

A multicriteria decision making approach for defining strategies in logistics

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Abstract: The homogeneous nature of logistics providers’ services, characterized by low margins and price-sensitive customers, has pushed the market towards a commoditization of logistics services in the last decades. For this reason, the efforts towards the definition of innovative success factor for this industrial setting is significant to increase the logistics service marginality. However, current scientific studies related to Logistics Service Providers (LSPs) overlook the identification of operational success factors to increase business competitiveness and profitability, leaving logistics organizations with ambiguity when defining their operational strategies. Hence, this paper aims to identify crucial elements in the logistics sector, specifically in chemical transport and distribution. The approach involves first qualitative research of the main factors that increase the competitiveness of the LSPs’ service. The factors are evaluated and ranked by adopting the Analytic Hierarchy Process (AHP) methodology to identify the main elements that could influence the LSPs’ competitiveness. Once the ranking has been provided, the paper proposes a framework to properly choose a set of operational strategies for logistics organizations and an industrial application for chemical transport and distribution. The presented case study shows how to apply the methodology to a real-world instance of the logistics sector.

Keywords: Logistics service providers, LSPs, Chemical transport and distribution, Strategy, AHP

I. INTRODUCTION

Logistics Service Providers (LSPs) coordinate and manage logistics functions and act as intermediaries between suppliers or manufacturers and users or customers [22]. LSPs may provide logistic services to one or more clients at any given moment and may offer either a single or several different logistics services.

To gain a competitive advantage, logistics integration into the supply chain processes is critical for organizational success. Indeed, synchronized logistics activities among supply chain members create value for end customers by reducing costs associated with redundancy and duplication [40]. As a result, LSPs are required to manage an increased complexity caused by a high degree of customization of the services required by organizations, the high service level requirements, and the management of many different types of contracts [16]. However, though logistics is a strategical activity for organizations, LSPs’ marginality is generally low since the low entry-level requirements minimize bargaining power, the standardisation of logistics processes and the homogeneous nature of services offered [24]. Indeed, customers often consider logistics companies as commodity providers whose offerings are based on standard services to reduce operating costs and to improve service quality, speed, and reliability [14]. In this way, the market has been driven toward the commoditization of logistics services over the past decades. To successfully compete in this challenging environment, being highly characterized by low margins

and price-sensitive customers, logistics companies must be able to seize new opportunities by re-defining their strategies and understanding how regulations and customer needs will change in each market. For this reason, to be competitive, it might be necessary to continuously adapt the services portfolio to offer higher value-added activities, innovative solutions, and more complex services [5]. Over the years, the scientific background concerning LSPs has shown an increasing number of contributions in the field of Operations and Supply Chain Management, mainly focused on the efficiency and standardization of processes. According to the literature, typically intense cost-based competition drives business approaches that prioritize efficiency, calculability, predictability, and standardization [14]. However, maintaining a competitive cost structure by offering only basic services may no longer be sufficient to compete in this market and increase logistics service marginality [32]. Hence, the prospect of stable profitability of the business strongly depends on the ability of logistics operators to make the right medium-long term choices and rapidly seize changes and opportunities. According to Wang et al. [42], the current scientific studies related to LSPs overlook the research streams on strategy and value creation themes. Indeed, the literature has commonly characterized LSPs as supporting actors to manufacturing companies that offer non-value-added services. Only a few studies focus on LSPs as firms with their structures and strategies [8,31,38], and it seems that no contributions focus on the identification of operational success factors to increase

business competitiveness and profitability. In this way, logistics organizations are left without clear guidelines in defining their operational strategies.

In light of the previous considerations, this paper aims to propose a comprehensive framework to choose a set of operational strategies for logistics organizations properly. Particularly, the research aims to select and evaluate the main elements that could influence the LSPs competitiveness by adopting the Analytic Hierarchy Process (AHP) methodology to guide the effective definition and the selection of operational strategies. Indeed, through the proposed approach, managers of logistics companies will be able to properly re-define and choose strategies to compete in the market successfully. The rest of the paper is organized as follows. Section II provides the scientific background on the methodologies for strategies selection in the logistics industry. Section III introduces and describes the proposed framework, and Section IV develops the industrial application for a company in the field of chemical transport and distribution. Finally, Section V presents the conclusions and further potential developments of this research work.

II. SCIENTIFIC BACKGROUND ON VALUE CREATION AND STRATEGIC PLANNING IN THE LOGISTICS INDUSTRY

Since the early 2000s, as the logistics market was expected to enter its maturity phase characterized by numerous competitors, the development of logistics strategies and the business choices of logistics organizations have played a central role in increasing firms' margins. However, it seems that LSPs' strategic planning methodologies and value creation models have received little consideration in the literature. Moreover, few contributions have addressed the LSPs value creation, though failing to propose models and guidelines to support strategic decisions [30] and often being empirical-descriptive. For instance, Berglund [7] studies empirically the relationship between the strategic development of LSPs and the type of services offered. Two relevant factors that increase the competitiveness of logistics firms emerge from his contribution: collaboration among logistics providers and the need for greater specialization by market segment (e.g., there is a significant difference between transport requirements for chemical and food distribution). His research also highlights the importance for LSPs to improve the formulation and choice of innovative strategies to increase the marginality of their services and the sustainability of their competitiveness. The contribution of Hertz and Alfredsson [20] analyses how relationship development influences the strategies and the business choices of LSPs, also providing a strategic positioning model: market growth has driven players to offer more complex logistics services over time (Fourth-Party Logistics Provider) and to consider strategic alliances, mergers, and acquisitions for developing the business. Other authors developed empirical studies using the different positional models to analyse the strategic

positioning of some logistics providers in different geographic markets and study the trade-offs that affect the strategic decisions of LSPs [1,21,37,38]; Prockl et al. [38] categorise the possible LSPs' business models, proposing a framework to identify which business model may be pursued by a specific logistics organization. Indeed, a better understanding of the value proposition allows to evaluate both the outcome of the pursued strategic choices and rethink the company positioning in the market.

Other studies in the field of Strategic Management focus on identifying the critical elements that influence the logistics industry's strategic planning process. For instance, Lieb and Butner [28] summarize the most important dynamics, opportunities and challenges faced by LSPs in North America: managing mergers and acquisitions, differentiating the company in the marketplace, continuing globalization, expanding service offerings, managing rising costs, lack of managerial talent, and maintaining steady growth in profitability and revenue. Mitra and Bagchi's [33] empirical study provides a rank of the key success factors for North American LSPs, identifying as the most important elements: investment in IT, availability of skilled professionals, and integration of supply chains. Also, the contribution analyses the connection between key success factors and various performance metrics (e.g., ROI, ROA, etc.). Benayoune [6] and Perham & Tamminga [36] focuses on the development of human capital which becomes critical in achieving the aspirations set out in the logistics strategy and matching the forecasted and planned growth of the logistics industry. According to Bullen and Rockart [9] and Wijn et al. [43], the definition of Key Success Factors provides a guideline to managers for allocating scarce resources and allows organizations to distinguish from competitors, thus building a stable, positive relationship with the market. However, while other contributions have focused on identifying success factors for the logistics industry in Germany [23,24], China [12,29,27], India [34] and Iran [2] no one focused on Italian Logistics industry. Moreover, these contributions do not concern on formulating and defining operational strategies from Key Success Factors. Recently, Marchet et al. [32] identified the most relevant value-creating factors and studied the related operational strategies adopted to successfully compete in the logistics market. The study categorises the different logistics providers' business models by identifying the strategies pursued and presents an important picture of the current state of the market. Specifically, some of the strategies identified interviewing several Italian logistics companies are service portfolio diversification, specialization by sector, specialization by the customer, horizontal alliances, partnerships with shippers, customers and start-up, process standardization and economies of scale, level of geographic coverage, and flexibility to increase and decrease volumes. However, although the contribution represents a first step towards the definition of a framework for supporting logistics manager selection of

strategies, it does not take into account that LSP’ business models evolve over time and that LSPs may adopt more than one model to compete on the market. Other authors investigated how digitalization and innovation [10,17], M&A and partnerships [11,24], marketing and brand image [15,4,35] influence logistics companies’ success. Both Laarti et al. [25] and Laguir et [26] al. examines the relationships between proactive environmental strategy, green supply chain management (GSCM) practices and performances. Laari et al.’ results show that although GSCM practices are positively correlated with environmental but not with financial performance, they could enhance future differentiation opportunities. Laguir et al.’ study further suggests that an improved environmental performance helps LSPs increase their economic performance. Moreover, LSP managers engaged in strategy definition should give priority to eco-efficiency orientations and distribution and transport, warehousing and green building, and reverse logistics practices. However, within the extant literature, it seems that only a few contributions support the formulation and the choice of logistics companies’ strategies. For instance, the contribution of Bottani and Rizzi [8] adopts the Quality Function Deployment (QFD) approach to properly determine the strategic actions to improve customer satisfaction.

To summarize, the contributions in the field of Strategic Management for LSPs seem to be mostly empirical-descriptive. In addition, the proposed approaches to evaluate strategies, opportunities, and success factors either are limited to specific aspects of LSPs or have been developed for specific geographic areas. Along with this, there is no evidence of effective methodologies and frameworks for supporting the decision-making process of organizations, necessary to properly orient the efforts towards the pursuit of strategic advantage. Although, managers need simple and effective methodologies for efficient decision-making, especially when considering strategic decisions. Hence, this ambiguity leaves logistics organizations without clear guidance when defining their operational strategies. Hence, this paper aims at providing a useful model to address the strategies formulation and strategic planning process within the logistics industry.

III. PROPOSED METHODOLOGY FOR DEFINING STRATEGIES IN LOGISTICS

Operational strategies can be considered a set of guidelines that firms define to respond to current internal and/or external pressures and/or anticipate future evolution of the competitive environment, regulators, and the customers’ needs [3]. According to Azzone et al. [3], the “logical” process of strategy formulation involves the analysis of the external context, choosing which critical factors to include into the overall process of strategy formation, and identifying the degree of priority that must be attributed to related variables. A general methodology based on selection and prioritization of the main elements that could influence the LSPs

competitiveness and marginality has been developed (Fig.1.). According to the methodology, first AHP is used for factors selection and prioritization that may influence LSPs’ competitiveness, secondly a degree of adherence is calculated for proposed strategies evaluation and selection. The method is described as follows:

- A. **Operational strategies formulation:** this step requires a brainstorming session involving Top Management in order to define a list of operational strategies (OS) to be pursued in the medium-long period. For the purposes of our research, the adopted tools to analyse and define the business environment and support the strategy formulation are both PESTEL and SWOT analysis. Indeed, PESTEL-SWOT combination allows to analyse and evaluate the industry environment, including all the many elements (e.g., economic, environmental) that characterize it and may affect the organization's strategic choices [41].
- B. **Success Factors selection, stratification, and prioritization:** which requires first the collection of Critical Success Factors (CSFs) for LSPs – gathered from a wide literature review – and secondly the adoption and implementation of the AHP methodology, aimed at identifying their degree of priority (within the field of chemical transport and distribution).
- C. **Ranking and selection of operational strategies:** once the ranking of CSFs has been carried out, it is possible to evaluate and select the operational strategies defined in the first step of this procedure considering the degree of adherence (A index) to the selected Critical Success Factors.

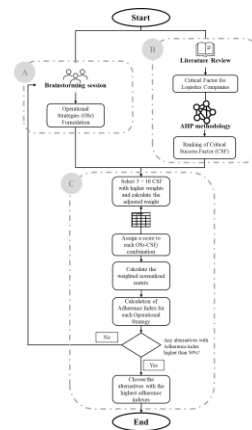


Fig. 1. Methodology for defining strategies in logistics

A. Phase B: Success Factors selection, stratification, and prioritization

The collection of CSFs that characterize LSPs industry has been performed from a deep analysis of logistics and supply chain management literature. Summarising the evidence that emerged above from examining the literature on this research stream, 4 different categories (Marketing Factors, Customer Service Factors, Investments, Internal Factors) and a total of 26 factors

have been identified as crucial for LSPs competitiveness. A brief description of each factor and the main references is reported below in Appendix A. Once the criteria had been collected, the hierarchical structure for AHP pairwise comparisons was identified (Appendix A – Fig.2.). The AHP questionnaire was designed to specify to the respondents that its goal is to rank and set the weights of the elements (w_j) that could influence the LSPs competitiveness. Specifically, respondents are asked to pairwise compare the 4 macro-criteria with a total of 6 questions and the sub-criteria of each macro-criterion. According to Saaty [39], the adopted scale to perform a pairwise comparison between the criteria is a discrete one (from 1 to 9).

B. Phase C: Ranking and selection of operational strategies

Once the success factors have been selected and prioritized, they shall guide the selection of operational strategies. In our approach CSFs (“whats”) are crossed over with viable strategic actions, either technical (e.g., adoption of a more performing technology) or managerial (e.g., a reorganization of activities), that could be undertaken by the firm’s top management to improve LSPs competitiveness (“hows”). The authors developed an index to quantify the adherence, henceforth referred to as the “A” index. Specifically, the adherence index shows if and how a specific operational strategy suits the organizational goals, based on the chosen company’s success factor. The proposed procedure is described in the following steps:

Step 0: Select 5 ÷ 10 CSF with higher weights (M_W) and calculate the adjusted weights as follows

$$\bar{w}_j = \frac{w_j}{\sum_{j \in M_W} w_j}, \quad J = 1, \dots, m \quad (1)$$

Step 1: Assign a score (x_{ij}) that ranges between 0 and 3 (where 0 means “absence of adherence” while 3 means “high degree of adherence”) to each OS_i -CSF $_j$ combination. The adherence levels of a strategy are given as follows:

- *Value equal to 0 (absence of adherence):* if there is no correlation among strategy and the achievement of the CSF;
- *Value equal to 1 (low impact on critical success factor):* if there is low adherence among strategy and CSF, meaning the strategy implementation may weakly influence under conditions the achievement of the CSF;
- *Value equal to 2 (medium impact on critical success factor):* if there is adherence among strategy and CSF, meaning that the strategy implementation influences the achievement of the CSF;
- *Value equal to 3 (high impact on critical success factor):* if the two are strongly connected and the strategy implementation strongly influences the achievement of the CSF.

Step 2: Calculate the weighted normalized matrix. The weighted normalized value v_{ij} is calculated as

$$v_{ij} = \bar{w}_j x_{ij}, \quad i = 1, \dots, n, \quad j \in M_W \quad (2)$$

where \bar{w}_j is the adjusted weight of the i -th CSF, and $\sum_{j=1}^m \bar{w}_j = 1$;

Step 3: Calculate the A index for each Operational Strategy (OS_i) as follows

$$A_i = \frac{\sum_{j=1}^m \bar{w}_j x_{ij}}{3}, \quad i = 1, \dots, n, \quad J = 1, \dots, m \quad (3)$$

Step 4: If there is any strategy with $A_i \geq 50\%$ then go to Step 5, otherwise re-define a list of operational strategies (OS_i) to be pursued in the medium-long period as described in sub-section “Phase B: Operational strategies formulation”;

Step 5: Develop a strategic plan by choosing the highest scoring alternatives ($OS_i \in X$) such that the sum of the estimated cost (c_i) is less than the budget laid down (B_{tot}):

$$\sum_{i \in X} c_i \leq B_{tot}, \quad (4)$$

where X is the ordered set of the alternatives with the highest A index. Note that the calculated index allows both the comparison and prioritization of defined operational strategies as well as the validation of strategies proposed by the company's management. Thus, the A index could also be used as a control parameter for the strategic planning process.

IV. INDUSTRIAL APPLICATION FOR CHEMICAL TRANSPORT AND DISTRIBUTION

In this section, the proposed model has been applied to a company in the field of chemical transport and distribution. Specifically, the company is an Italian Small-Medium Sized Enterprise (SME) that offers logistics services for liquid chemicals, hazardous goods (ADR) and waste for Italian and European areas. According to the first step of the approach shown above, a workshop has been conducted involving the company Top Management to analyse internal and external business environment and define a list of operational strategies to be pursued in the medium-long period, listed in Table 1.

TABLE I
OPERATIONAL STRATEGIES DEVELOPED BY ITALIAN LSPS

OS_i	Operational Strategies
A.1	Keeping accessory services in-house
A.2	Offering of different services with higher added value, configuring itself for its customers as a real 3PL
A.3	Definition of a Business Intelligence System for marginality analysis and price definition
A.4	Traffic balancing, limiting inefficiencies and minimizing unloaded trips
A.5	Marketing activities aimed at communicating a commitment to sustainable logistics
A.6	Standardize operations and adopt information supports for systematic cost optimization

OS _i	Operational Strategies
A.7	Adopting systems for planning, management, and control of business processes.
A.8	Acquire green certifications, to be visible as a Green Oriented company
A.9	Synergize recruiting and training activities through an ad hoc Academy with the aim of training pret-a-porter drivers

Successively, the company's CEO has been asked to express opinions through an AHP questionnaire. It can be observed from Table 2 that skilled and involved workers (C.3.1.) and investments in innovation (C.4.1.) have turned out to be significant performance-enhancing strategic factors, very likely to enable companies to gain competitive advantage for the specific case study business environment.

TABLE II
CSFS WEIGHTS

CSF _j	Critical success factors in chemical logistics	w _j
C.3.1.	Skilled and Involved workers	0,18
C.4.1.	Investment in Innovation	0,15
C.2.1.1.	Transportation Tariffs	0,05
C.2.1.2.	Other services Tariffs	0,05
C.4.2.	Investment in assets and infrastructure	0,05
C.3.3.	Efficiency and cost minimization	0,04
C.3.2.	Organizational Hierarchy	0,04
C.2.3.1.	Flexibility to increase/decrease volumes	0,04
C.2.3.3.	Flexibility to negotiate special terms and conditions	0,04
C.4.3.1.	Vertical Alliances and Partnerships	0,04
C.1.5.	Geographical Reach	0,04
C.2.2.1.	Amount of information shared	0,04
C.1.4.	Brand Reputation	0,04
C.2.2.5.	Delivery speed	0,03
C.2.2.4.	On-time loading and unloading	0,03
C.2.3.2.	Flexibility of timely shipping	0,03
C.1.2.	Market penetration	0,02
C.2.2.2.	Reliability of delivery	0,01
C.2.2.3	Easy service access	0,01
C.2.1.3.	Discount options	0,01
C.1.3.3.	Customer specialization	0,01
C.2.3.4.	Flexibility in payment and billing	0,01
C.1.1.	Amount of services offered	0,01
C.4.3.2.	Horizontal Alliances and Partnerships	0,01
C.1.3.1	Product specialization	0,01
C.1.3.2	Specialization by distribution channel	0,00

Once the factors have been prioritized, it has been possible to identify the operational strategies to be pursued by the logistic company. Firstly, following step 0 of the procedure, five high-weighted CSFs were selected among the 26 CSFs and the adjusted weight (\bar{w}_j) for each of them was calculated (Table 3).

TABLE III
THE FIVE CSFS HIGH-WEIGHTED

CSF description	w _j	\bar{w}_j
C.3.1. Skilled and Involved workers	0,18	0,37
C.4.1. Investment in Innovation	0,15	0,31

CSF description	w _j	\bar{w}_j
C.2.1.1. Transportation Tariffs	0,05	0,11
C.2.1.2. Other services Tariffs	0,05	0,11
C.4.2. Investment in assets and infrastructure	0,05	0,10

Secondly, according to Step 1 a score (x_{ij}) that ranges between 0 and 3 (where 0 means "absence of adherence" while 3 means "high degree of adherence") was assigned to each OS_i-CSF_j combination as reported in Table 4.

TABLE IV
ADHERENCE SCORE FOR EACH OS_i-CSF_j COMBINATION

	C.3.1.	C.4.1.	C.2.1.1.	C.2.1.2.	C.4.2.
A.1	0	0	0	0	3
A.2	2	2	0	0	3
A.3	3	3	2	3	0
A.4	3	2	2	3	0
A.5	0	0	0	2	0
A.6	3	3	0	3	0
A.7	3	3	1	3	0
A.8	2	2	2	3	0
A.9	2	2	3	3	0

Lastly, applying the proposed procedure, the adherence index for each Operational strategy was calculated and reported in Table 5. Hence, the following operational strategies were selected as the most appropriate for the logistics company's budget:

- Synergize recruiting and training activities through an ad hoc academy with the aim of training pret-a-porter drivers;
- Definition of a Business Intelligence System for marginality analysis and price definition;
- Acquire green certifications to be visible as a Green-Oriented company.

TABLE V
RANKING OF OPERATIONAL STRATEGIES

Operational Strategies	A _i
A.9 Synergize recruiting and training activities with the aim of training drivers	82%
A.3 Business Intelligence System Development for marginality analysis and price definition	77%
A.8 Acquire green certifications to be visible as a Green Oriented company	74%
A.4 Traffic balancing, limiting inefficiencies and minimizing unloaded trips	70%
A.7 Adopting systems for planning, management, and control of processes	65%
A.6 Standardize operations and adopt information supports for systematic cost optimization	53%
A.2 Offering of different services with higher added value	25%
A.5 Marketing activities aimed at communicating our sustainable logistics	20%
A.1 Keeping accessory services in-house	10%

V. CONCLUSION AND FURTHER DEVELOPMENT

This article shows the relevant factors in order to define and implement medium-long term strategies in the LSP's sector, along with an application in the chemical

transport and distribution industry. Moreover, through the definition of a framework that considers both qualitative and quantitative aspects, this article allows modelling a methodology to support the organizations’ Top Management to prioritize activities.

Our contribution is divided into four main sections. The first section explains the key characteristics of the logistics industry and the role of Strategic Management in guiding companies to gain a competitive advantage. Furthermore, it provides a literature review, which leads to the definition of shortcomings of the research studies and how decision-making methodology could help guide the effective definition and selection of operational strategies. While the second section illustrates the literature review about the specific topic, the third section proposes an exhaustive framework of an innovative methodology to define strategy in the Logistic sector along with an application of the model for the chemical transport and distribution sector in the fourth section. The application showed that in the competitive context in which the company operates, the most relevant success factors for obtaining competitive advantage are first and foremost the qualification and involvement of personnel and the investments that the company makes to innovate in terms of digitalization and sustainability. In this regard, a change of perspective from the point of view of logistics business models seems to be winning. In fact, if the organizational focus has historically been placed towards models of cost efficiency and optimization of the logistics service, nowadays the need for models oriented towards human resources (e.g., Human Excellence models) and the need for investments in innovation (e.g., Business Intelligence System) are emerging. It is no coincidence that among the strategies proposed by the company’s management, the following are some of the most relevant: "Synergize recruiting and training activities through an ad hoc Academy with the aim of training pret-a-porter drivers" and "Business Intelligence System Development for marginality analysis and price definition". An open question, and a possible development of the research, is to evaluate how much a *Human Excellence* strategy would contribute to achieving the logistics company's medium-long term goals. However, at the same time, some insights have emerged from this study on how to sustain and improve the implementation of the framework. While the methodology is useful in determining a ranking of major industry strategies in the logistics sector, it does not consider long-term metrics that highlight the benefits of a strategy. This leads to the assertion that a possible further extension of this framework is introducing a procedure to analyse the benefits of implementation.

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Appendix A. FIRST APPENDIX

TABLE VI
MACRO-CRITERIA FROM THE LITERATURE

Macro-criteria	References
C.1. Marketing factors	[33][34][37][5][29][27][2][15][7][31][35][4]
C.2. Customer service factors	[23][42][29][31][43][8][18][13]
C.3. Organizational Internal factors	[31][12][38][20][34][33][28][36][6]
C.4. Investments	[34][24][7][28][31][10][38][11][20][17][26][25]

TABLE VII
SUB-CRITERIA C.1.

Sub-Criteria	
C.1.1.	Amount of services offered
C.1.2.	Market penetration
C.1.3.	Specialization
C.1.4.	Brand Reputation
C.1.5.	Geographical Reach
C.2.1.	Price competitiveness
C.2.2.	Service quality
C.2.3.	Flexibility
C.3.1.	Skilled and Involved workers
C.3.2.	Organizational Hierarchy
C.3.3.	Efficiency and cost minimization
C.4.1.	Investment in Innovation
C.4.2.	Investment in assets/infrastructure
C.4.3.	Alliances and Partnerships

TABLE VIII
OTHER SUB-CRITERIA

Other Sub-Criteria	
C.1.3.1	Product specialization
C.1.3.2	Specialization by distribution channel
C.1.3.3	Customer specialization
C.2.1.1.	Transportation Tariffs
C.2.1.2.	Other services Tariffs
C.2.1.3.	Discount options
C.2.2.1.	Amount of information shared
C.2.2.2.	Reliability of delivery
C.2.2.3	Easy service access
C.2.2.4.	On-time loading and unloading
C.2.2.5.	Delivery speed
C.2.3.1.	Flexibility to increase/decrease volumes
C.2.3.2.	Flexibility of timely shipping
C.2.3.3.	Flexibility to negotiate special terms
C.2.3.4.	Flexibility in payment and billing
C.4.3.1.	Vertical Alliances and Partnerships
C.4.3.2.	Horizontal Alliances and Partnerships
C.1.3.1	Product specialization
C.1.3.2	Specialization by distribution channel

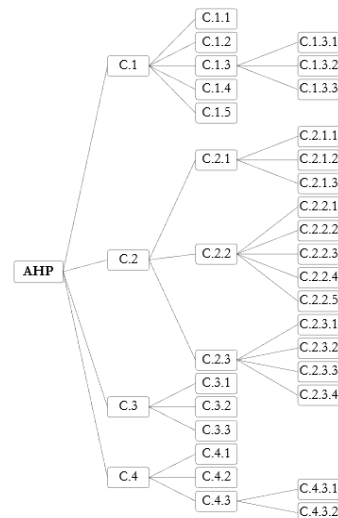


Fig. 2. AHP pairwise comparisons