving decisions about the purchasing of green logistics services with shippers [9]. A survey of shippers and 3PLs by [10] suggested that environmental performance measurement systems were not widely used by shippers to evaluate 3PLs' performance levels. This indicates that the evaluation of 3PL performance remains predominantly based on traditional objectives (i.e., price, quality, on-time, and in-full) [11]. In this context, this paper

investigates the role played by the green agenda and environmental sustainability in the follow-up and evaluation stage of logistics services purchasing based on empirical evidence from UK-based shippers and 3PLs. The specific objectives of this research are:

1. To identify how shippers and 3PLs view their roles in this context;
2. To compare these practitioner perspectives with relevant constructs from the body of relevant scholarly knowledge;
3. To identify key focal areas for potentially fruitful future research in this area.

Section 2.3 (below) describes how the development of these objectives was informed by the authors' review of the relevant extant literature.

Following this introduction, the authors' literature review provides an overview of the process of purchasing logistics services and related environmental concerns. Then the rationale of the current study is explained, and the authors' specific objectives are set out. Next, the methodology employed by the authors is described and justified. The authors then discuss the key findings from the research, highlighting some of the main limitations and contributions of the paper.

2. Literature Review

The authors carried out a comprehensive review of the extant literature with a particular focus on the role that the green agenda and environmental sustainability play in the logistics services purchasing. The review focused specifically on the purchasing process—this forms the basis of the first part of the summary which follows. In the context of this process, the review then examined how environmental aspects are considered, paying particular attention to the final stage of the process (i.e., follow-up and evaluation). The process followed by the authors was informed by the recent systematic literature review of [12]. It used several keywords—"Sustainable", "Green", "Logistics", "Purchasing", "Shippers", "3PLs", "Follow-up" and "Evaluation"—to search the Scopus and Web of Science databases. This provided a broad coverage of the relevant scholarship which then informed the development of the authors' specific objectives.

2.1. Process of Purchasing Logistics Services

The area of transport and logistics services purchasing is relatively under-researched with a limited number of specific articles available [13]. A framework for purchasing 3PL services by small and medium-sized enterprises (SMEs) was presented by [14], which included such elements as: comparative bids; comparison of costs, services, and transit times; supplier management. A more generalised process of purchasing, which can be applied to the procurement of logistics services was presented by [15] and is summarised in Figure 1. This paper adopts this framework and a brief explanation of each stage is provided below.

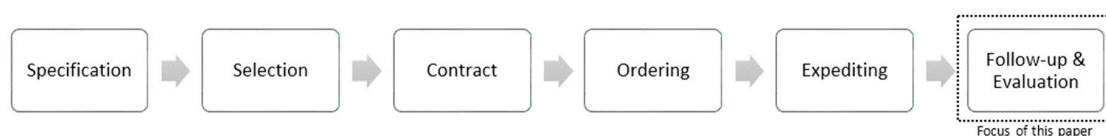


Figure 1. The purchasing process and a focus of this paper.

Specification is the initial stage of the purchasing process in which order requirements in both functional and technical respects are defined. At this stage shippers send out their request for proposal (RFP) to 3PLs, which may be pre-selected based on previous experiences, market surveys, and industry rankings [16]. RFPs are usually highly standardised to allow for comparison between responses [17]. Supplier selection is interwoven with the specification process and includes "a preliminary selection of the most suitable suppliers by means of a tender and ranking procedure" [18] (p. 53). Supplier selection ends with negotiations, during which 3PLs and shippers enter a dialogue on contractual

details [19]. According to [19] (p. 27) logistics contracts focus mainly on technical, economic, or operative aspects—“The parties’ main concern... is the negotiation of the price and the performance levels that the 3PL provider must achieve while rendering the services.” Logistics contracts tend to be of relatively short duration, which leads to uncertainty on the side of the 3PLs and may stifle innovation [20]. The ordering and expediting stages happen after the contract has been agreed, when logistics service purchase orders (POs) are placed. 3PLs’ operation and execution of orders is then followed-up and evaluated. Incidentally, it is at this stage that “it becomes clear whether the supplier can substantiate his promises about service” as outlined in the contract [15] (p. 62). This highlights the criticality of this stage, particularly in the context of the need for more environmentally sustainable logistics activities. As there is little focus on this stage in the extant literature, this paper attempts to fill this gap with a particular emphasis on the issue of environmental sustainability.

The process of logistics services purchasing with a focus on green and sustainability has generally been approached in the literature from three perspectives: shippers (see, for example: [21]); 3PLs (see, for example: [22]); and both shippers and 3PLs in a dyadic approach (see, for example: [23]). However, both shippers and 3PLs may have multiple relationships in the supply chain that extend beyond dyadic relationships [24], and as such need to be investigated in a broader context. This broad approach to investigating the respective roles of shippers and 3PLs in the procurement of environmentally sustainable logistics services was applied by [25]. However, this work focused only on the early stages of the aforementioned purchasing process (i.e., specification and request for proposals (RFP), negotiations, and contracting). This provides further evidence of the need for a focus on the later stages (i.e., follow-up and evaluation specifically). In this context, this paper explores the perspectives of both shippers and 3PLs on issues of environmental sustainability during this important final stage.

2.2. Environmental Concerns Related to Purchasing Logistics Services

The anthropogenic impacts of logistics and other supply chain activities is now widely understood. It is not surprising, therefore, that there has for some time been a strong focus in the literature on the development of more environmentally sustainable supply chain processes and practices (see, for example: [26]). A significant body of literature has also emerged in the specific area of green logistics. This work—effectively part of the wider field of sustainable supply chain management (SSCM, see [4])—has focused largely on how firms can reduce the environmental impact of their freight transport and allied activities. A systematic literature review of publications in the area of environmental sustainability in 3PLs between 2000 and 2016 [12] provides a comprehensive insight into this work. This builds on the earlier work of [27] which provides a taxonomy of green initiatives and an investigation into their diffusion among 3PLs. Such green initiatives range from those undertaken by individual companies to improve vehicle energy efficiency (e.g., eco-driving) through to collaborative approaches aimed at making the wider supply chain more efficient (e.g., “coordinated transportation and logistics programs”). It is important that the process of improving environmental performance in logistics is undertaken in a logical and systematic manner. In this context, [28] proposed a ten step approach to decarbonising distribution processes. As well as being useful in its own right, this approach emphasises the importance of measuring the environmental costs associated with logistics activities.

Green procurement is defined as procurement of “goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured” [29] (p. 1). Recent literature on the purchasing of green logistics services suggests a tension—and some attendant misalignment—between shippers and 3PLs on this topic. For example, [21] suggests that shippers consider sustainability to be high on their agenda during the purchasing phase, but at the same time they tend not to engage with their chosen 3PLs in green initiatives. This work suggests that shippers play a relatively minor role in influencing the green behaviour of 3PLs. However, this view differs to that presented by [30]. According to [31] (p. 229), buyers on the shippers’ side have “barely yet integrated logistics services within their sustainability management”, while those shippers who have made attempts to integrate

sustainability into their contracts did not consider how these issues should be measured or how poor levels of compliance should be handled [32]. Moreover, there is a lack of performance metrics linked to sustainability to evaluate 3PLs [12]. This provides the context within which the research objectives of this paper were developed.

2.3. Development of Research Objectives

The authors' literature review pointed to the need to generate deeper and richer insights into the role played by the green agenda and environmental sustainability during the follow-up and evaluation stage of logistics services purchasing. Based on this overall aim the specific objectives of this research study are:

1. To identify how shippers and 3PLs view their roles in this context;
2. To compare these practitioner perspectives with relevant constructs from the body of relevant scholarly knowledge;
3. To identify key focal areas for potentially fruitful future research in this area.

As well as being informed by the relevant extant literature, these objectives—particularly objective 2—are also framed in the context of the divergence between theory and practice widely discussed in the literature (see, for example: [33,34]). Their main purpose is to provide a focus for the work and to ensure that the empirical research builds on the current understanding of the pertinent issues from the relevant extant literature. In short, objective 1 seeks to fill a specific gap in our knowledge in relation to how the follow-up and evaluation stage is viewed by shippers and 3PLs. It responds to several of the propositions for future research from [12], in particular the call for “more in-depth investigation of collaborative mechanisms between buyers and logistics service providers” (p. 23). Objective 2 then builds on this by comparing practitioner perspectives with the theoretical narrative from the literature. Objective 3 recognises the exploratory nature of the current research in a relatively under-explored area and seeks to set out a coherent direction that builds on the authors' findings.

3. Research Design

In the first section, key elements of the authors' overall research strategy are explained. The subsequent sections then present the data collection and analysis elements of the research methodology adopted by the authors.

3.1. Overall Research Strategy

As noted above, the purpose of this article is to generate deeper and richer insights into the role that the green agenda and environmental sustainability play during the follow-up and evaluation stage of logistics services purchasing. The relative paucity of research into the phenomena to which the authors' three specific objectives relate means that the current study is primarily exploratory in nature. Thus, the research aims to contribute to conceptual development and understanding, rather than to empirical generalizability. The authors were also conscious of the advice of [35] who advocated the “constant reflection of empirical against theoretical studies.” (p. 75), as well as of the work of [36] who stated in relation to their case-based research design that, “This kind of dual theoretical and empirical approach is in tune with the point made by [35]” (p. 763).

3.2. Data Collection

The authors' data collection used semi-structured interviews with carefully selected key informants representing two groups: managers in shipper firms responsible for the procurement of logistics services, and 3PL managers with a knowledge of the provision of green logistics services. This approach adopts the lesson of [37] (p. 5) who stated that “if you want to understand what a science is, you should look in the first instance not at its theories or its findings ...you should look at what

the practitioners do". The interview sample comprised ten managers, five representing shippers (manufacturers and retailers) and five representing 3PLs, all based in the UK. The UK represents an appropriate context for this research given its importance in the wider European and international logistics landscape. The relatively small sample of interviewees facilitates "a close association with the respondents, and enhances the validity of fine-grained, in-depth inquiry" [38] (p. 483). This is in line with the information power model which indicates that "the more information the sample holds, relevant for the actual study, the lower number of participants is needed" [39] (p. 7) and mirrors the approach used by [40] in a supply chain context.

Table 1 presents the main characteristics of the key informants' firms. This sample of shippers included two retailers and three manufacturers. These shipper companies handle quite a wide variety of product groups and operate in both the UK and international markets. The sample of 3PLs included firms of various sizes that provide a range of different types of logistics service. In terms of geographical scope, the sample included both shippers and 3PLs with national (i.e., UK), regional (i.e., Europe), and global footprints. Given the focus of this research on generating novel insights, the range of firm types included in the sample enabled the authors to generate a breadth of perspectives. Individual respondents were senior managers with a responsibility for purchasing logistics services on the shipper side, and a responsibility for overseeing the fulfilment of contracts on the 3PL side. Each individual was sent an indication in advance of topics to be discussed to consider for their upcoming interview. The research then involved carrying out focused (i.e., semi-structured) interviews with each respondent. Interviews were recorded and transcribed. The authors' three research objectives informed the development of the interview data collection guide. This was based around eight main interview questions—see Table A1 in Appendix A for more details. Minor refinements were made to these questions based on pilot interviews conducted with one shipper and one 3PL. The questions were grouped into three categories informed respectively by each research objective (RO): RO1 is linked directly to questions about context and background (i.e., Q1, Q2, and Q3); RO2 with questions pertaining to specific follow-up and evaluation stage issues (i.e., Q4, Q5, and Q6); RO3 with other general comments (i.e., Q7 and Q8). These questions were adjusted to fit the context of each interview, reflecting the specific expertise and experience of key informants. The authors found that asking a general question (i.e., Q8—"Is there anything else that you would like to add?") resulted in many instances in a wealth of additional insights [41].

Table 1. Interviewee characteristics.

Interviewee Code ¹	Industry	Goods/Services Offered	Company Presence
S-RET-1	Retail	Non-food goods	UK
S-RET-2	Retail	Clothes, food, home	Global
S-MAN-1	Manufacturing	Dispensing equipment	Global
S-MAN-2	Manufacturing	Agri-food	UK and Europe
S-MAN-3	Manufacturing	Furniture	UK and Europe
3PL-1	Logistics	Integrated logistics	Global
3PL-2	Logistics	Shipping and logistics	Global
3PL-3	Logistics	Contract logistics	Global
3PL-4	Logistics	Logistics management	Global
3PL-5	Logistics	Temperature controlled logistics	UK and Europe

¹ S = shipper; RET = retailer; MAN=manufacturer; 3PL = logistics service provider.

3.3. Data Analysis Considerations

Regarding interview transcript analysis, [38] describe two approaches: content analysis and grounded analysis. The overall approach in this study involved a combination of both methods, thus integrating the strengths and mitigating the shortcomings of each. The authors employed a transcript analysis process which involved four main stages, as shown in Figure 2, in distilling the raw transcript

data into useful information. This is based largely on identifying points of convergence and divergence between the responses provided by key informants in relation to the main issues under investigation.

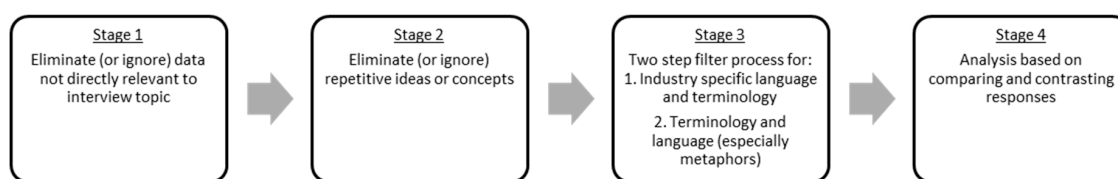


Figure 2. Transcript analysis process.

4. Findings

Most of the interviews were conducted in mid-2017 with some subsequent follow-ups to clarify any issues encountered during the analysis. The analysis of each transcript was then undertaken as described in Section 3.3 (above). Sections 4.1 and 4.2 now provide an overview of the main findings from the shippers' and 3PLs' perspectives, respectively.

4.1. Shippers' Perspective

A short summary of the main findings from the transcript analysis of each interview with the shippers is presented in Table 2.

All shippers indicated that the green agenda and environmental sustainability were important for their business and defined them in terms of caring for the environment, minimising waste, limiting CO₂ emissions, "green miles", fuel efficiency, and minimising power and water usage. For shipper S-RET-2 green procurement meant "going beyond caring just for the environment" and included people welfare—"how people are treated and protected an example being modern day slavery".

There is a divergence of practice between manufacturers and retailers with regard to addressing environmental concerns during the initial stages of the purchasing process. The key informant from S-MAN-1 suggested that any such concerns were driven by their upstream clients, which led to pragmatism in this area – "we were looking for solutions that we could sell to our customer, which we could put on a presentation slide". The key informant from S-MAN-2 indicated that his company does not specifically ask potential suppliers about anything sustainability-related, as in his view it may limit a response to tender and requires only general statements about corporate social responsibility (CSR) policies. The primary focus of S-MAN-2 and S-MAN-3 is around filling trucks and minimising empty runs. Conversely, retailers are very upfront about their environmental concerns. Both retailers request details of "any environmental policies, standards and targets for green levies, CO₂ emissions" (S-RET-1) and work under the assumption that "a participant in the tender, especially in the contractual stage, is committing to green principles that we are operating under" (S-RET-2).

The follow-up and evaluation stage is very important to all shippers, and they carefully follow-up on each element that was agreed within the contract. Some of the metrics that are monitored include: fuel consumption, mileage (mpg—miles per gallon), trailer utilisation and maximising fill, CO₂ emissions, driver behaviour (road safety), water efficiency, and energy usage. S-MAN-1 suggested that although the primary focus of follow-up and evaluation is cost control, "you can see some environmental benefits as well—lowering costs and improving sustainability are closely linked". S-MAN-3 summarises the importance of monitoring driver behaviour with telematics—"drivers driving in the best way is a benefit to the environment". In addition to using metrics, both retailers also follow-up with visits to 3PLs' physical facilities to "make sure they do not pose any risk to people and the environment" (S-RET-2).

There is a range of practices among shippers when it comes to specific processes to handle lack of compliance among 3PLs in the area of environmental sustainability. Manufacturers rely solely on periodic reviews with the 3PLs "where all aspects of performance are evaluated, including any green and sustainability issues" (S-MAN-3). Retailers make use of periodic reviews, but also have

“internal audit teams, who make sure that contract terms—including any green and sustainability obligations—are complied with” (S-RET-1). All respondents indicated that a 3PL who was failing to meet their contractually agreed green and sustainability obligations would be challenged, even if they were exceptional on all other metrics: “we would seriously consider if they are a right company to take our business forward” (S-MAN-3); “green issues cannot be compromised or overlooked” (S-RET-1). Retailer S-RET-2 suggested that while contractually “agreed . . . measurable sustainability metrics can be followed-up quite easily” a problem arises when “you have engaged with a company believing that they are sharing your green and sustainability principles” and they are not then, “it would be tricky to manage this disconnect”.

Table 2. Summary of interviews with shippers.

Interviewee Code ¹	Context Questions Q1, Q2, Q3	Specific Issues Q4, Q5, Q6	General Comments Q7, Q8
S-RET-1	Setting the standard in sustainability as opposed to a compliance-oriented approach; all suppliers must conform and agree with our environmental policies.	Auditing and site visits. Performance metric related to mileage. Supplier has to be the best in everything, and sustainability cannot be compromised or overlooked.	Attitudes towards sustainability have changed from compliance to leading since our merger with a larger corporation. Most companies focus on the compliance when it comes to sustainability.
S-RET-2	Sustainability is exceptionally important to us and our green initiatives go back to the early 2000s. We expect all tender participants to commit to green principles that we are operating under.	Every environmental key performance indicator (KPI) agreed in a contract is followed-up. If a 3PL we have engaged with does not share our sustainability agenda, then it would be tricky to manage this disconnect and it would require a lot of open discussion.	Sustainability makes a good PR story for the suppliers. In the next 5–10 years we will see even greater onus put on that, and suppliers will be measured more strictly on their environmental impact.
S-MAN-1	Sustainability is important to our company, but the level of our involvement is dictated by the needs of upstream clients.	Every KPI in contracts is followed-up, but there is no process to handle poor compliance in sustainability obligations. Only selecting large 3PLs and presuming they are environmentally sustainable.	Sustainability is driven by customers and legislation and our business has to comply with both. Clear link between sustainability and cost reduction.
S-MAN-2	Sustainability and eliminating waste is hugely important. 3PLs must highlight their CSR policies in tenders.	Monthly monitoring of contracts. If any 3PL utilised an aging fleet and did not operate efficiently and greenly it would be raised at the review meeting. No specific processes solely for sustainability issues.	Sustainability is the responsibility of the shippers more than the 3PLs to make the game-changing decisions leading to lower CO ₂ emissions. Need for a certification or a tool to compare 3PLs’ sustainability.
S-MAN-3	Sustainability is very important, especially limiting CO ₂ emissions by driving efficiently. Using telematics to ensure our own fleet and 3PLs are driving correctly.	Tracking KPIs related to driving. If our 3PL is excellent in service but fails on sustainability front this would require a very serious conversation at the periodic review.	Improvements in transportation are linked with sustainability and positively impacts bottom line. Direct correlation between operational improvements and environmental results.

¹ S = shipper; RET = retailer; MAN = manufacturer.

4.2. 3PLs’ Perspective

A short summary of the main findings from the transcript analysis of each interview with the 3PLs is presented in Table 3.

Table 3. Summary of interviews with third-party logistics (3PLs).

Interviewee Code ¹	Context Questions Q1, Q2, Q3	Specific Issues Q4, Q5, Q6	General Comments Q7, Q8
3PL-1	Environmental issues come under our CSR policy. Customers ask in requests for quote (RFQ) about environmental concerns that they are interested in.	SLA or a KPI linked to any environmental issue is very rare. If we were failing on some green metric, it is likely that our client had asked us to transport things in a non-green way.	Large corporations have very strong green policies compared with others. Most companies ask about green and sustainability on the RFQ just as a part of their internal CSR requirements.
3PL-2	Sustainability is important but it depends on the activity and how much a customer is interested in green issues (recycling customers are), or are they just interested in our services and low prices.	Sustainability is not the highest item on the agenda compared to service and cost. Health and safety come higher than any environmental concerns.	Sustainability is mainly customer-driven, and we just follow any related legislation. Companies which advertise on their trailers how they are saving CO ₂ , but their actual motivation is to save money, are a bit cynical.
3PL-3	Sustainability is very important to us and our customers ask specific questions in the tenders about what we are doing to save the environment.	Most customers do not follow-up on environmental issues, but some ask questions about CO ₂ emissions and fuel usage. Service metrics are their primary concerns.	We have environmental teams in all our main offices because we take sustainability very seriously and aspire to be a leader in this area.
3PL-4	Sustainability is very important for us, especially as our shipping operations are under a pressure to lower CO ₂ emissions.	Customers are mainly concerned about OTIF (on time in full) and costs, which are higher on the agenda than any green issues.	Companies do not focus much on green and sustainability, but if there are any incidental achievements in that area, they make a lot of noise about it.
3PL-5	Sustainability is important to us and we deliver what our customers want in this area, mainly in relation to recycling.	OTIF and related KPIs are more important to our customers than anything related to our own initiatives around green and sustainability.	The recycling sometimes required by our customers leads to additional journeys, so I do often wonder if it is good for the environment or it is just for a poster.

¹ 3PL = logistics service provider.

The green agenda and sustainability were important for all the 3PLs and were discussed by the key informants in terms of their CSR policy, CO₂ emissions control, carbon footprint, and fuel efficiency.

All 3PLs indicated a wide range of approaches to addressing environmental concerns during the initial stages of purchasing process—"it varies between the customers" (3PL-2). Logistics provider 3PL-3 indicated that many of their customers "are interested in how to save the environment and there are specific questions [in the tender] about what we are doing in terms of our environmental agenda". This sentiment is shared by 3PL-2: "it depends on how much a customer is interested in these green issues, or are they just interested in our services and prices". 3PL-5 adds that regarding green and sustainability initiatives "the push comes from customers". Environmental sustainability questions in tender documents were summed up interestingly by 3PL-1: "Somewhere in the request there is that question . . . it is still not the first question, but probably the last one".

The follow-up and evaluation stage is very important to all 3PLs, but they unanimously stated that it is unusual to be asked for any direct service level agreement (SLA) or key performance indicator (KPI) linked specifically to environmental sustainability. Costs and operational service levels "are higher on [customers'] agenda, before any green points are raised" (3PL-4). However, some operational metrics are indirectly related to green and sustainability issues. For example, better utilisation of the shipping units (i.e., containers or trucks) leads to "less impact on the environment" and in this case although a decision is primarily cost-driven "any green benefits are an add-on" (3PL-1). In recycling operations 3PL-5 is asked by customers about quantities of recycled materials, but "not

about continuous improvement around CO₂ emissions". 3PLs acknowledge that sustainability issues are rarely raised during performance reviews: "Not all our customers evaluate environmental issues, but we do get a couple who ask" (3PL-3). Specific sustainability metrics that 3PLs are asked about include: carbon footprint, CO₂ emissions, fuel consumption, and energy usage.

According to 3PLs, shippers do not typically have any specific process to handle poor compliance in the area of environmental sustainability—"I have never come across any process like that with our customers" (3PL-2). 3PL-5 suggests that while customers promote slogans about sustainability to a wider audience "these things do not affect us as a forwarder". Logistics provider 3PL-1 notes—"I have never heard of any contract that has been lost on green and sustainability issues"—and remarks that commercial and quality teams on their side "would spin the data" anyway: for example, "Maybe we are using more CO₂ than we agreed or planned, but you—Mr Customer—are asking us to do some more emergency airfreight shipments" concludes the key informant from 3PL-1.

An apparent lack of environmental scrutiny on the shippers' side does not impede some 3PLs from pursuing their own sustainability efforts. 3PL-3 aims to be a leader in this area and their regular internal communications include reports on how they are "doing in terms of green and environmental targets, CO₂ saved, wastage, recycling, etc." with all sites reporting these metrics to a centralised unit. This corroborates the view of 3PL-5 that many sustainability initiatives are "covered by our cost reduction" and help to improve the bottom line.

4.3. Bringing It All Together

Follow-up and evaluation plays an important role within the contract for both shippers and 3PLs. Although shippers indicated that green and sustainability concerns are high on their agendas, it is not apparent in discussions with the 3PLs how this is operationalised in practice. Nevertheless, both groups indicated the growing importance of real metrics linked with sustainability, such as CO₂ emissions and fuel usage. Additionally, both groups recognise a positive link between economic efficiency and environmental sustainability. Despite these advances, the traditional focus on price and service levels in the purchasing of logistics services seems to largely prevail, which corroborates the findings from previous research [9,11].

In terms of the three overall research objectives which provide the focus for this paper, our research identified that shippers and 3PLs see their roles quite differently in relation to sustainability issues (RO1). Shippers are more often the initiators of any green initiatives, while 3PLs tend to respond to customer requirements. In relation to the second objective (RO2), our research confirms the focus on price as the biggest factor as shown in earlier studies [9,11]. This raises questions about the role of sustainability considerations when determining the overall supply chain objectives in any business. The work of [33], based on an investigation into supply chain management (SCM) adoption by 3PLs and shippers, suggested that specific sustainability-based objectives need to be incorporated into the business planning processes of firms. One important insight into the third objective (RO3) is quite succinctly captured in a comment by S-MAN-2 asking for a "certification or a tool with very clear service bars that could be implemented" to evaluate sustainability of 3PLs. This opens up not only questions about the development of such tools or frameworks, but also about new ways to disseminate academic knowledge to practitioners. The authors' reflection on the limitations of their current research also provided some insights into RO3 (see below).

5. Research Limitations and Future Work

In reflecting on the validity and reliability of this research, the four qualitative criteria recommended by [42] have been adopted—credibility, transferability, dependability, and confirmability. The credibility criterion involves establishing that the results of qualitative research are credible from the perspective of the participants in the research. Whilst there is room for improvement in this area in the research described in this paper, this issue was addressed to some extent by inviting interviewees to comment on summaries of the research findings. The small sample used in the current research is not intended to be

definitive and transferability is difficult. However, use of the focused interview methodology enabled some potentially useful contributions to be developed inductively. The process of relating the empirical findings back to the literature helped in this regard. The next stage of the work is to empirically test these findings using a larger survey of firms. In this context, the effective use of a combined inductive/deductive approach based on methodological pluralism is proposed. This is in line with approaches suggested by other scholars in various facets of logistics research (see, for example: [43]). Dependability emphasizes the need for the researcher to account for the changing context within which research occurs. In this regard, the authors fully documented the whole focused interview process, from design through to analysis and feedback. It would be instructive to undertake the work in other geographic contexts to determine if environmental priorities and practices vary significantly between countries and regions. Given the urgent need to address green logistics challenges, the development of longitudinal studies that track progress would help to inform policy making in this area. Confirmability refers to the degree to which the results could be confirmed by others. As noted above, development the research objectives that provided the focus for this work was informed by the authors' review of the relevant extant literature. This allowed the current work to build directly on the findings that emerged from earlier work. The recent systematic review of the literature by [12] was particularly helpful in this regard. Future work needs to continue in this way, thus enabling our understanding of the complex phenomena under investigation to be developed in a logical and systematic manner.

6. Conclusions

Reflecting on the work described in this paper highlights three key particularly critical points. First, it is important to recognise that the follow-up and evaluation stage is just one part of the wider purchasing process. In line with the guiding SCM principle of integration, the way in which this stage connects with the others (see Figure 1), as well as the way in which purchasing processes link with the wider internal and external supply chain, should not be overlooked. Second, it is now widely recognised that achieving deep cuts in greenhouse gas emissions depends on effective collaboration between firms (see, for example: [28]). In a logistics context, a key collaborative relationship is that between shipper and 3PL. The insights from this paper can be built upon in by focusing on the relationship dynamics in these dyads. Building on the previous observation about integration, it is important in this context to recognise that these dyads do not exist in a vacuum, but rather as part of a wider network of firms. Thus, future work needs to consider how relationship dynamics throughout supply chains impact the adoption of more environmentally sustainable logistics processes. Third, our research pointed to the need for tools that can be used by firms as part of the follow-up and evaluation stage of logistics services purchasing. Academic scholarship can make a positive contribution in this regard, particularly in harnessing the potential offered by emerging technologies. The authors' current research suggests that the impact of work in this area depends on effective academic/business collaboration and the development of truly interdisciplinary approaches.

The first two objectives of the research described in this paper were: to identify how shippers and 3PLs view their roles regarding environmental sustainability issues in the context of the follow-up and evaluation stage of logistics services purchasing, and to compare practitioner perspectives with relevant constructs from the body of academic knowledge. To this end, the views of practitioners in manufacturing, retail, and third-party logistics have been investigated through a series of focused interviews with carefully selected key informants. The findings suggest that although green agenda and sustainability issues have grown in importance in the initial stages of purchasing logistics services, they continue to play a relatively small role during the follow-up and evaluation stage. This provides some insights into the third objective of this piece of research, and opens up some potentially fruitful avenues for future work. As noted above, our findings from the current largely exploratory research need to be empirically tested using a larger sample of firms and in a wider geographical context. Using combined inductive/deductive approaches based on methodological triangulation then provides a

basis for the development of tools and frameworks that can be used to support both shippers and 3PLs in their adoption of more environmentally sustainable practices.

Author Contributions: Conceptualization, W.B.; Methodology, W.B. and E.S.; Validation, E.S.; Formal Analysis, W.B.; Investigation, W.B.; Resources, Aston University.; Data Curation, W.B.; Writing-Original Draft Preparation, W.B.; Writing-Review & Editing, E.S. and W.B.; Visualization, W.B.; Supervision, E.S.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Indicative list of interview questions.

Question Code	Indicative Question
Q1	What is green and sustainability agenda?
Q2	Is sustainability important for your company?
Q3	How do you address any environmental concerns during specification, selection, and contract negotiations with 3PLs?
Q4	How do you follow-up with any environmental concerns at the follow-up and evaluation stage? Are there any performance metrics used?
Q5	What if a logistics provider was failing in regard to their green obligations, but was excellent on price, quality, OTIF, metrics? Would this be an issue?
Q6	Do you have a process to handle poor compliance in the area of green/sustainability?
Q7	Is green/sustainability just a window dressing exercise?
Q8	Is there anything else that you would like to add?

References

- Menon, M.K.; McGinnis, M.A.; Ackerman, K.B. Selection criteria for providers of third-party logistics services: An exploratory study. *J. Bus. Logist.* **1998**, *19*, 121.
- Giusti, R.; Iorfida, C.; Li, Y.; Manerba, D.; Musso, S.; Perboli, G.; Tadei, R.; Yuan, S. Sustainable and De-Stressed International Supply-Chains Through the SYNCHRO-NET Approach. *Sustainability* **2019**, *11*, 1083. [[CrossRef](#)]
- Nidumolu, R.; Prahalad, C.; Rangaswami, M. Why sustainability is now the key driver of innovation. *IEEE Eng. Manag. Rev.* **2015**, *43*, 85–91. [[CrossRef](#)]
- McKinnon, A.; Browne, M.; Whiteing, A.; Piecyk, M. *Green Logistics: Improving the Environmental Sustainability of Logistics*; Kogan Page Publishers: London, UK, 2015.
- Halldórsson, Á.; Kovács, G. The sustainable agenda and energy efficiency: Logistics solutions and supply chains in times of climate change. *Int. J. Phys. Distrib. Logist. Manag.* **2010**, *40*, 5–13. [[CrossRef](#)]
- Dey, A.; LaGuardia, P.; Srinivasan, M. Building sustainability in logistics operations: A research agenda. *Manag. Res. Rev.* **2011**, *34*, 1237–1259. [[CrossRef](#)]
- Min, H. Examining logistics outsourcing practices in the United States: From the perspectives of third-party logistics service users. *Logist. Res.* **2013**, *6*, 133–144. [[CrossRef](#)]
- Colicchia, C.; Marchet, G.; Melacini, M.; Perotti, S. Building environmental sustainability: Empirical evidence from Logistics Service Providers. *J. Clean. Prod.* **2013**, *59*, 197–209. [[CrossRef](#)]
- Wolf, C.; Seuring, S. Environmental impacts as buying criteria for third party logistical services. *Int. J. Phys. Distrib. Logist. Manag.* **2010**, *40*, 84–102. [[CrossRef](#)]
- Björklund, M.; Forslund, H. The purpose and focus of environmental performance measurement systems in logistics. *Int. J. Product. Perform. Manag.* **2013**, *62*, 230–249. [[CrossRef](#)]
- Lammgård, C.; Andersson, D. Environmental considerations and trade-offs in purchasing of transportation services. *Res. Transp. Bus. Manag.* **2014**, *10*, 45–52. [[CrossRef](#)]
- Evangelista, P.; Santoro, L.; Thomas, A. Environmental Sustainability in Third-Party Logistics Service Providers: A Systematic Literature Review from 2000–2016. *Sustainability* **2018**, *10*, 1627. [[CrossRef](#)]

13. Evangelista, P.; Huge-Brodin, M.; Isaksson, K.; Sweeney, E. Purchasing green transport and logistics services: Implications from the environmental sustainability attitude of 3PLs. In *Outsourcing Management for Supply Chain Operations and Logistics Service*; IGI Global: Hershey, PA, USA, 2013; pp. 449–465.
14. Holter, A.R.; Grant, D.B.; Ritchie, J.; Shaw, N. A framework for purchasing transport services in small and medium size enterprises. *Int. J. Phys. Distrib. Logist. Manag.* **2008**, *38*, 21–38. [[CrossRef](#)]
15. Van Weele, A.J. *Purchasing and Supply Chain Management: Analysis, Strategy, Planning and Practice*; Cengage Learning EMEA: Adover, UK, 2009.
16. Qureshi, M.; Kumar, D.; Kumar, P. Selection of potential 3PL services providers using TOPSIS with interval data. In Proceedings of the 2007 IEEE International Conference on Industrial Engineering and Engineering Management, Singapore, Singapore, 2–4 December 2007; pp. 1512–1516.
17. Andersson, D.; Norrman, A. Procurement of logistics services—A minutes work or a multi-year project? *Eur. J. Purch. Supply Manag.* **2002**, *8*, 3–14. [[CrossRef](#)]
18. Selviaridis, K.; Spring, M. Third party logistics: A literature review and research agenda. *Int. J. Logist. Manag.* **2007**, *18*, 125–150. [[CrossRef](#)]
19. Jané, J.; De Ochoa, A.; de Ochoa, A. *The Handbook of Logistics Contracts: A Practical Guide to a Growing Field*; Palgrave Macmillan UK: London, UK, 2006.
20. Kacioui-Maurin, E.; Lazzeri, J.; Michon, V. The strategic intent of logistic service providers on three processes: French case. In Proceedings of the The 20th Annual Conference of The Chartered Institute of Logistics and Transport, Derby, UK, 9–11 September 2015.
21. Large, R.O.; Kramer, N.; Hartmann, R.K. Procurement of logistics services and sustainable development in Europe: Fields of activity and empirical results. *J. Purch. Supply Manag.* **2013**, *19*, 122–133. [[CrossRef](#)]
22. Rossi, S.; Colicchia, C.; Cozzolino, A.; Christopher, M. The logistics service providers in eco-efficiency innovation: An empirical study. *Supply Chain. Manag. Int. J.* **2013**, *18*, 583–603. [[CrossRef](#)]
23. Sallnäs, U. Coordination to manage dependencies between logistics service providers and shippers. *Int. J. Phys. Distrib. Logist. Manag.* **2016**, *46*, 316–340. [[CrossRef](#)]
24. Panayides, P.M.; So, M. Logistics service provider–client relationships. *Transp. Res. Part E Logist. Transp. Rev.* **2005**, *41*, 179–200. [[CrossRef](#)]
25. Jazairy, A. Harmonising the purchase of green logistics services between shippers and logistics service providers. In Proceedings of the Proceedings of the 24th EurOMA conference: University of Gävle, Center for Logistics and Innovative Production, Edinburgh, UK, 1–5 July 2017.
26. Seuring, S.; Müller, M. From a literature review to a conceptual framework for sustainable supply chain management. *J. Clean. Prod.* **2008**, *16*, 1699–1710. [[CrossRef](#)]
27. Centobelli, P.; Cerchione, R.; Esposito, E. Developing the WH2 framework for environmental sustainability in logistics service providers: A taxonomy of green initiatives. *J. Clean. Prod.* **2017**, *165*, 1063–1077. [[CrossRef](#)]
28. McKinnon, A. *Decarbonizing Logistics: Distributing Goods in a Low Carbon World*; Kogan Page Publishers: London, UK, 2018; ISBN 978-0-7494-8048-6.
29. European Commission Green Public Procurement. Available online: http://ec.europa.eu/environment/gpp/pdf/GPP_Good_Practices_Brochure.pdf (accessed on 16 January 2019).
30. Carter, C.R.; Dresner, M. Purchasing’s Role in Environmental Management: Cross-Functional Development of Grounded Theory. *J. Supply Chain. Manag.* **2001**, *37*, 12–27. [[CrossRef](#)]
31. Kudla, N.L.; Klaas-Wissing, T. Sustainability in shipper-logistics service provider relationships: A tentative taxonomy based on agency theory and stimulus-response analysis. *J. Purch. Supply Manag.* **2012**, *18*, 218–231. [[CrossRef](#)]
32. Björklund, M.; Forslund, H. The inclusion of environmental performance in transport contracts. *Manag. Environ. Qual. Int. J.* **2013**, *24*, 214–227. [[CrossRef](#)]
33. Sweeney, E.; Grant, D.B.; Mangan, D.J. The implementation of supply chain management theory in practice: An empirical investigation. *Supply Chain. Manag. Int. J.* **2015**, *20*, 56–70. [[CrossRef](#)]
34. Fabbe-Costes, N.; Jahre, M. Supply chain integration improves performance: The Emperor’s new suit? *Int. J. Phys. Distrib. Logist. Manag.* **2007**, *37*, 835–855. [[CrossRef](#)]
35. Croom, S.; Romano, P.; Giannakis, M. Supply chain management: An analytical framework for critical literature review. *Eur. J. Purch. Supply Manag.* **2000**, *6*, 67–83. [[CrossRef](#)]
36. Storey, J.; Emberson, C.; Godsell, J.; Harrison, A. Supply chain management: Theory, practice and future challenges. *Int. J. Oper. Prod. Manag.* **2006**, *26*, 754–774. [[CrossRef](#)]

37. Geertz, C. *The Interpretation of Cultures: Selected Essays*; Basic Books New York: New York, NY, USA, 1973; ISBN 046503425 0465097197.
38. Crouch, M.; McKenzie, H. The logic of small samples in interview-based qualitative research. *Soc. Sci. Inf.* **2006**, *45*, 483–499. [[CrossRef](#)]
39. Malterud, K.; Siersma, V.D.; Guassora, A.D. Sample Size in Qualitative Interview Studies. *Qual. Health Res.* **2016**, *26*, 1753–1760. [[CrossRef](#)]
40. Lummus, R.R.; Krumwiede, D.W.; Vokurka, R.J. The relationship of logistics to supply chain management: Developing a common industry definition. In *Industrial Management & Data Systems*; MCB University Press Ltd: Bingley, UK, 2001; Volume 101, pp. 426–432.
41. Garcia, J.; Evans, J.; Reshaw, M. “There Anything Else You Would Like to Tell Us”—Methodological Issues in the Use of Free-Text Comments from Postal Surveys. *Qual. Quant.* **2004**, *38*, 113–125. [[CrossRef](#)]
42. Lincoln, Y.S.; Guba, E.G. *Naturalistic inquiry*/Yvonna S. Lincoln, Egon G. Guba; Sage Publications: Beverly Hills, CA, USA, 1985; ISBN 0-8039-2431-3.
43. Sweeney, E.; Grant, D.B.; Mangan, D.J. Strategic adoption of logistics and supply chain management. *Int. J. Oper. Prod. Manag.* **2018**, *38*, 852–873. [[CrossRef](#)]



© 2019 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).