The effect of logistics performance determinants on export performance

Imad Ait Lhassan (a)*, Manal Ezekari (b), Mahmoud Belamhitou (c), Ikram El Hachimi (d)

(a,b,c,d) PhD, Abdelmalek Essaadi University, Tangier, Morocco
(c) Professor, National School of Business & Management, Abdelmalek Essaadi University, Tangier, Morocco

ABSTRACT

From the mid-1980s, Morocco confirmed its choice to liberalize trade so that international trade could become a lever for development. However, despite these ambitions, the persistence of the trade deficit has led us to reflect on the challenges of exports and the factors that can trigger the emergence of new competition. At this level, logistics has become one of the key factors to circumvent the obstacles that affect the supply of Moroccan exports. The objective of this paper is to study and assess the impact of the determinants of logistics performance on export performance in the Moroccan context. The methodology followed in this research is the quantitative approach by applying the steps of the Churchill paradigm (1979). The data were collected from the logistics directors and managers of 90 Moroccan exporting companies and later were analyzed by using the structural equation method through the SMARTPLS software to test the hypotheses and validate the research model. The results of our empirical study showed that the three determinants of logistics performance (collaboration, information sharing and logistics strategy) positively affect the export performance of Moroccan firms; also, we have distinguished that the three determinants play a very important role in improving the company's activities and strengthening the relationship between suppliers and customers, and finally, we found that all hypotheses of our study are validated.

Introduction

In a context dominated by globalization, namely that of economies, increased financial and commercial liberalization and fierce competition, companies are being guided by the search for performance and profit maximization in order to position themselves on the market so as to be competitive as to ensure their sustainability. Such a context has not failed to influence international trade and finance, and lead to profound changes in the economies of both developed and underdeveloped countries. Such changes have shaped relations between countries in terms of competitiveness. In this new global context, each country, wherever its size and position on the international scale, has found itself obliged to seek greater or lesser integration according to the means at its disposal. This situation has been facilitated by the rapid and unprecedented evolution of the means of communication, techniques, technologies and revolutions in the fields of informatics and telematics, as well as by many other factors, both tangible and intangible. Among these factors, logistics is the cornerstone of the exporting company. To adapt to this new context, it is necessary, even essential for companies to create comparative advantages. Logistics is a fundamental and indispensable element of the latter, and represents the basis for the success of any self-respecting exporting company in search of performance. The question for exporting companies is precisely to find out to what extent is it possible to reach this objective of logistics performance to ensure export performance.

The insistent interest in the issue of logistics and the determinants of its performance is explained by several elements, namely competition, competitiveness, different risks, financial costs, economic costs, social costs and private costs, to name but a few. Indeed, logistics is a major concern for economists, managers and decision-makers. These concerns explain the renewed interest of both theorists and practitioners in analyzing the performance of logistics, its determining factors and its place in the creation of added

* Corresponding author. ORCID ID: 0000-0002-5429-8557
© 2022 by the authors. Hosting by SSBFNET. Peer review under responsibility of Center for Strategic Studies in Business and Finance.
https://doi.org/10.20525/ijrbs.v11i5.1849
value, and therefore wealth. In this context, several scientific researches demonstrate the importance of the influence of logistics excellence as a source of competitive advantage. Companies that are leaders in the application of the most sophisticated logistics methods derive clear benefits from this, compared to those that do not pay attention to logistics. Similarly, the issue of logistics performance is not just a matter for companies. The state, as a regulator of economic activity, must provide optimal logistics conditions for companies. The role of public authorities in the regulation, control and regulation represents a determining element in the implementation of the performance of logistics by the company. An effective regulatory framework is a prerequisite to achieving this objective. Therefore, it is imperative to continuously verify the ability, accountability and adaptability of existing laws and regulations to actually change incentives and behaviors of firms in the direction of better use of logistics.

In empirical terms, logistics and the supply chain have been the subject of a very large and rich literature. However, this literature does not provide a consensus on the classification of logistics performance models. The objective of the empirical framework is to clarify the preliminary results highlighted by the descriptive analysis. The integration of all the explanatory variables in a single dynamic statistical model makes it possible to take into account the potential interactions in explaining the nature of the relationship studied between logistics performance and export performance. Concretely and objectively, this paper revolves about the following problem: What is the impact of the logistics performance determinants on the export performance of Moroccan firms?

The purpose of this paper is to contribute to the unfinished debate on the determinants of export logistics performance in a rather particular context of a developing Moroccan economy, which has undergone a significant change or changes in logistics, both at the public and private levels.

**Literature Review**

**Theoretical and Conceptual Background**

In an international context of dynamic and unstable nature, marked by globalization, globalization of economies, commercial and financial liberalization that has been pushed forward more and more, along with the search for performance and competitiveness, the concepts of logistics and supply chain (SCM) has become nowadays more than ever indispensable for the analysis of production, distribution and export performance systems. Indeed, to facilitate the flow of materials, products and information, which purpose is to respond to needs and achieve specific objectives. The whole is characterized by customer satisfaction and loyalty. The concept of “Supply Chain” reflects the static image of a set of companies grouped within an organized operating structure, with a communication system. In contrast to the static supply chain, supply chain management (dynamic image) encompasses the approaches, methods and tools for meeting the needs of integrating companies and coordinating the various flows of materials, products and information.

According to the management literature, the concepts of logistics and systems are becoming increasingly important within the broader aspects of physical distribution, including the location of production, storage, and distribution facilities, the location of international strategic alliances, and their overall effects on cost and responsiveness. Export, import and international marketing are all directly affected by these developments.

The supply chain encompasses all the links in the logistics process, which is not only internal to the company, but also understood globally, through all suppliers and their subcontractors. Indeed, the success or failure of a company’s export activity depends entirely on the guarantee of buyers’ orders, the delivery of products in the right condition at the right time and, most importantly, the receipt of payment. This depends on the correct processing of export procedures. Errors in documents of any kind in export transactions can cause major delays or losses. In addition to mastery of export procedures, decisions must be based on a broad knowledge of the characteristics and costs of alternative methods of packaging, transportation, storage, and the availability and mastery of improved communication systems and technology.

According to management literature, etymologically, the term performance dates back to the 13th Century, and comes from the old French word performer, which means to accomplish, to execute. In English, the term performance is attested since the end of the 15th century and derives from the English word “to perform”. From the 19th Century onwards, the word “performance” was first used to designate, in the plural, all the results obtained by a racehorse on the racecourse, and by extension, the success achieved in this race (Hubault et al., 1996). This term then extends towards the end of the 19th Century to an athlete or a sports team. At the beginning of the 20th Century, the analogy reached materials: generally used in the plural, the term performance is applied to the numerical indications characterizing the possibilities of a machine, and designates by extension, an exceptional output or reliability.

An analysis of the work done in this area shows that export performance has been evaluated in several ways and from several angles, depending on the researchers’ visions and perspectives. The common denominator of this work on trade performance is the absence of a universally accepted definition. Indeed, there is currently no consensus on a definition accepted by all authors.

In order to get around the theoretical definition of export performance, the definition of Bourguignon (2000) seems interesting insofar as it refers to the question of organization. For him, export performance is “the achievement of organizational objectives”. In line with this approach, Maurel (2009) defines performance as “the degree of achievement of export objectives”. However, this definition is problematic because the term “degree of achievement of objectives” remains ambiguous.
Starting from the undisputed truth that performance is a multidimensional concept, it is subject to a plethora of uses, and therefore takes on different meanings depending on the context and the authors. According to Biteau (1998), logistics performance is generally represented by the rate of service to the customer. It is the number of times the right product is delivered, in the desired quantity, within the required time, at the required place, in the required packaging, in the right condition and with the right documents, preceded, accompanied and followed by the right information, all this, in the best economic conditions. Another definition of the logistic performance where the authors, Daanoune & Ait Lhassan (2016) have defined it as an objective of the company and the achievement of the three phases, the effectiveness, the efficiency and the logistic effectiveness in the company.

There are several determinants of logistics performance and we have chosen three very important practices where they are mentioned more and more in the literature, namely collaboration and information sharing and logistics strategy. These practices play a very important role in improving logistics and export performance.

Whatever the importance of the logistics put in place and the rational management of the supply chain, the performance in the export cannot ignore the importance of commercial relations and partnerships between companies in order to achieve their objectives. Indeed, studies have highlighted the development of inter-company collaboration to ensure complementarity, but this does not prevent each company seeks to better position itself on the market through competitiveness, which involves several factors. Indeed, this inter-company collaboration is a new approach that makes partnerships and business relationships a determining factor in the development and performance of companies. In this perspective, collaboration in the supply chain is attracting increasing attention from researchers and practitioners to better understand this collaboration.

Collaboration in the supply chain is therefore considered as an essential factor for creating a competitive advantage. The challenges of this collaboration are multiple: cost reduction, quality improvement, focusing the company on its core competencies, increasing revenues and reducing lead times (Roy et al., 2006). That is to say, collaboration is a term of ambiguous nature with many facets. It is a difficult concept to grasp because of its subjective nature and its polysemous nature. The main elements that characterize collaboration are the type of collaboration, the manner of collaboration and the degree of collaboration. It is in this sense that some authors raise the problem of measuring the degree of collaboration by managers. In other words, company managers or logistics managers are faced with explaining and evaluating the level of collaboration with their partners, particularly suppliers and potential customers (the company's customers, its competitors' customers and indifferent customers).

The company is obliged to adopt different behaviors depending on the quality of the customer. First of all, it must retain its own customers, find out to what extent it can attract the customers of competing companies, and how to convince indifferent customers. It should be noted that this collaboration can concern several aspects, including subcontracting, information exchange, credits, financing and other services which common point is to maintain these relations in the long term. To this end, research in this area is conducted using the relational approach to exchange. This approach places much more emphasis on the social dimension than on the economic dimension of exchanges. This social dimension should not be underestimated, as it can have a knock-on effect on the economic dimension.

Several paradigms have tried to approach the notion of collaboration, which has given rise to several theories which common point remains the absence of consensus due to the subjective nature of this notion. The main theories put forward in this framework can be summarized in the following points: Transaction cost theory (Nesheim, 2001; Barringer and Harrison, 2000); Institutional theory; Resource theory (Park et al., 2004; Verwaal and Hesselmans, 2004); Resource dependency theory; Social exchange theory (Das and Teng, 1998).

The analysis of these different approaches shows that the notion of collaboration has been the subject of many conceptual and empirical developments, but they have not been unanimously accepted. This is justified by the fact that collaboration has a dimension rather related to management sciences such as sociology, psychology, marketing, management, and supply chain management.

Information sharing allows suppliers, manufacturers, and retailers to improve forecasts, synchronize production and delivery, coordinate inventory decisions, and develop a common understanding of the impact of their performance (Lee and Whang, 2000; Simchi-Levi et al., 2000). At present, information sharing is of strategic importance. It should be noted that a lack of anticipation or poor quality of anticipatory information can result in costs and/or loss of earnings in a competitive environment where time is the determining factor.

The implementation of a computerized flow allows the anticipation of the different operations in a global logistic approach of the supply chain. The authors are unanimous on the fact that information is directly linked to decision making, and that the quality of company performance depends largely on the decisions made by managers, and that the quality of the decision is conditioned by the quality of the information.

Tai (2011) distinguishes three types of effects of information sharing:

i. Effects on supply chain performance in that information sharing is a fundamental element to improve coordination and collaboration (trust and commitment are required) among members; thus coordinating and energizing supply chain activities;
ii. Effects on the development of competitive advantage of members. In this case, the reliable and relevant information is communicated to the supply chain partners. In this perspective, information exchange is considered as a means to improve collaborative relationships, Fawcett et al. (2007);

iii. Effects on overall business performance. In this case, information sharing is seen as a mechanism for governing relationships to create a sustainable competitive advantage for supply chain firms (Tai, 2011).

Logistics strategy can be defined as a set of guiding principles, attitudes, and driving forces that help you coordinate plans, objectives, and policies among the various partners in any supply chain. Several researchers have found that logistics strategy plays a very important role in improving logistics performance. The research will be presented in the next part of the literature review.

Empirical Review and Hypothesis Development

Information sharing supports two levels of integration in improving supply chain activities, operational and strategic (Prajogo and Olhager, 2012). The operational level considers improvements in supply chain activities, including inventory levels, production and delivery schedules, capacity utilization, order status, and sales data. The strategic level goes beyond rudimentary supply chain activities and expands to include product, customer, supplier, and competitive improvements. Second, many studies have argued that supply chain collaborations can effectively improve participants’ financial performance, such as costs and revenues, and non-financial performance, such as customer service and marketability in the marketplace (Mentzer et al., 2000; Frohlich & Westbrook, 2001). Also, Daanoune & Ait LHassan (2018) conducted an empirical study (semi-direct interview) where they studied the impact of collaboration on the performance of companies in the northern region of Morocco. They found that all the interviewees (Logistics Directors and Logistics Managers) affirmed that the impact is positive since collaboration plays an important role in minimizing the risks that can hinder the continuity of the production chain and in reducing costs and achieving objectives. Other studies have also addressed inter-firm collaborations with the link to the financial and non-financial performance of partners (Kumar and van Dissel, 1996). Financial performance includes cost efficiency and returns on investment, while non-financial performance can cover a wide range, such as uncertainty reduction through vertical integration, access to complementary resources, and risk avoidance through co-investment with partners. In line with these arguments, two hypotheses are therefore proposed about information sharing and collaboration and supply chain performance.

Vokurka and Lummus (2000) state that the goal of supply chain management is to add value for customers at reduced overall costs. The added value should be reflected in the cost, quality, flexibility, and delivery components of supply chain performance (Ho et al., 2002). Oliver and Delbridge (2002) and Bowersox et al. (2000) provide empirical evidence regarding the impact of a supply chain management strategy on supply chain performance. According to Ait LHassan and Daanone (2019), Companies use tools, models to measure the supply chain performance by strategic, tactical and operational indicators, and improve its performance. In the same context, Oliver and Delbridge (2002) compared six “high-performing” supply chains to six “low-performing” chains on four measures of supply chain performance. The high-performing chains had fewer inbound defects, fewer outbound defects, a lower percentage of late deliveries to second-tier suppliers, and a lower percentage of late deliveries from first-tier suppliers. Bowersox et al. (2000) collected data from 306 senior logistics executives in North America and classified the companies represented as “high performers” or “average performers” in terms of supply chain competencies. The top-performing companies were then compared on logistics performance metrics related to customer service, quality, productivity, and asset management. The best-performing companies scored significantly higher on each performance metric measured. Based on this theoretical justification and the empirical evidence of Bowersox et al. (2000).

In export markets, there are high levels of uncertainty, unpredictable and continuous change, complexity, and global competition (Patel et al., 2017). Therefore, responsiveness is a critical element for firms exporting their products, as firms without a responsive supply chain cannot meet the changing demands of the global market and cannot withstand global competition (Oliveira et al., 2012; Singh & Sharma, 2014). Once a firm enters international markets, the intensity of competition increases globally; therefore, firms with higher levels of responsiveness can meet the needs of foreign customers better than competitors (Tan and Sousa, 2015). In addition, entering export markets encompasses additional costs, such as tariffs, product adaptation, transportation, market research, and finding new distribution networks (Singh, 2015). Thus, only firms with higher levels of logistics can expect good results from entering export markets. Some previous studies have discussed the critical role of responsiveness in improving firm and market performance (Wu et al., 2006; Qrunfleh and Tarafdar, 2013).

The main objective of this research is to understand the impact of the implementation of the logistics performance determinants within exporting companies in the northern region of Morocco on their export performance. Consequently, our conceptual model is presented as follows:
The data advanced lead to the hypotheses that:
H1: Collaboration has a positive effect on logistics performance;
H2: Information sharing has a positive impact on logistics performance;
H3: Logistics strategy has a positive effect on logistics performance;
H4: Logistics performance has a positive impact on export performance.

**Research and Methodology**

This research is set up from empirical research with logistics managers of exporting companies in the northern region of Morocco, respecting the steps of the Churchill paradigm (1979).

Our paper aims to carry out two empirical phases to study the impact of the logistics performance determinants on the export performance of Moroccan companies:

The Quantitative Exploratory Phase: It is conducted by a survey administered by a questionnaire. Data are collected from a sample of 30 exporting companies from the northern region of Morocco which are subject to purification through exploratory factorial analysis methods including Principal Component Analysis (PCA). Also, the result of this purification will be presented. Note that this step is necessary to assess the psychometric quality of the scales used to collect the data and is a fundamental prerequisite for applying the regression method. These analyses are performed using SPSS 25 software.

The Quantitative Confirmatory Phase: A final step is the validation of the hypotheses using the SMART PLS 3 software using both simple and multiple linear regression methods. As a result of the hypothesis testing presentation, the discussion of the results will be addressed.

The questionnaire was tested on a sample of 90 respondents of exporting companies from the northern region of Morocco to ensure that they fully understand the questions and are not likely to refuse to answer. The final version of the questionnaire, measuring the items which have a good quality of representation of the result of our exploratory factor analysis on a five-point (Likert) scale.

All the items are collected by the literature and presented in the table 1 below:

| Variables           | Items | References        |
|---------------------|-------|-------------------|
| Collaboration       | 6     | Tan et al. (2002) |
| Information Sharing | 5     | Kai et al. (2006) |
| Logistics Strategy  | 6     | Wisner (2003)     |
| Logistics Performance| 5    | Bowersox et al. (2000) |
| Export Performance  | 9     | Zou et al. (1998)  |

**Analysis and Findings**

In this section, we present the results and analysis of our empirical study, which involves two important steps, exploratory factor analysis and confirmatory factor analysis. Regarding the empirical study, we refer to a sample of 90 exporting companies from the northern region of Morocco, subjected to a few steps in a first stage. Thus, the exploratory factorial analysis was carried out using SPSS 25 software for the purpose of purifying the items of our research model. In the second step, the confirmatory factorial analysis carried out using the structural equations method and SMART PLS 3 software leads us to test the hypotheses of our study, and to validate our research model.
As regards the characteristics of the companies in our sample, we focus more specifically on the legal status, size, and business lines of companies in the northern region of Morocco also as part of the characteristics of the respondents interviewed; we describe the positions held and their experiences.

### Table 2: Companies’s and respondent’s characteristics

| Companies’s characteristics | Frequency | % |
|-----------------------------|-----------|---|
| **Legal status**            |           |   |
| Anonymous society           | 14        | 16% |
| Limited liability company   | 76        | 84% |
| **number of employees**     |           |   |
| Between 10 and 100          | 14        | 16% |
| Between 100 and 250         | 42        | 47% |
| Over 250                    | 34        | 38% |
| **Activity area**           |           |   |
| Automotive                  | 65        | 72% |
| Aeronautics                 | 9         | 10% |
| Textile and Leather         | 18        | 18% |
| **Respondent**              | Frequency | % |
| Logistics Director          | 34        | 38% |
| Logistics Manager           | 56        | 62% |
| **Number of years of experience** | |   |
| 0 - 1 year                  | 4         | 4% |
| 1 - 3 years                 | 17        | 19% |
| 3 - 6 years                 | 23        | 26% |
| 6 - 10 years                | 28        | 31% |
| 10 years and over           | 18        | 20% |

**Source:** Authors

The table 2 reveals that our empirical study sample includes: 76 exporting companies with a legal status of “limited liability company” and 14 companies with a legal status of “Anonymous society” located in the northern region of Morocco. In addition, the table 2 shows that 38% of the exporting companies in the northern region of Morocco are large companies with more than 250 employees. Small and medium-sized companies represent 47% of the sample, while very small companies represent 16%. Afterwards, we note that 72% of exporting companies located in the northern region of Morocco refer to companies in the automotive sector, 10% of companies in the aeronautical sector and 18% of companies specialized in textiles and leather. Also, the table 2 indicates that 62% of respondents hold the position of logistics director and 38% of logistics manager. Finally, we note that 31% of respondents working in exporting companies in the northern region of Morocco have between 6 and 10 years of experience, 26% have between 3 and 6 years of experience, 20% have more than 10 years of experience, and finally, 23% of respondents have less than 3 years of experience.

### Exploratory Factor Analysis (EFA)

This section presents the analysis of the results of our empirical study, which includes the three independent variables (Collaboration, Information Sharing and logistics strategy), mediator variable (Logistics Performance) and the dependent variable (Export Performance).

### Table 3: Summary of the results of the principal component analysis

| Variables         | Number of items before EFA | Number of items after EFA | Cronbach’s Alpha |
|-------------------|----------------------------|---------------------------|------------------|
| Collaboration     | 6                          | 5                         | 0.619            |
| Information Sharing| 5                          | 5                         | 0.643            |
| Logistics Strategy| 6                          | 6                         | 0.722            |
| Logistics Performance| 5                         | 3                         | 0.738            |
| Export Performance| 9                          | 4                         | 0.609            |

**Source:** Authors

According to Table 3, the result of the exploratory factor analysis shows that there is a deletion of items from some variables in our study such as collaboration, logistics performance and export performance. Either the deletion of items was because of low representation or we sometimes find items with several dimensions with low correlation. For the items that have a low representation, we have eliminated two items of the variable “logistics performance namely the speed of delivery and the reliability of deliveries, where we note that the exporting companies interviewed do not give importance to these two items related to the delivery to export. For the eliminated items where they presented several dimensions with a low correlation are items of the variable “collaboration” and the variable “export performance”. We also notice that there is no change before the AFE and after the AFE for the two variables “information sharing” and “logistics strategy”. Also, we distinguish that the Cronbach's alpha of all variables have a good reliability and respects the scientific standards in management sciences (Kaiser & Rice, 1974; George and Mallery, 2003).
Confirmatory Exploratory Analysis (CFA)

Our following conceptual model is composed of five variables, and its relationships have been declined in the form of hypotheses. Here, we will try to validate them in this section.

![Diagram of the structural model](image)

**Figure 2**: The adjusted structural model (using Smart PLS Software); *Source: Authors*

**Validity and Reliability**

Table 4 shows the validity and reliability of the research model, which includes five elements: Cronbach's alpha, Rho_A, Composite reliability, AVE and R Square. According to the Table 4, we can see that all the variables met the accepted value at the level of cronbach's alpha, rho_A, composite reliability, and AVE and exceeded 0.6 and met the accepted value or the recommendations of the authors (Hair et al., 2014; Tenenhaus, 1999). Convergent validity is affirmed when each construction has an AVE’s greater than 0.5 (Hair et al., 2014; Tenenhaus, 1999).

The results provided in Table 4 show that the AVE’s are 0.5 higher. This means that convergent validity is demonstrated. Apart from validity and reliability, the expected R square is greater than zero.

| Variables              | Cronbach's Alpha | rho_A   | Composite Reliability | Average Variance Extracted (AVE) | R Square |
|------------------------|------------------|---------|-----------------------|----------------------------------|----------|
| Collaboration          | 0.656            | 0.723   | 0.800                 | 0.575                            |          |
| Information Sharing    | 0.764            | 0.785   | 0.769                 | 0.528                            |          |
| Logistics Strategy     | 0.747            | 0.787   | 0.852                 | 0.659                            |          |
| Logistics Performance  | 0.759            | 0.743   | 0.811                 | 0.685                            | 0.501    |
| Export Performance     | 0.786            | 0.911   | 0.866                 | 0.684                            | 0.285    |

*Source: Authors*

The main empirical results of the research for all data show that collaboration has a positive effect on logistics performance (coeff. = -0.402; p < 0.01), and information sharing has a significant positive effect on logistics performance (coeff. = 0.540; p < 0.01), while logistics performance positively affects export performance (coeff. = 0.205; p > 0.01), and finally, we end with the «Logistics Strategy » variable, which positively affects logistics performance (coeff. = 0.535; p < 0.01). The results of the path coefficient, T-statistic, and P-value on the bootstrapping test are presented in Table 5.
Table 5: Variable Relationship Result

| Hypotheses       | Path coefficients (Mean, STDEV, T-Values) | Results |
|------------------|------------------------------------------|---------|
| Original         | Sample Mean | Standard Deviation | T (|O/STDEV|) | P Values |         |
| Sample (O)       | (M)         | (STDEV)            |        |          |         |
| H1 : CL -> LP    | -0.402      | -0.384             | 0.081  | 4.988    | 0.000   | Accepted|
| H2 : IS -> LP    | 0.540       | 0.535              | 0.063  | 8.509    | 0.000   | Accepted|
| H3 : LS -> LP    | 0.535       | 0.555              | 0.059  | 9.091    | 0.000   | Accepted|
| H4 : LP -> EP    | 0.205       | 0.193              | 0.084  | 2.424    | 0.016   | Accepted|

CL : Collaboration ; IS : Information Sharing ; LS : Logistics Strategy ; LP : Logistics Performance ; EP : Export Performance.

Source: Authors

Discussions

The analysis of the empirical study data yielded a very important result. This result concludes four validated hypotheses.

The result of the first hypothesis shows that collaboration has a positive impact on the logistics performance of exporting companies in Morocco and this result is consistent with all results found in previous theoretical and empirical work: (Lee and Whang, 2000; Simchi-Levi et al., 2000; Prajogo and Ollagner, 2012; Mentzer et al., 2000; Frohlich and Westbrook, 2001; Kumar and van Dissel, 1996).

The result of the second hypothesis shows that information sharing has a positive effect on the logistics performance of exporting companies in Morocco and this result is similar to all results found in previous theoretical and empirical work: (Lee and Whang, 2000; Simchi-Levi et al., 2000; Prajogo and Ollagner, 2012; Mentzer et al., 2000; Frohlich and Westbrook, 2001; Kumar and van Dissel, 1996).

The result of the third hypothesis shows that logistics strategy has a positive impact on the logistics performance of exporting companies in Morocco and this result is consistent with all results found in previous theoretical and empirical work: (Vokurka and Lummus, 2000; Ho et al., 2002; Oliver and Delbridge, 2002).

The result of the last hypothesis shows that logistics performance has a positive effect on the export performance of exporting companies in Morocco and this result is similar to all results found in previous theoretical and empirical work: (Patel et al., 2017; Oliveira et al., 2012; Singh and Sharma, 2014; Tan and Sousa, 2015; Singh, 2015; Wu et al., 2006; Qrunfleh and Tarafdar, 2013).

Conclusions

The objective of this research paper is to propose a conceptual model through the literature and to test it with exporting companies in the northern region of Morocco. We first presented the theoretical framework of the research, the literature reviews to propose after our conceptual research model, and lastly, we presented the results of our empirical study.

Through this research, we have presented the concept of performance, logistics and export performance and identified the important determinants of logistics performance through the review of the literature. In view of this, a conceptual research model was developed to study the impact of the determinants of logistics performance on export performance. The results obtained through an empirical study have shown that the three determinants of logistics performance (collaboration, information sharing and logistics strategy) have a strong impact on the export performance of companies surveyed.

In the perspective of this research, an empirical study will be carried out in order to test and empirically verify our conceptual model by adding other determinants of logistics performance. Also, we will verify our conceptual model in other countries which would allow us to identify universal trends.

Acknowledgement

All authors have read and agreed to the published version of the manuscript.

Author Contributions: Conceptualization, U.H., J.H. and Z.S.; methodology, U.H., J.H.; validation, Z.S.; formal analysis, U.H., J.H.; and Z.S.; investigation, J.H.; resources, U.H.; writing—original draft preparation, U.H.; writing—review and editing, U.H., J.H. and Z.S.

Informed Consent Statement: “Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to restrictions.

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

Ait Lhassan, I., and Daanoune, R. (2019). Supply Chain Performance Measurement Tools: Case of Moroccan Companies. International Journal of Science and Research. 8. 1626-1634. https://doi.org/10.21275/ART20196499.

Barringer, B. R., and Harrison, S. H. (2000). Walking a Tightrope: Creating Value through Interorganizational Relationships. Journal of Management. 26(3):367-404. https://doi.org/10.1080/01492063(00)000046-5.

Biteau, R. S. (1998). Maitriser les flux industriels: les outils d’analyse. Editions d’Organisation, Paris, 1998.

Bourguignon, A. (2000). Performance et contrôle de gestion. Encyclopédie de Comptabilité, Contrôle de gestion et Audit, Ed. Economica, pp. 931-941.

Bowersox, D. J., Closs, D. J., Stank, T. P., & Keller, S. (2000). How supply chain competency leads to business success. Supply Chain Management Review. 4. 70-78.

Chin, W. W., Peterson, R. A., & Brown, S. P. (2008). Structural equation modeling in marketing: some practical reminders. Journal of Marketing Theory and Practice, 16(4), 287–298. https://doi.org/10.2753/MTP1069-6679160402.

Chin, W., and Marcoulides, G. (1998). The Partial Least Squares Approach to Structural Equation Modeling. Modern Methods for Business Research. 8.

Churchill, G. A., Ford, N. M., & Walker, O. C. (1974). Measuring the Satisfaction of Industrial Salesmen. Journal of Marketing Research. 11 (August 1974), 254–60. https://doi.org/10.2307/3151140.

Daanoune, R., and Ait Lhassan, I. (2016). Capital humain et performance logistique : Cas des entreprises de la région du nord du Maroc. Dossiers de Recherches en Économie et Gestion. Volume 5. Number 2. 194-206.

Daanoune, R., and Ait Lhassan, I. (2018). Impact des pratiques et des compétences de la chaîne logistique sur la performance de l’entreprise : Une étude exploratoire. Revue Marocaine de Management, Logistique et Transport. Volume 3. Number 3. 35-58.

Das T. K., and Teng B. S. (1998). Between Trust and control: developing confidence in partner cooperation in alliances, Academy of Management Review. 23. 3. https://doi.org/10.2307/259291.

Fawcett, S.E., Osterhaus, P., Magnan, G.M., Brau, J.C., & McCarter, M.W. (2007). Information Sharing and Supply Chain Performance: The Role of Connectivity and Willingness. Supply Chain Management. August 2007. https://doi.org/10.1108/13598540710776935.

Frohlich, M., and Westbrook, R. (2001). Arcs of Integration: An International Study of Supply Chain Strategies. Journal of Operations Management. 19. 185-200. https://doi.org/10.1016/S0272-6963(00)00055-3.

George, D., and Mallery, P. (2003). SPSS for Windows Step-by-Step: A Simple Guide and Reference, 14.0 update (7th Edition).

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). Multivariate data analysis. Upper Saddle River, NJ: Pearson Prentice Hall. Vol. 6.

Ho, D., Au, K., & Newton, E. (2002). Empirical Research on Supply Chain Management: A Critical Review and Recommendations. International Journal of Production Research. 40. 4415-4430. https://doi.org/10.1080/00207540210157204.

Hubault, F., Noulin, M., & Rabit, M. (1996). La régulation du processus d’action de travail. In P. Cazamian, & M. Noulin (s/d), Traité d’ergonomie (pp. 637-662). Toulouse: Octarès Editions.

Jolibert, A., and Jourdan, P. (2006). Marketing Research : méthodes de recherche et d'études en marketing. Publisher: Dunod, Paris.

Kaiser H. F., and Rice J. (1974). Little Jiffy & Mark Iv. Economist, pp. 931-941.

Kumar, K., and Van Dissel, M. (2001). Externalization of the core: Antecedents of collaborativ

Maurel, C. (2009). Determinants of export performance in SMEs: the case of the French wine industry. Journal of International Trade & Economics. 568. https://doi.org/10.21275/ART20196499.

Manning, M. L., and Munro, D. (2007). The survey researcher’s SPSS cookbook, 2nd edn, Pearson Education Australia, Frenchs Forest, NSW.

Manu C., and Fanny P. (2008). Analyse de données avec SPSS, Edition Pearson.

Maurel, C. (2009). Determinants of export performance in SMEs: the case of the French wine industry. International Journal of Wine Business Research. 21. 2. 118-142. https://doi.org/10.1108/17511060910967971.

Mentzer, J., Min, S., & Zacharia, Z. (2000). The Nature of Interfirm Partnering in Supply Chain Management. Journal of Retailing, 76. 549-568. https://doi.org/10.1016/S0022-4359(00)00040-3.

Nesheim, (2001). Externalization of the core: Antecedents of collaborative relationships with suppliers. European Journal of Purchasing & Supply Management. 7(4):217-225. https://doi.org/10.1016/S0969-7012(01)00003-X.

Oliveira, M., Mccormack, K., & Tkman, P. (2012). Business analytics in supply chains - The contingent effect of business process maturity. Expert Syst. Appl. 39. 5488-5498. https://doi.org/10.1016/j.eswa.2011.11.073.

Oliver, N., and Delbridge, R. (2000). The characteristics of high performing supply chains. IJMTM. 2. 532-545. https://doi.org/10.1504/IJMTM.2000.001363.

Park N. K., Mezias J.M., & Song J. (2004). A resource-based view of strategic alliances and firm value in the electronic marketplace. Journal of Management. 30. 1. https://doi.org/10.1016%2Fj.jm.2002.11.001.
Patel, B., Samuel, C., & Sharma, S.K. (2017). Evaluation of agility in supply chains: A case study of an Indian manufacturing organization. *Journal of Manufacturing Technology Management*. 28. 212-231. https://doi.org/10.1108/JMTM-09-2016-0125.

Plaucu, V., & Tairou, A. (2008). Méthodologie du diagnostic de l’entreprise. L’Harmattan, Paris, France, 298p.

Prajogo, D., & Ollhager, J. (2012). Supply Chain Integration and Performance: The Effects of Long-Term Relationships, Information Technology and Sharing, and Logistics Integration. *International Journal of Production Economics*. 135. 514-522. https://doi.org/10.1016/j.ijpe.2011.09.001.

Qrunfleh, S., and Tarafdar, M. (2013). Lean and agile supply chain strategies and supply chain responsiveness: The role of strategic supplier partnership and postponement. *Supply Chain Management: An International Journal*. 18. https://doi.org/10.1108/SCM-01-2013-0015.

Rai, A., Patnayakuni, R., Seth, N., & Patnayakuni, N. (2006). Firm Performance Impacts of Digitally Enabled Supply Chain Integration Capabilities. *MIS Quarterly*. 30. 225-246. https://doi.org/10.2307/25148729.

Roy S., Terran L., Chris A., Anthony D. A., & Margaret W. W. (2006). A hidden-state Markov model for cell population deconvolution. *J Comput Biol*. 13(10):1749-74. https://doi.org/10.1089/cmb.2006.13.1749.

Simchi-Levi, D., Kaminsky, P., & Simchi-Levi, E. (2003). Designing and Managing the Supply Chain: Concepts, Strategies, and Case Studies. Third Edition. Mc Graw Hill International Edition.

Larson, P. (2001). Designing and Managing the Supply Chain: Concepts, Strategies, and Case Studies, David Simchi-Levi Philip Kaminsky Edith Simchi-Levi. *Journal of Business Logistics*. 22. https://doi.org/10.1002/j.2158-1592.2001.tb00165.x.

Singh, K., and Sharma, S. (2014). Executive use of social media for talent acquisition and recruitment. *International Journal of Interultural Information Management*. 4(4), 228–237.

Singh, R., and Gonsalves, T. (2015). A pragmatic approach towards secure sharing of digital objects. *Security and Communication Networks*. 8. https://doi.org/10.1002/sec.1310.

Tai Y. M. (2011). Perceived value from customers in information sharing services. *Industrial Management and Data Systems*. V. 111, N°4, pp. 551-569. https://doi.org/10.1108/0263557111133542.

Tan, K. C., Lyman, S., & Wisner, J. (2002). Supply Chain Management: A Strategic Perspective. *International Journal of Operations & Production Management*. 22. 614-631. https://doi.org/10.1108/01443570210427659.

Tan, Q., and Sousa, C. (2015). Leveraging marketing capabilities into competitive advantage and export performance. *International Marketing Review*. 32. 78-102. https://doi.org/10.1108/IMR-12-2013-0279.

Tenenhaus, M. (1999). L’approche PLS. *Revue de Statistique Appliquée*. 47 (2), 5-40.

Trainor, K., Rapp, A., Skinner B. L., & Schillewaert, N. (2011). Integrating information technology and marketing: An examination of the drivers and outcomes of eMarketing capability. *Industrial Marketing Management*. 40(1):162-174. https://doi.org/10.1016/j.indmarman.2010.05.001.

Verwaal E., and Hesselmans M. (2004). Drivers of supply chain network governance: and explorative study of the Dutch chemical industry. *European Management Journal*. 2. 4. https://doi.org/10.1016/j.emj.2004.06.008.

Vokurka, R., and Lummus, R. (2000). The Role of Just In Time in Supply Chain Management. *International Journal of Logistics Management*. 11. 89-98. https://doi.org/10.1108/09574090010806092.

Wetzels, M., and Odekerken, G. (2009). Using PLS Path Modeling for Assessing Hierarchical Construct Models: Guidelines and Empirical Illustration. *Management Information Systems Quarterly*. 33. https://doi.org/10.2307/20650284.

Wisner, J. (2003). A structural equation model of supply chain management strategies and firm performance. *Journal of Business Logistics*. 24. 1-25. https://doi.org/10.1002/j.2158-1592.2003.tb00030.x.

Wu, F., Yeniyurt, S., Kim, D., & Cavusgil, S. (2006). The impact of information technology on supply chain capabilities and firm performance: A resource-based view. *Industrial Marketing Management*. 35. 493-504. https://doi.org/10.1016/j.indmarman.2005.05.003.

Zou, S., Taylor, C., & Osland, G. (1998). The EXPERF Scale: A cross-national generalized export performance measure. *Journal of International Marketing*. 6. 37-58. https://doi.org/10.1177/1069031X9800600304.

**Publisher's Note:** SSBFNET stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.