

Negrutiu, Cristian; Vasiliu, Cristinel; Enache, Calcedonia

## Article

# Sustainable entrepreneurship in the transport and retail supply chain sector

Journal of Risk and Financial Management

### Provided in Cooperation with:

MDPI – Multidisciplinary Digital Publishing Institute, Basel

*Suggested Citation:* Negrutiu, Cristian; Vasiliu, Cristinel; Enache, Calcedonia (2020) : Sustainable entrepreneurship in the transport and retail supply chain sector, Journal of Risk and Financial Management, ISSN 1911-8074, MDPI, Basel, Vol. 13, Iss. 11, pp. 1-12, <https://doi.org/10.3390/jrfm13110267>

This Version is available at:

<https://hdl.handle.net/10419/239360>

### Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

### Terms of use:

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



<https://creativecommons.org/licenses/by/4.0/>



Article

# Sustainable Entrepreneurship in the Transport and Retail Supply Chain Sector

Cristian Negrutiu <sup>1</sup>, Cristinel Vasiliu <sup>2,\*</sup> and Calcedonia Enache <sup>2</sup>

<sup>1</sup> Business Administration Doctoral School, The Bucharest University of Economic Studies, Piata Romana 6, 010374 Bucharest, Romania; cristian\_negrutiu@yahoo.com

<sup>2</sup> Department of Business, Consumer Sciences and Quality Management, The Bucharest University of Economic Studies, Piata Romana 6, 010374 Bucharest, Romania; calcedoniaenache@yahoo.com

\* Correspondence: cristi\_vasiliu@yahoo.com

Received: 11 October 2020; Accepted: 29 October 2020; Published: 1 November 2020



**Abstract:** The present study investigated the factors that influence the feasibility and competitive advantage of a digital freight forwarder through a binary logistic regression model. The research is a concrete application of sustainable entrepreneurship in the transport and supply chain sector. The novelty of this topic presents a research gap that needs to be covered with dedicated studies. After the literature review and concept clarification, the article presents quantitative research involving an online questionnaire administered among a sample of transporters in Romania. Through analysis of the data collected from 405 respondents, it was found that the most important factors when selecting a digital freight forwarder are the existence of both sales and dispatch departments. Furthermore, apart from greening the industry, a digital freight forwarder has several other advantages for all stakeholders and society. The study concludes that the concept has the potential to disrupt the entire industry through a unique combination of efficiency, transparency, and sustainability.

**Keywords:** sustainable entrepreneurship; retail supply chain; sustainable development; digital technology; transport; freight forwarding

## 1. Introduction

Entrepreneurship is the blood of any economy in the world. The new ideas that become concrete in new companies maintain society and set the course for the future. Without responsibility and sustainability, however, this future will be bleak, and future generations may not enjoy the same development. Therefore, a new generation of entrepreneurs has risen that are driven by profit, like any entrepreneur, but have also a genuine interest towards sustainability. These types of entrepreneurs are present in all industries, but in the transport and supply chain sector they add a direct and significant impact. Given the impact of transport in today's world, it is very important to investigate how entrepreneurs started to transform this sector.

Sustainable development has become a constant theme in the public agenda, both for academia and practitioners. Numerous studies have demonstrated the need for a new way of thinking in terms of development, and several ideas were put into practice. [Jia et al. \(2019\)](#) performed a bibliometric analysis of the scientific research regarding sustainability, where they identified, in the period 1990 to 2019, 37,332 publications and 1,199,398 cited references. Given the vastness of the theme, it is worthwhile to dive deeper into it by providing specific research in areas related to business and economics. In an effort to categorize the different types of sustainability, [Almășan et al. \(2019\)](#) distinguish between economic (focused on costs), environment (focused on resource consumption) and social sustainability (focused on internal and external communities). In addition, [Tiron-Tudor et al. \(2019\)](#) highlight the

need for more transparency in sustainability reporting, maintaining that only financial reporting is simply not enough nowadays.

The United Nations Sustainable Development Goals (SDGs) provide a good starting point for any discussion around this topic. In 2015, UN proposed a set of 17 goals that can help humanity to reimagine and reshape the future, by nurturing prosperity while protecting the planet at the same time. Among the goals, three of them are extremely relevant in an economic and business context: Goal 5—Industry, innovation, and infrastructure; Goal 11—Sustainable cities and communities; and Goal 17—Partnerships. According to [Meschede \(2020\)](#), the last one can be seen as a meta-goal that helps all the other SDGs to be implemented.

The current study aimed to explore how entrepreneurship and entrepreneurs can put into practice these goals through new ventures. It is true that the public authorities and large corporations have a very important role to play, but without entrepreneurs creating a true market, the efforts towards sustainable development may remain just noble ideas. Therefore, the main research question of this article is how sustainable development is accomplished by entrepreneurs in the specific domain of transport. This topic is particularly important, as sustainable transport is one of the most significant factors contributing to the realization of the abovementioned SDGs.

The authors identified a gap in the research in this specific domain. The subsequent literature review revealed that sustainability in relation to entrepreneurship in general, on one side, and sustainability and the supply chain sector (and transport in particular), on the other side, is presented in several studies and articles. However, specific applications of entrepreneurship ventures into sustainable transport are yet to be researched in detail, and the authors wish to address this gap.

Another factor that is rapidly changing is the emergence of new technologies. The recent technological breakthroughs have made possible new initiatives by streamlining processes and allowing significant improvements. Technology plays an exponential role in the scalability of a business, so it is utilized a large category that can be called “tech sustainable entrepreneurs”. In the transport industry, this new wave of entrepreneurs has already created successful businesses, thus putting into practice the UN SDGs. The literature review was performed using international databases, like ProQuest and Web of Science, based on several combinations of keywords: sustainability, entrepreneurship, new technologies, supply chain. The remaining sections outline the quantitative research carried out through a questionnaire administered in Romania regarding the freight industry. The results of the study are interpreted in relation to the findings from the literature review.

## 2. Literature Review

The literature review aims to provide the theoretical background of the researched topic. The first objective of the review is to understand the main concepts, from basic to complex, following a top-down approach. Therefore, the areas that were investigated started with general concepts of entrepreneurship and sustainable development then narrowed towards more specific issues in the supply chain sector. Particular attention was devoted to the specific applications of sustainable entrepreneurship in the supply chain/transport sector. The second objective of the literature review was to support the empirical research structure and questions by addressing the gaps in the literature.

The topic was researched in the recent literature, but many authors point to the novelty of the domain. Most of the studies were conducted in the larger context of entrepreneurship, without enough focus on and dedication to the green ventures. Although the emergence of green startups is evident, the literature is still in the process of defining and understanding the concept of green entrepreneur/entrepreneurship.

Before entering the special field of sustainable entrepreneurship, [Lebron and Brannon \(2018\)](#) analyzed a few ideas of well-known economists regarding entrepreneurship in general. For Kirzner, the main motivation of an entrepreneur is opportunity discovery, while Mises inclines more towards logic and rational choice. Furthermore, Kirzner believes that an entrepreneur capitalizes on the opportunities provided by the market. However, both economists present a static world,

where entrepreneurs move towards equilibrium. In contrast, Schumpeter proposes that an entrepreneur creates opportunities, not just seizing them, through his concept of creative destruction. In this context, green entrepreneurship is also possible, as environmental issues are difficult to be observed and translated into innovative but profit-driven ventures. The same view is shared by [Mrkajic et al. \(2019\)](#), who maintained that entrepreneurial companies have the chance to increase competition in well-established industries, but force, at the same time, large companies to accelerate innovation (citing [Schumpeter 1942](#)).

The first studies at the intersection between entrepreneurship and green-associated terms (e.g., eco, environment, sustainable) can be traced back in the early works of [Varadarajan \(1992\)](#) and [Menon and Menon \(1997\)](#). During that time, environmental protection started to gain attention, so ([Menon and Menon 1997](#); [Varadarajan 1992](#)) proposed a few terms, like enviropreneurs, enviropreneurial firms, enviropreneurial managers, and enviropreneurial marketing. The enviropreneur is defined as a “a person who in organizing and assuming the risks of, and managing the activities of, a business enterprise, pursues environmentally responsible (environmentally friendly) policies, procedures, and practices” ([Varadarajan 1992](#), p. 342). The economic dimension is clearly stated, but one can notice from this early definition that only environmental protection is taken into account, and no other aspects of sustainability are considered. [Menon and Menon \(1997\)](#) further developed the term enviropreneurial and associated it with green marketing. For them, enviropreneurial marketing is as a “process for formulating and implementing entrepreneurial and environmentally beneficial marketing activities with the goal of creating revenue by providing exchanges that satisfy a firm’s economic and social performance objectives” ([Menon and Menon 1997](#), p. 54). From that date, subsequent authors have associated enviropreneur with green marketing, limiting somewhat the extent of the domain.

Sustainable entrepreneurship is defined by [Kraus et al. \(2018\)](#) through the integration of environmental, social, sustainable, and economic activities. They point out that green entrepreneurship is linked with sustainable entrepreneurship and is usually led by a startup by an entrepreneur who, through innovation and value creation, also develops sustainable and green managerial practices. In a similar view, [Demirel et al. \(2019\)](#) consider green entrepreneurship as a new and emerging field of research. They maintain that, even though sustainability was an area of interest for existing and large companies, a new trend is unfolding right now of “born to be green” companies. The authors propose four areas of research: (a) the green industry and corporate life cycle; (b) the role of institutional structure and government; (c) access to finance; and (d) geographical clusters and regional drivers of green startups.

[Galkina and Hultman \(2016\)](#) introduce the term “ecopreneurship” as a concept at the intersection of the research regarding environmental policies and entrepreneurship. The authors highlight that the term is different from social entrepreneurship as it involves a clear economic motivation. On the other hand, we are speaking about a clear focus on environment and not just about a slogan. [Galkina and Hultman \(2016\)](#) also assessed the viability of ecopreneurship as a valid field of research based on three criteria: differentiation, mobilization, and legitimacy building. The authors also stressed that these early qualitative studies should be followed by more in-depth quantitative research.

In contrast, [Lebron and Brannon \(2018\)](#) consider ecopreneurship to be similar in significance with other terms like environmental entrepreneurship, green entrepreneurship, and sustainable entrepreneurship. The authors cited several definitions in the literature, pointing out that there is still a lot of debate surrounding the term. This is due especially to the extent that a green entrepreneur tries to develop. Value creation is at least as important as a green mindset; therefore, [Lebron and Brannon \(2018\)](#) define a green entrepreneur “as someone exploiting opportunities within the context of the natural environment, creating innovations that create value through enhancing both sustainability and economic development” ([Lebron and Brannon 2018](#), p. 3). Following again the Schumpeterian philosophy, they define two main categories of green entrepreneurs: (i) discoverers, who trigger innovation at firm level, and (ii) revolutionaries, who spark innovation at industry level. Of course,

in practice, the categories are somewhat mixed, as an innovation in a company can spur a drastic change in the whole industry.

Lotfi et al. (2018) propose a very direct and yet simple definition: “a green entrepreneur is an entrepreneur who aims to profit from green business”. The economic motivation of the entrepreneur is further enhanced by the concept of a very broad “green market” where sustainable development goals are met. In correlation to this, Kirkwood and Walton (2010b) tried to understand what motivates a green entrepreneur. In contrast with a classic entrepreneur, the green entrepreneur looks at alternative ways, having sustainability as a principle and a “there must be a better way” mindset. The same conclusion is reached by Oncioiu et al. (2018) through a study on a sample of 144 small and medium enterprises (SMEs) from the EU analyzed through an ANOVA model. The authors demonstrate that not only does environmental knowledge generate an interest in sustainable innovation but also that eco-innovation has a direct impact on the competitive advantage and, thus, to company growth and financial performance. In a deeper analysis, Nikolaou et al. (2018) identified two groups of incentives that motivate green entrepreneurs: resource-based and institutional. In the first category, the most important aspects are competitive advantage, capabilities, goodwill, and environmentally responsible staff, while the second category features items like tax incentives, subsidies, and, very interestingly, “meet the needs of the local community”. The last item illustrates again the profound link between social responsibility and the desire for profit. The authors used a questionnaire administered among a sample of Greek firms, followed by a regression analysis.

The term of “ecopreneur” is also proposed by Santini (2017). The author underlines that ecopreneurs have evolved from being just solitary and naïve activists to fully-fledged businessmen, capable of creating and exploiting significant markets. Nevertheless, a true ecopreneur is also highly motivated by ethical and ecological standards. Santini (2017) also highlights the increasing role of technology as a key enabler for a successful venture in this field. As a result, the industry has become attractive for business angels and venture capitalists, who have supported green startups. This interest grew dramatically in recent years as green startups proved to be fast, scalable, and thus profitable for a venture capitalist. Tohanean and Weiss (2019) assess the feasibility of a green startup through three pillars—entrepreneurship, digital, and green strategy—thus highlighting again the importance of technology.

This interest of venture capital funds (VC) for green startups is also captured by Mrkajic et al. (2019) who consider green as “the new gold” for venture capital. Due to their novelty, debt financing is not possible for high-tech green companies, so venture capital may be the only available option. The question is whether the green component represents an extra incentive for a venture capital fund (VC) to invest in such a company. First, the authors developed a comparative table (Table 1) between green and non-green ventures, which was also applicable to this research.

**Table 1.** Comparative view of green ventures vs. non-green ventures.

| Factor                    | Green Ventures  | Non-Green Ventures   |
|---------------------------|---|--|
| Competences and resources | Highly capital intensive (for hardware-based companies)<br>Lack of managerial capabilities, due to nascent sector | Usually fairly low capital intensive (e.g., software companies)<br>Proven best practices in place                                |
| Technological complexity  | Usually very high   | Normally moderate to low   |
| VC investment outlook     | Difficult exit through M&As * and IPOs **<br>Longer maturity period<br>Difficult to evaluate                      | Well-established framework for exit and cash-out   |
| Regulatory environment    | Usually very high   | Normally moderate to low   |
| Market potential          | Access to fresh, new markets<br>Possibility to offer a unique product   | In the absence of a new idea, the market already has some active players<br>Cost and delivery are superior to product uniqueness |

Source: adapted from Mrkajic et al. (2019). \* M&A = mergers and acquisitions; \*\* IPO = initial public offering.

From Table 1, it appears that investment into a green venture is riskier for a VC. However, if the entrepreneur manages to communicate correctly his business proposition, the investor adds this as an extra benefit. Investing in green ventures may have non-financial incentives for a VC. Mrkajic et al. (2019) also developed a univariate regression model to assess statistically the validity of their hypothesis.

Narrowing down our research, one of the areas where sustainable entrepreneurship can manifest its full potential is the supply chain. Lotfi et al. (2018) list no less than 23 references related to green entrepreneurship, from green marketing to green startups. One of their research questions is related to green supply chains and the impact on green entrepreneurship, and they demonstrate a direct link between the two concepts. Usually, the supply chain journey starts with cost control, then moves to agility in order to meet customers' demands, and finally shifts to resiliency when mitigating the risks. This journey is a continuous improvement process to which the authors propose to add the green dimension. In this new context, sustainable entrepreneurship finds a lot of opportunities to exploit as a result of the going green dimension. The results of their study are further enhanced through quantitative research. The authors deployed a questionnaire to a selected panel, which was then analyzed using a partial least squares (PLS) model, applicable in cases of small samples. The importance of resilience is also highlighted by Rahman and Mendy (2019) especially in the context of internalization of small and medium enterprises in developing countries. The authors found a strong connection between the two factors and analyzed barriers, like sociocultural differences, that need to be addressed in the abovementioned context. The authors used the same statistical instruments, a questionnaire followed by a partial least squares (PLS) model.

The link between entrepreneurship and supply chain sustainability is also strongly argued by Marshall et al. (2015). Social sustainability culture is the starting point in implementing sustainable practices that progress from simple (e.g., auditing suppliers' sustainability compliance) to complex (e.g., supply chain strategy redefinition focused on fair trade). This effort can trigger real sustainable supply chain management (SSCM). Entrepreneurial orientation fits between culture and both categories of practices, acting actually as a trigger from saying to actually doing. The authors used a questionnaire administered among top managers that was first statistically tested for validity, then analyzed through a regression model. The green values of entrepreneurs have a direct impact on their supply chain practices. Kirkwood and Walton (2010a) present a few practical examples of green practices in supply chain management, both on the demand and supply side. Due to the exploratory nature of their study, the authors used qualitative research.

A particular application of green entrepreneurship in the retail supply chain is represented by digital freight platforms. This development was facilitated by the advancement of technology and mirrors the profound changes that occurred in the way people move and use transport services. It is without question that the nascent platforms like Uber, Lyft, and Bolt have completely changed personal transport, and it is expected that the same trend will follow in freight transport. Frehe et al. (2017) propose the term crowd logistics, through which normal people can act as carriers for a small fee. The crowd logistics services provider is normally a tech platform that acts as an intermediary between the beneficiary and the performer of the freight service. The authors highlight the technological part of the concept, achievable through advancements like Radio Frequency Identification (RFID) and GPS, and the ubiquitous use of smartphones. As such, this kind of service is performed by tech companies and not by classical logistics/freight forwarders and is based on the principles of circular/sharing economy. The authors used semi-structured interviews in order to assess the validity of their findings.

Following this trend, a lot of digital freight forwarders have appeared in the US and Europe. All of them are aiming to streamline the transport process and are currently gaining significant market share from classical freight forwarders. Due to recent developments in this industry, the scientific literature presents a gap here. Therefore, the authors turned their attention to the research by management consultants, as they provide useful and documented insights into fresh topics.

In a white paper, the reputable management consultant [Roland Berger \(2020\)](#) analyses the current state of logistics/transport by using the term FreightTech. This is defined as “the application of disruptive ideas in intelligence, automation and integration to increase transparency and efficiency in the logistics industry”. FreightTech is expected to disrupt the retail supply chain industry in the near future based on three pillars: intelligence, automation, and integration. The white paper presents another two important insights: a. The future logistics ecosystem will be based on a framework that enforces low-to-zero emissions and b. startups and e-commerce players are more innovative in addressing the challenges and are therefore leading disruption in logistics markets, posing a threat to incumbents.

The same view is shared by [McKinsey \(2020\)](#), the worlds’ largest management consulting company, in a recent report that presents startup funding in logistics. The main conclusion of the article showed a very high interest of venture capital in the new green tech ventures in the field of logistics. The funding of the industry enjoyed a strong 76% increase per year in the period 2014 to 2019, with total investment reaching 10 billion USD in 2019 vs. 0.4 billion USD in 2014. More relevant for the pace of development, in the same period the logistics startup funding growth was 17 times higher versus just 2 times overall for venture funding growth. The report revealed that investments were made in all the logistics areas, but the champions were last-mile delivery models and road freight marketplaces and solutions. The report mentions that freight platforms received the most corporate funding, threatening to replace traditional intermediaries. In terms of geography, the investments were focused mainly in the US, China, and APAC regions, while Europe had only a modest 5% allocation.

As a conclusion of the literature review, it can be said that the topic of sustainable entrepreneurship is studied extensively by several authors. Most of them agree with the conclusion that a sustainable entrepreneur seizes the opportunities presented by this new field and, with the help of technology, transforms them into viable businesses. However, the specific applications of sustainable entrepreneurship in the areas of transport and the supply chain are yet to be extensively investigated through dedicated research in the field. In terms of statistical tools used, most of the authors deployed a questionnaire among a sample of respondents that was analyzed through a regression model.

### 3. Materials and Methods

From the above review of literature, it is clear that sustainable entrepreneurship and, more specifically, its application in the retail supply chain form a valid and relevant research topic. Moreover, a gap in the literature was found, showing that the research needs to be completed. Therefore, the authors chose to further investigate this topic through a quantitative and qualitative analysis in Romania.

The main research question relates to the application of sustainable entrepreneurship in the area of the supply chain and transport sector in the form of digital freight forwarding startups (FreightTech). Additional research questions assessed the feasibility of such startups and the benefits versus a traditional freight forwarder.

Before carrying out this study, we needed to define very simply what a freight forwarder is (digital or not). Very simply, the job of a freight forwarder is to organize and execute the transport of goods on behalf of others. Key to this definition is the intermediary role of the forwarder between the customers and transporters; as such, the forwarder also acts as an aggregator of supply and demand. The whole process is managed through a set of tools and procedures, as presented in [Figure 1](#).

In the classical setup, the freight forwarder is a physical company, while in the future tech paradigm it is replaced by a digital platform. The analogy Uber vs. the old taxi functions perfectly here.

The current study addressed the research questions from the perspective of the transporters, which constitute the supply side of the process. In any digital platform, the presence of the supply side is a prerequisite for the demand. More specifically in this case, the customers will not choose FreightTech unless there is a consistent pool of transporters available in the platform.

Following the findings from the literature review, a questionnaire was designed and deployed online to Romanian transporters from October to December 2019. The transporters were chosen randomly from internal databases using two main criteria of selection: 1. the transporter has been active in the last 12 months and 2. the transporter owns their own fleet. When they started to reply to questions, there was a pre-qualification section, where they needed to reply to a few discriminating questions. The questionnaire included a total of 36 questions, structured over sections. In total, 405 transporters replied, a number that is considered suitable for the current research. The interviewees were made aware that all interviews would be confidential (Özmen et al. 2017).

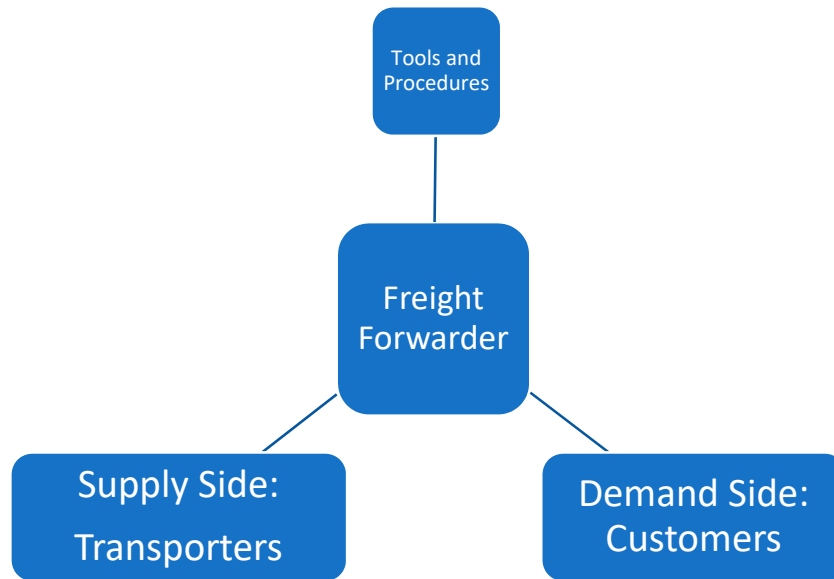


Figure 1. Freight forwarding process.

#### 4. Results

The results of the questionnaire are presented gradually, from characteristics of the respondents, including their risk assessment, to a logistic regression model showing the links between variables.

##### 4.1. Characteristics of the Sample

The first feature of respondents can be measured based on their fleet dimension. As can be seen from Figure 2, the vast majority of the transporters have very small fleets with less than five vehicles. Although small fleets are common in Romania, this result already suggests that FreightTech will appeal mainly to small transporters.

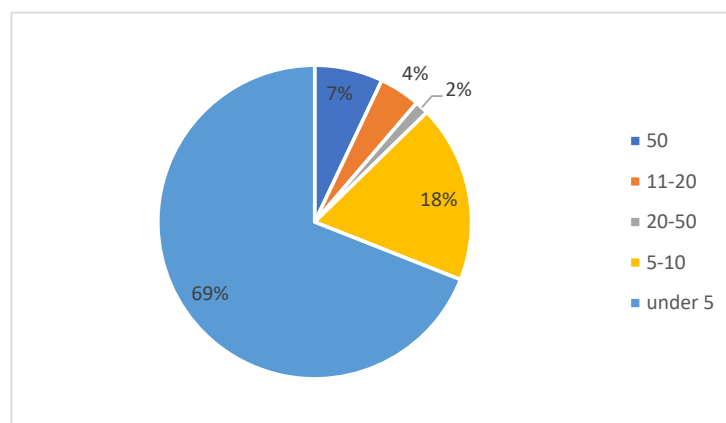


Figure 2. Split of transporters according to fleet dimension.



The second very important characteristic of the sample is the usage of online transport freight exchanges. More than 94% of the respondents declared that they are using such services on a daily basis, both locally (Bursa Transport, Cargopedia) and internationally (Timocom, Transporoen). This a very significative prerequisite that shows that the market looks ready for FreightTech.

4.2. Regression Model

For a deeper interpretation of the results of the questionnaire, we used a binary logistic regression model similar to the one presented by Scott Menard (2002). The binary model, in which the dependent variable is a dichotomous one, which has two values, usually symbolized by 0 and 1, is used to show whether an event occurred or whether a statistical unit has a particular property or not. We further purpose to quantify econometrically the relationship between the determinants and the option of the Romanian carriers to carry out their shipments through a digital freight forwarder. The variables included in the analysis can be found in Table 2.

Table 2. The variables of the regression model.

| Indicator | Description                                   | Nature of Variables  |
|-----------|---|----------------------|
| SFT       | Shipments carried out through FreightTech     | Dichotomous, nominal |
| RPT       | Risks related to pressure on transport prices | Polytomous, ordinal  |
| SD        | Existence of own sales department             | Dichotomous, nominal |
| TEU       | Transport carried out mainly in the EU        | Dichotomous, nominal |
| DD        | Existence of own dispatcher department        | Dichotomous, nominal |
| TFE       | Usage of online transport freight exchanges   | Dichotomous, nominal |

The dichotomous variables take value 0 if the assumption is not met (e.g., the transporter doesn't have a sales department) or 1 if the assumption is met (e.g., the transporter has a sales department). The polytomous variable has five levels of degree, from no risk to high risk.

The results of binary logistic regression model are presented in Table 3.

Table 3. Results of binary logistic regression model.

| Variables | B      | S.E.  | Wald  | df | Sig.  | Exp(B) |
|-----------|--------|-------|-------|----|-------|--------|
| RPT       | 0.381  | 0.182 | 4.367 | 1  | 0.037 | 1.464  |
| SD        | 0.853  | 0.324 | 6.938 | 1  | 0.008 | 2.347  |
| TEU       | 0.657  | 0.307 | 4.589 | 1  | 0.032 | 1.928  |
| DD        | 0.646  | 0.248 | 6.772 | 1  | 0.009 | 1.907  |
| TFE       | 0.513  | 0.258 | 3.946 | 1  | 0.047 | 1.670  |
| Constant  | -0.417 | 0.335 | 1.549 | 1  | 0.213 | 0.659  |

The calculation of the model was performed using SPSS V.27 statistical software.

The column B shows the direction of the link between the dependent variable (SFT) and independent variables (SD, TEU, DD, TFE). All of them show a positive number and thus a positive connection. Column Exp(B) shows the intensity of the link between the dependent variable and independent variables. Based on the obtained results, we can conclude that all the independent variables have a direct impact on the dependent variable. The stronger influence on the decision to use FreightTech is the existence of a sales department. The model shows that transporters who have a sales department are 2.347 times more using a FreightTech than the ones that do not. This should be read in connection with impact of variable DD, which also shows a high degree of correlation of 1.907. The existence of sales and dispatch departments shows a transporter that has achieved

a high level of complexity and sophistication, thus making it capable of understanding the benefits of FreightTech. Activity mainly carried out in the EU (variable TEU) has also a stronger impact of 1.928 as the transporters that operate at EU level are expected to need a digital freight forwarder. The usage of online transport freight exchanges (variable TFE) is significant, as expected, showing that transporters that use such services already use digital tools. Pressure on transport prices (variable RPT) presents a correlation of 1.464 and points to another important benefit of FreightTech, which is lower fees compared to a classical freight forwarder, thus allowing the transporter to achieve higher returns.

The model passed the set of diagnostic tests relatively comfortably, as presented in Table 4. The omnibus tests result of model coefficients was 40.422 (df = 5; n = 405), and its *p* value was 0.00 (see Salkind 2010). The model explained between 9.5% (Cox and Snell R-squared) (see Cox and Snell 1989) and 13.7% (Nagelkerke R-squared) (see Nagelkerke 1991) of the variance in using FreightTech and correctly classified 72.8% of cases. The Hosmer and Lemeshow (2000) test (see Menard 2002) result was 14.691.

**Table 4.** Diagnostic tests of the binary logistic regression model.

| Omnibus Tests of Model Coefficients |                         |                      |       |
|-------------------------------------|-------------------------|----------------------|-------|
|                                     | Chi-square              | df                   | Sig.  |
| Step                                | 40.422                  | 5                    | 0.000 |
| Block                               | 40.422                  | 5                    | 0.000 |
| Model                               | 40.422                  | 5                    | 0.000 |
| Model Summary                       |                         |                      |       |
| -2 Log likelihood                   | Cox and Snell R-squared | Nagelkerke R-squared |       |
| 435.266 <sup>a</sup>                | 0.095                   | 0.137                |       |

<sup>a</sup> Estimation terminated at iteration number 5 because parameter estimates changed by less than 0.001. The calculation of the model was performed using SPSS V.27 statistical software.

The results of the empirical research show that transporters positively valued the emergence of a digital freight platform. They are eager to work with such a platform and follow the trend that has become evident in recent years.

## 5. Discussion

The literature review and the empirical research demonstrate that digital freight forwarders are a viable and concrete application of sustainable entrepreneurship. The literature presents the ecopreneur as a special type of entrepreneur, who beyond economic interest has a clear focus on sustainable development. Both features are perfectly personified by an entrepreneur in the digital freight sector, who takes a classical business and, through the help of technology, transforms it into a sustainable business.

Apart from being green, going digital also presents other benefits in terms of transparency and traceability. Other factors being equal (e.g., price, insurance), the competitive advantage of a digital freight forwarder becomes evident, as depicted in Table 5. The only challenging factor for a digital forwarder is network spread and size, as this takes time to build.

Therefore, we can say that digital freight forwarders increase pricing transparency, professionalize, and digitize the relationship between beneficiary and transporter. They focus on vast quantities of data as a tool to address vast inefficiencies that still exist in the market (for instance, those caused by empty runs). Thus, these startups significantly contribute to improving sustainability within the transport and logistics industries, therefore contributing to the greening of the industry. Following the trend of other digital platforms, they provide a user-friendly interface for shippers and truckers, which improves the customer experience.

As said above, the biggest challenge for FreightTech is still the low volumes and, therefore, small network. Nevertheless, classic freight forwarders met the challenge and reacted to it quickly by

launching or acquiring their own digital platforms. For example, DHL Freight launched the online marketplace Saloodo, and Kuehne + Nagel launched FreightNet, a road-freight booking platform. It is likely that this trend will continue, and more big players will launch similar initiatives.

**Table 5.** Competitive advantage of digital vs. classic freight forwarders.

| Key Competitive Factors | Classic Freight Forwarder | Digital Freight Forwarder |
|-------------------------|---------------------------|---------------------------|
| Price                   | Same                      | Same                      |
| Transit time            | Same                      | Same                      |
| Instant booking         | Lower                     | Higher                    |
| Traceability            | Lower                     | Higher                    |
| Transparency            | Lower                     | Higher                    |
| Insurance               | Same                      | Same                      |
| Network                 | Higher                    | Lower                     |
| Green                   | Lower                     | Higher                    |

The overall question, however, is how these digital startups will integrate in the landscape of the industry and how much disruption they will bring. The big, classical players have a strong grip on the market and dominate it with their networks, assets, and relationships. Currently, no startup can match or offer complete and integrated solutions in a similar manner to big names like DSV or DHL. On the other hand, by focusing on technology and flexibility, new entrants can focus on markets neglected by the current incumbents. Adding the green component will help the digital freight forwarders to better position themselves and gain market share. In case of Romania, several startups have capitalized on the continuous growth of e-commerce and developed successful logistics and transport models.

Instead of competition, the future may bring cooperation and partnerships between old and new players that will increase overall efficiency of the industry and add benefits for all stakeholders, including society and the environment, through green aspects. As a result of partnerships, incumbent players can learn from young companies and deploy digital capabilities to link their physical network with customers; the new technology players have the opportunity to improve their credibility and brand awareness and gain access to a larger base of customers.

## 6. Conclusions and Future Research

The present paper provides a critical review of the research in the area of sustainable entrepreneurship and the potential applications in the transport and retail supply chain sector. A gap in the research in this field was identified and addressed.

The term ecopreneurship was defined at the intersection between economic drive for profit and preoccupation for sustainable development and environment. Both aspects are equally important in order to distinguish from other forms, like social entrepreneurship or non-governmental organizations. In recent years, due to emergence of new technologies, there has been a new wave of green tech/eco-entrepreneurs, building sustainable and profitable businesses that attract an increased level of attention from investors.

In the transport and retail supply chain sector, a particular application of sustainable entrepreneurship is the new concept of digital freight forwarders. The quantitative research proved the feasibility of the concept in Romania, and the reality of the market drives the same conclusion. By providing extra benefits for transparency and usability, a digital freight forwarder competes successfully against classical players, and only the future will tell what the preferred business model will be. New technologies will certainly have a direct and positive impact on the greening of the retail supply chain, and it is expected that new entrepreneurs will follow this path. On a policy level,

the adoption of such new tools can provide a real benefit for society; therefore, the authorities should encourage these initiatives with direct impact on green transportation.

This research has certain limitations, both theoretically and practically. Given the vast amount of literature on sustainability, it was virtually impossible to cover all the sources, even though the authors used several criteria and keywords to restrict the search. Although the questionnaire was administered to a sample that was deemed statistically relevant, it may still not be entirely relevant for such a large industry, and further investigation may be required.

The authors wish to continue the research in other areas at the intersection of sustainable entrepreneurship and the retail supply chain. Other segments, like warehousing, have a significant impact on the environment that needs to be addressed. The emergence of e-commerce, especially in the post Covid-19 world, will require new technologies and procedures to improve the service to the customers in a sustainable manner. The impact on society can be further investigated once the industry has been "greened" to assess the real improvements in terms of sustainable development.

**Author Contributions:** Conceptualization, C.N., C.V.; methodology, C.N., C.E.; software, Calcedonia Enache.; validation, C.N., C.V., and C.E.; formal analysis, C.N.; investigation, C.N.; resources, C.N.; data curation, C.N., C.E.; writing—original draft preparation, C.N.; writing—review and editing, C.N., C.V., and C.E.; visualization, C.N., C.V., and C.E.; supervision, C.V., C.E.; project administration, C.N., C.V. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

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

## References

- Almășan, Alina, Cristina Circa, Mădălina Dumitru, Raluca Gina Gușe, and Dragoș Marian Mangiuc. 2019. Effects of Integrated Reporting on Corporate Disclosure Practices regarding the Capitals and Performance. *Amfiteatru Economic* 21: 572–89.
- Cox, David Roxbee, and E. Joyce Snell. 1989. *Analysis of Binary Data*, 2nd ed. London: Chapman and Hall/CRC.
- Demirel, Pelin, Qian Cher Li, Francesco Rentocchini, and J. Pawan Tamvada. 2019. Born to be green: New insights into the economics and management of green entrepreneurship. *Small Business Economics* 52: 759–71. [[CrossRef](#)]
- Frehe, Volker, Jens Mehmman, and Frank Teuteberg. 2017. Understanding and assessing crowd logistics business models—Using everyday people for last mile delivery. *The Journal of Business & Industrial Marketing* 32: 75–97.
- Galkina, Tamara, and Martin Hultman. 2016. Ecopreneurship-Assessing the field and outlining the research potential. *Small Enterprise Research* 23: 58–72. [[CrossRef](#)]
- Hosmer, David W., and Stanley Lemeshow. 2000. *Applied Logistic Regression*. Hoboken: John Wiley & Sons, Inc.
- Jia, Qiong, Liyuan Wei, and Xiaotong Li. 2019. Visualizing Sustainability Research in Business and Management (1990–2019) and Emerging Topics: A Large-Scale Bibliometric Analysis. *Sustainability* 11: 5596.
- Kirkwood, Jodyanne, and Sara Walton. 2010a. How ecopreneurs' green values affect their international engagement in supply chain management. *Journal of International Entrepreneurship* 8: 200–17. [[CrossRef](#)]
- Kirkwood, Jodyanne, and Sara Walton. 2010b. What motivates ecopreneurs to start businesses? *International Journal of Entrepreneurial Behaviour & Research* 16: 204–28.
- Kraus, Sascha, Janina Burtscher, Christine Vallaster, and Martin Angerer. 2018. Sustainable Entrepreneurship Orientation: A Reflection on Status-Quo Research on Factors Facilitating Responsible Managerial Practices. *Sustainability* 10: 444. [[CrossRef](#)]
- Lebron, Mariana J., and David Brannon. 2018. When Social Identities Integrate: Schumpeterian Entrepreneurs Leading Green Entrepreneurship. *Academy of Entrepreneurship Journal* 24: 1–25.
- Lotfi, Maryam, Akram Yousefi, and Soheil Jafari. 2018. The Effect of Emerging Green Market on Green Entrepreneurship and Sustainable Development in Knowledge-Based Companies. *Sustainability* 10: 2308. [[CrossRef](#)]
- Marshall, Donna, Lucy McCarthy, Paul McGrath, and Marius Claudy. 2015. Going above and beyond: How sustainability culture and entrepreneurial orientation drive social sustainability supply chain practice adoption. *Supply Chain Management* 20: 434–454.

- McKinsey. 2020. Startup Funding in Logistics: New Money for an Old Industry? Available online: <https://www.mckinsey.com/industries/travel-logistics-and-transport-infrastructure/our-insights/startup-funding-in-logistics> (accessed on 15 July 2020).
- Menard, Scott. 2002. *Applied Logistic Regression Analysis*. Thousand Oaks: SAGE Publications, pp. 67–90.
- Menon, Ajay, and Anil Menon. 1997. Enviropreneurial marketing strategy: The emergence of corporate environmentalism as market strategy. *Journal of Marketing* 61: 51–67.
- Meschede, Christine. 2020. The Sustainable Development Goals in Scientific Literature: A Bibliometric Overview at the Meta-Level. *Sustainability* 12: 4461. [CrossRef]
- Mrkajic, Boris, Samuele Murtinu, and Vittoria G. Scalera. 2019. Is green the new gold? Venture capital and green entrepreneurship. *Small Business Economics* 52: 929–50. [CrossRef]
- Nagelkerke, Nico J. D. 1991. A note on a general definition of the coefficient of determination. *Biometrika* 78: 691–2. [CrossRef]
- Nikolaou, Ioannis E., Konstantinos P. Tsagarakis, and Kyriaki Tasopoulou. 2018. An examination of ecopreneurs' incentives through a combination between institutional and resource-based approach: A preliminary study: A preliminary study. *Management of Environmental Quality* 29: 195–215.
- Oncioiu, Ionica, Ana Maria Ifrim, Anca Gabriela Petrescu, and Bilcan Florentina Raluca. 2018. Role of Green Innovation and Business Performance: Evidence from Romanian SMEs. *Electrotehnica, Electronica, Automatica* 66: 129–34.
- Özmen, Özgür, Roxana Sârbu, Andreea Simona Saseanu, and Corneliu Toader. 2017. The European Foundation for Quality Management (EFQM) Excellence Model in a Low Voltage Switchgear Company. *Amfiteatru Economic* 19: 1064–76.
- Rahman, Mahfuzur, and John Mendy. 2019. Evaluating people-related resilience and non-resilience barriers of SMEs' internationalization. *International Journal of Organizational Analysis* 28: 225–40. [CrossRef]
- Roland Berger. 2020. FreightTech: Advancing the Future of Logistics. Available online: <https://www.rolandberger.com/en/Publications/FreightTech-The-future-of-logistics.html> (accessed on 16 July 2020).
- Salkind, Neil J., ed. 2010. Omnibus Tests. In *Encyclopedia of Research Design*. Thousand Oaks: SAGE Publications Inc.
- Santini, Cristina. 2017. Ecopreneurship and ecopreneurs: Limits, trends and characteristics. *Sustainability* 9: 492.
- Shumpeter, Joseph. 1942. *Capitalism, Socialism, and Democracy*. New York: Harper and Brothers.
- Tiron-Tudor, Adriana, Cristina Silvia Nistor, Cristina Alexandrina Ștefănescu, and Gianluca Zanellatto. 2019. Encompassing Non-Financial Reporting in A Coercive Framework for Enhancing Social Responsibility: Romanian Listed Companies' Case. *Amfiteatru Economic* 21: 590–606. [CrossRef]
- Tohanean, Dragos, and Pablo Weiss. 2019. Digital Entrepreneurship and Green Business Model Innovation: Lean Startup Approaches. *Calitatea: Acces La Success* 20: 630–4.
- Varadarajan, P. Rajan. 1992. Marketing contribution to the strategy dialogue: The view from a different looking glass. *Academy of Marketing Science* 20: 335–44. [CrossRef]

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



© 2020 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/>).