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Determinants of SMEs' Willingness to Pay for Electric Vehicle Logistics

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Abstract. Small and medium enterprises face logistic challenges that can impede their transition to sustainable practices. One of these challenges is the successful adoption of electric vehicles in their supply chains. Our study investigated factors influencing the willingness to pay for electric vehicle logistics services among small and medium enterprises in Latin American countries. A survey was administered to 302 SMEs from Bolivia, Chile, Colombia, Ecuador and Peru, spanning sectors like retail, tourism, and manufacturing. Ordered logistic regression analysis identified social trust, perceived risks, and prevailing attitudes as significant predictors of willingness to pay. Despite recognizing the overarching environmental and social benefits of electric vehicles, most small and medium enterprises exhibited reluctance to incur additional expenses for electric vehicle transport. The findings highlight the need for strategies to build trust, mitigate perceived risks, and encourage positive attitudes to spur greater adoption of sustainable transportation options.

Keywords: green logistics; sustainable entrepreneurship; transport industry; green finance

1. Introduction

Transportation is a critical pillar of global economic systems (Saidi et al., 2020), yet it remains a significant contributor to environmental degradation (Du et al., 2022). Traditional modes of transportation, particularly in the logistics and freight sector, predominantly rely on diesel and gasoline-powered vehicles (Santos, 2017). These vehicles are major sources of greenhouse gases (GHGs), contributing substantially to global carbon emissions (Breuer et al., 2021). According to the International Energy Agency (IEA), the transportation sector accounted for approximately 24% of direct CO_2 emissions from fuel combustion in 2020. In Latin American countries, where urban centers are expanding rapidly, the impact is increasingly pronounced (Bataille et al., 2020). The rise in logistics activities, driven by burgeoning urban populations and growing e-commerce (Khan et al., 2022), has led to an escalation in the use of heavy-duty vehicles, further exacerbating the emission levels. This not only contributes to climate change but also poses a significant threat to urban air quality, leading to health issues and reduced quality of life (Deng et al., 2020).

The urgent need for paradigm shifts in transportation methods is evident. While global efforts are underway to curb emissions and transition towards cleaner energy sources, the logistics sector still lags in adopting sustainable practices (Huge-Brodin et al., 2020). The adoption of electric vehicles (EVs) in logistics presents a feasible solution to this challenge (Patella et al., 2020). EVs offer a substantial reduction in GHG emissions, especially when paired with renewable energy sources. In contrast to their fossil fuel-powered counterparts, electric vehicles emit no tailpipe pollutants, offering a cleaner alternative that can significantly improve urban air quality (Shi et al., 2016). However, despite these clear environmental benefits, the transition to electric vehicle logistics, particularly in SMEs, has been slow (Charette, 2023). This hesitance is attributed to a variety of factors including perceived operational constraints, higher upfront costs, and a general lack of awareness about the long-term economic and environmental benefits of EVs (Sioshansi and Webb, 2019; Muratori et al., 2021). Therefore, understanding the determinants of SMEs' willingness to pay for electric vehicle logistics becomes crucial in addressing these barriers and fostering a sustainable transformation in the logistics sector.

Several strategies are being explored to tackle the issue of decreasing CO_2 emissions. Among these, optimizing resources to balance energy use and economic expansion is deemed crucial in minimizing CO_2 output (Li et al., 2020). Policies to reduce total cement production offer a direct way of reducing total energy consumption and CO_2 emissions (Ke et al., 2012). Additionally, it is widely accepted that substantial reductions in the use of fossil fuel energy are necessary to alleviate the effects of global warming and climate change (Chang et al., 2020). In China, the largest CO_2 emitter in the world, research has focused on effective approaches to reducing and mitigating CO_2 emissions (Wang et al., 2015). However, further research is needed to find solutions to this economic and social problem.

The imperative for sustainable alternatives in transportation is clear as the world faces escalating climate challenges. Transitioning to electric vehicles stands as a cornerstone in this shift, with deep implications for environmental stewardship and public health. EVs offer a significant reduction in emissions, directly addressing the urgent call to minimize the impact of transportation on carbon footprints (Braungardt et al., 2019). Unlike their internal combustion counterparts, EVs contribute to improve air quality and reduce the health risks associated with air pollution. This is especially beneficial in urban areas where vehicular emissions contribute to a substantial portion of air quality degradation. Furthermore, by integrating EVs with renewable energy sources, we can move towards a truly green transportation ecosystem (Khan et al., 2019). This transition is not only aligned with the Paris Agreement's objectives to combat global warming but is also essential in meeting its ambitious goals to limit temperature rise. Encouraging the adoption of EVs is therefore a critical pathway to securing a sustainable future and honoring international climate commitments.

Although climate commitments and technological developments, public policy and strategic visions of corporate sustainability influence the transition from fossil fuels to other supplies with a lower carbon footprint (Kulagin et al., 2020), it is undeniable that the economic aspect of this decision has a considerable impact on supply chains (Davis et al., 2011; Le Billon and Kristoffersen, 2020; Månberger, 2021). Currently, an electric vehicle has a higher cost than one powered by diesel or gasoline, and although the operating costs of a vehicle powered by natural gas are lower than fossil fuels, a vehicle conversion is necessary and has an initial investment cost for its implementation. Therefore, it is valid to assume that part of the additional costs will be passed on to end consumers (Nelson and Simhauser, 2014). However, the willingness of small entrepreneurs to pay for fuels with a lower carbon footprint is an area that has not been explored in the literature. Thus, this paper contributes to the knowledge by investigating the response of entrepreneurs in their willingness to pay for EV transport in their transportation activities.

Despite the recognized potential of electric vehicles in revolutionizing the logistics sector, a significant research gap exists in understanding the specific attitudes and constraints of small and medium enterprises (SMEs) towards adopting EV logistics (Zowada and Niestrój, 2019). While larger companies may have the resources to adapt more readily to new technologies, SMEs face challenges that can impede their transition to sustainable practices. These challenges include limited access to capital, and concerns about operational efficiency and cost-effectiveness (Lee and Klassen, 2008).

Understanding the perspective of SMEs is not just an academic exercise; it has practical and policy implications. In Latin America, where urbanization and industrial growth are rapidly increasing the demand for logistics services, SMEs' transition to EV logistics could significantly reduce carbon emissions and improve urban air quality. However, without a clear understanding of the motivators and barriers from the SMEs' viewpoint, policies and initiatives aimed at encouraging this transition may fall short. Therefore, our study aims to bridge this gap by exploring the determinants of SMEs' willingness to pay for electric vehicle logistics. This research seeks to provide valuable insights that can guide policymakers, industry stakeholders, and SMEs themselves in promoting the adoption of sustainable transportation solutions.

2. Literature Review

Electric vehicles (EVs) have the potential to significantly reduce greenhouse gas emissions and improve air quality, but their overall environmental impact depends on factors such as the source of electricity used to power them, and the materials used in their production (Dubey and Dubey, 2023). By using renewable energies, e-mobility can contribute to a significant reduction of the climate balance of transportation (Held and Baumann, 2011). The main components of EVs, including Battery Electric Vehicle (BEV), Hybrid Electric Vehicle (HEV), Plug-in Hybrid Electric Vehicle (PHEV), and Fuel Cell Electric Vehicle (FCEV), have various technologies that can impact the environment and power system (Un-Noor et al., 2017). Despite the potential environmental benefits, there are obstacles that EVs need to overcome before replacing internal combustion engine vehicles; hence, the mass adoption of EVs is subject to several factors (Eggers and Eggers, 2011).

Previous research has extensively documented the environmental imperatives for transitioning to low-carbon transportation solutions such as electric vehicles (EVs) (Creutzig et al., 2015; Moretti and Loprencipe, 2018). While the technological and commercial viability of EVs has been established (Eggers and Eggers, 2011), literature focusing on the logistics industry, especially from the perspective of SMEs, remains sparse. Studies have pointed to the need for strong public support for new energy solutions (Wüstenhagen et al., 2007), yet the willingness of SMEs to bear the additional costs for sustainable alternatives is not well-understood (Liu et al., 2017). This is critical, as SMEs operate within different constraints and decision-making paradigms compared to larger corporations or individual consumers.

The role of governments and societal structures is also emphasized as a facilitator in the transition towards low-carbon mobility systems (Schwanen et al., 2012), yet how these factors influence SME decision-making is underexplored. The literature indicates that social trust plays a pivotal role in the adoption of technology and innovation (Modica et al., 2020), suggesting a deeper investigation into SME trust in EV logistics is warranted.

Regarding the willingness to pay for electric transport, Hidrue et al. (2011) show that individual drivers were willing to pay for an EV a premium above their price for gasoline vehicles. Hulshof and Mulder (2020) showed that Dutch consumers were also willing to pay more for EV transport. According to Huang and Ge (2019), the existence of monetary incentives may have a positive impact on the consumer purchase intention of EVs. However, while there are other studies on customer willingness to pay for electric vehicles in various contexts (Noel et al., 2019; Bansal et al., 2022), the research does not adequately represent the context of business logistics sector, particularly in emerging economies. Our study aims to fill this void by examining the general opinion and attitudes of SMEs towards EVs in logistics, assessing both the perceived benefits and risks as well as the willingness to pay for such technologies. This exploration is essential, as the existing literature indicates a lack of awareness among public and SMEs alike about the potential of low-carbon fuels in reducing emissions (Radics et al., 2016; Tcvetkov et al., 2019), a factor that could critically hinder decarbonizing efforts in the transport and logistics industry.

Flexibility is a key factor in achieving a sustainable and resilient energy future. Stakeholders should be involved in the formulation of energy laws and policies to ensure an inclusive flexibility transition towards a low-carbon, resilient, and just electricity system (Heffron et al., 2021). The growth of CO_2-intensive transport is unsustainable, and the transport sector must decarbonize. Solutions for low-carbon transport systems include behavioral options, demand reduction, innovative technologies, and international agreements on pricing, standards, and regulations (Banister et al., 2011). The transportation and logistics industry also plays a crucial role in achieving low-carbon scenarios (Christensen and Salmon, 2021). Considering various stakeholders and integrating social sciences perspectives are important for understanding the energy-constrained and low-carbon future of transportation and supply chains (Von der Gracht & Darkow, 2016). Other studies have focused on studying public knowledge, perception and attitudes around low carbon fuel in the transportation sector (Radics et al., 2016; Tcvetkov et al., 2019).

However, the general findings indicate that there is little public awareness of low-carbon fuels. Specifically in the case of EV transport, reduced evidence has been collected about the public preference (Rezvani et al., 2015), in line with the fact that market penetration of EV is relatively low (Selva and Arunmozhi, 2020). Studies like Krishna et al. (2020) demonstrate that research on EV transport is an emerging field. However, it seems clear that in the near future, EV transport is still not a feasible option for long distance operations (Sattayathamrongthian and Vanpetch, 2023). These studies have revealed a mix of positive and negative attitudes depending on local conditions.

As reviewed in the literature, some studies explicitly assessed customers' willingness to pay for electric vehicles. According to Noel et al. (2019), wealthier consumers in Nordic countries are more likely to adopt these vehicles. Bansal et al. (2022) indicates that Indian consumers are willing to pay an additional USD 10 to USD 34 in the purchase price to reduce the fast-charging time by 1 min. Ardeshiri and Rashidi (2020) shows that 74.2 percent of the population would be willing to pay some levy for fast charging stations. Clairand and González-Rodríguez (2021) investigated about the willingness to travel in electric transport, though they did not measure the willingness to pay for these transport options. However, these studies only provide a theoretical basis for the study. Therefore, this study focuses on determining the general opinion of the public on the benefits and risks associated with the use of electric vehicles in the transport industry, their social trust in the institutions that handle the issue, and their attitudes manifested in their willingness to switch off more for eco-friendly fuels.

In summary, we can infer from the literature that there is a need to explore the public's perception as well as their attitude towards the use of sustainable fuels. This is due to the lack of public knowledge about the effects that exist to reduce carbon emissions, this lack of knowledge could hinder efforts aimed at decarbonizing logistics and transport industry. Moreover, social trust in key stakeholders has not been adequately explored. It is therefore vital to explore how the public perceives the benefits and risks of sustainable fuels, especially when they are indirect and societal rather than direct and personal. There is no doubt that eco-friendly fuels are more expensive to use in the distant future, but it is inevitable that transport companies will have to raise their prices. It is therefore important to investigate the willingness to pay for green fuels while trying to understand and establish what influences willingness to pay.

3. Research Method

We designed and deployed a quantitative instrument to expand our understanding of small and medium-sized enterprises' perspectives on green logistics. While the primary objective was to construct a robust model capturing SMEs' willingness to pay (WTP) for electric vehicle (EV) transport, we formulated an instrument to capture a wide range of data points, from cost considerations to environmental attitudes, ensuring a comprehensive representation of the variables influencing WTP. By leveraging statistical techniques, we looked to validate the reliability and validity of our instrument, thus supporting the accuracy of our findings. The data collection process was carefully calibrated to reflect the diverse economic landscapes within which these SMEs operate, recognizing that their views on green logistics are shaped by a confluence of market dynamics, regulatory frameworks, and individual corporate structures. This approach allowed us to infer the underlying factors that may drive future shifts in SMEs' investment decisions regarding EV transport.Principio del formulario

3.1 Sample

We sent surveys to 500 SMEs, and we received 319 responses from their CEOs. 17 were left out of the sample due to missing or incomplete data. Therefore, the final sample is composed by 302 responses. The sample size was determined by convenience sampling. This approach was chosen due to practical constraints regarding the access to Latin American SMEs. We selected SMEs who were readily available and willing to participate, ensuring the feasibility of the study within our constraints.

3.2 Instrument

This study takes an approach based on the Theory of Planned Behavior (Ajzen, 2002) to look for insights regarding the willingness to pay for EV transport. The Theory of Planned Behavior points out that intention is the primary construct that influences behavior. Using this approach allows us to get a wide view to understand entrepreneurs' behavior, as shown in Halder et al. (2017). To develop the instrument, we focused on measuring perceptions to get insights about the public views about EV transport. Then, we used five items: perceived benefits, perceived risks, social trust in institutions, attitude, and finally the willingness to pay (WTP) to measure the intention to use EV transport. The survey items were derived from the literature and the authors experience. The validity of the survey was assessed by three experts on the field of Logistics industry and Electric Vehicle industry, and then minor adjustments were made to the questions.

3.3 Data Analysis and Reliability

The instrument's items were coded in a Likert 5-point scale, where a value of 1 is "strongly disagree" and a value of 5 is "strongly agree". The instrument is presented in Appendix A. We applied Harman's single factor test to address the impact of common method bias (Jordan and Troth, 2020), and the variance extracted was 31.19%. Hence, the common method bias is not present in the study. We also measured Cronbach's alpha to determine the internal consistency of the variables. For our study, we used a threshold of 0.7 to construct the reliability (Bell et al., 2022). According to Table 1, all variables had strong internal consistency with alpha values higher than the threshold. We also performed a factor analysis, and then to confirm this analysis we used the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy.

Table 1: Reliability statistics.

Variable	Cronbach's alpha	KMO measure
Perceived benefits	0.79	0.735
Perceived risks	0.78	0.624
Social trust	0.73	0.651
Attitude	0.81	0.726
Willingness to pay	0.86	0.827

We used an ordered logistic regression model to predict the variables that influence the willingness to pay for EV transport in small and medium enterprises (SMEs). We selected this method, which is particularly suited for modeling ordinal dependent variables, like the levels of willingness to pay, which are inherently ordered but not quantitatively measurable. Ordered logistic regression efficiently allows to handle the ordinal nature of the response variable, supporting us to estimate the odds of individuals being in higher willingness categories as a function of predictor variables. This approach provides robust and nuanced insights into the factors influencing consumer decisions regarding electric vehicles.

3.4 Descriptive Statistics

As shown in Table 2, our sample comprises a diverse range of SMEs, characterized by distinct attributes. The CEOs' ages vary, offering a broad perspective across different generational leadership styles. The sample comprised 59% male respondents and 41% female respondents. Though the SMEs are geographically dispersed, most of the SMEs are from Peru. Though fleet sizes among these enterprises vary, most of the surveyed SMEs opt to outsource their transport logistics, highlighting different operational strategies. Additionally, these SMEs span across several industries, ensuring an extensive understanding of business trends.

Table 2: SMEs' Attributes.

Socio-demographic and economic variables		Sample values
CEO age (years)	Mean	38
	Range	23-61
CEO gender	Male	59%
	Female	41%
SME location	Peru	71%
	Chile	15%
	Bolivia	6%
	Ecuador	5%
	Colombia	3%
SME fleet size	Outsourced	27.8%

	1	55.3%
	2	13.6%
	3 or more	3.3%
Industry	Commerce	44.7% (135)
	Hotels, tourism, catering	26.8% (81)
	Textile	11.6% (35)
	Construction	9.6% (29)
	Health services	4.6% (14)
	Agriculture	2.7% (8)

4. Results and Discussion

Regarding the perceived benefits, most of the SMEs see EV transport as beneficial for the environment, the economy and the society (Figure 1). The benefits in producing and using EV transport are in line with Jenn (2020). The survey showed most of the SMEs agreed that investments in EV transport would be positive for the economy and the society, as well as using EV can be effective to protect the environment. In foreign oil dependence, SMEs look EV transport as an option to reduce the dependence from other countries.

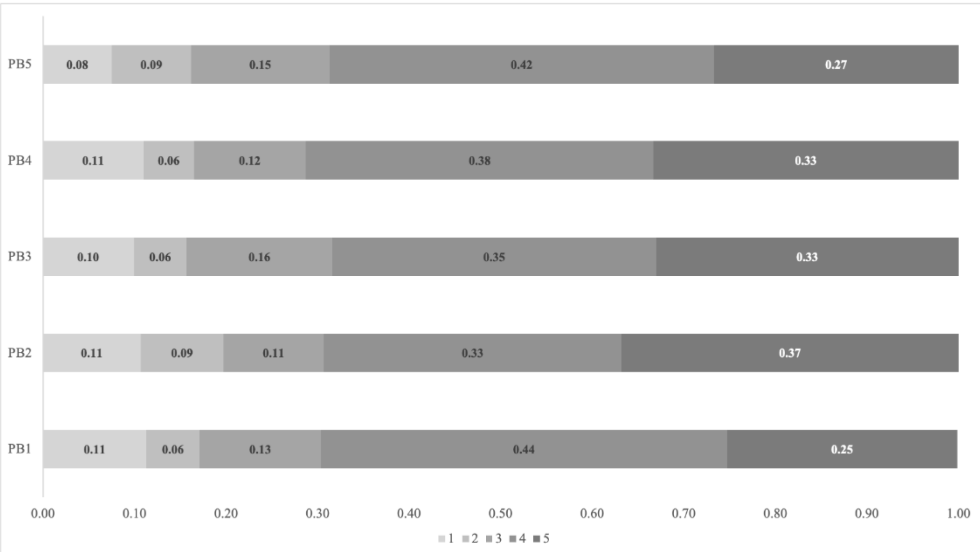

Fig.1: Public perceived benefits of EV use

In relation to the risks of the use of EV transport in SMEs, participants expressed some concerns over the risks. Most of the participants do not perceive that EV may harm the ecosystem, in line with studies like Razeghi et al. (2016) and Christensen and Salmon (2021).

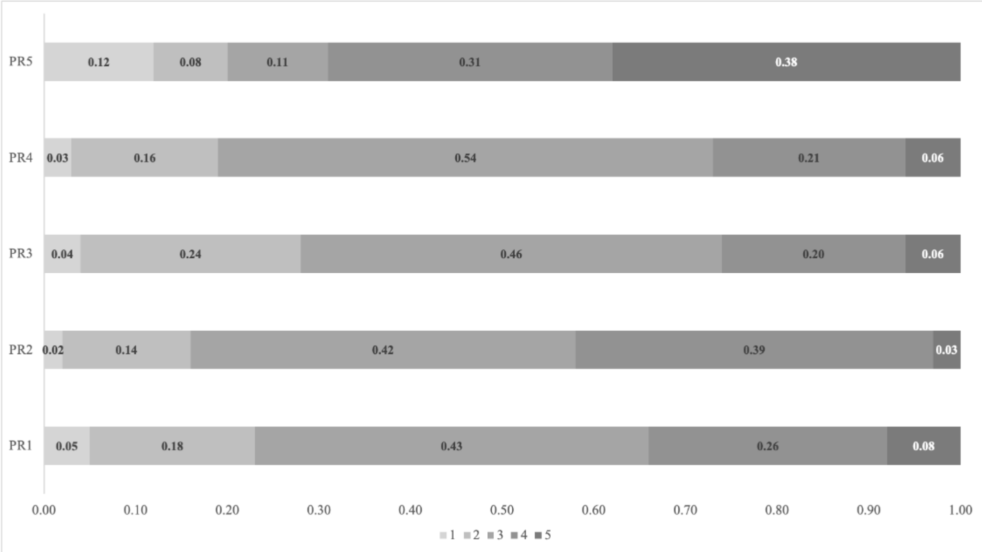

Fig.2: Public perceived risks of EV use

In social trust, the construct is oriented to assess the level of public confidence in several institutions. The level of trust in the diverse institutions is disperse (Figure 3). The least level of trust was shown in the governments' job related to EV regulation and development. These results are aligned with Hao et al. (2018) and Gössling et al. (2016), with little impact of regulation. The low trust from the SMEs is related to a general dissatisfaction of the citizens with the quality of public services. Conversely, the level of trust in EV manufacturers and the scientific community is higher, in line with Stoutenborough and Vedlitz (2016), Diamond et al. (2020), although almost half of the SMEs recorded "neither agree nor disagree" in the level of trust, in line with Sihvonen and Partanen (2016) and Turnhout (2018), showing the relevance of public engagement in EV acceptance.

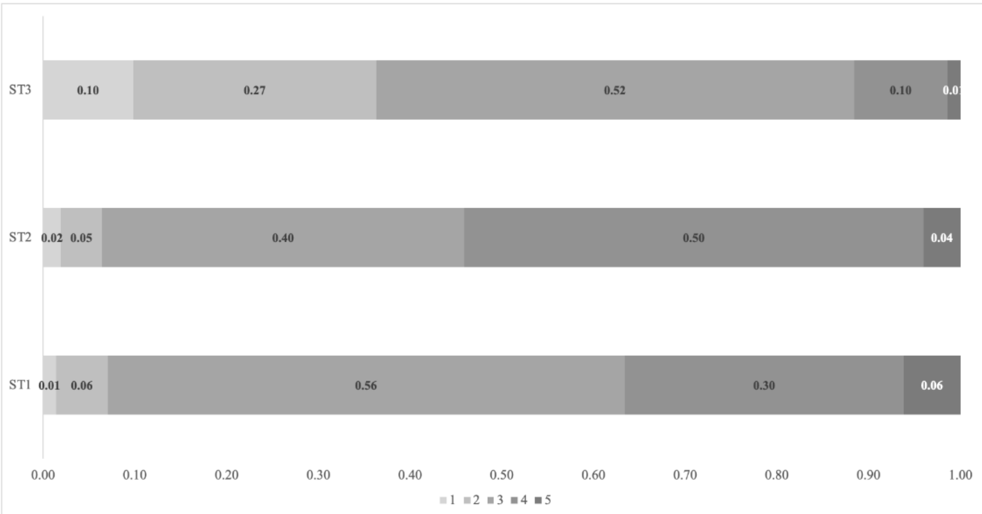

Fig.3: Social trust in institutions regarding EV transport.

We used four items to measure SME's attitude towards EV transport. Our results showed a positive attitude toward EV transport, in line with studies like Rezvani et al. (2015) and Javid et al. (2022). In all the items, more than half of the sample remained in the "agree" and "strongly agree" groups. When considering using EV transport services, responses were not conclusive. This behavior can be attributed to a reduced level of knowledge about the use of EV in logistics operations (Krishna et al., 2020).

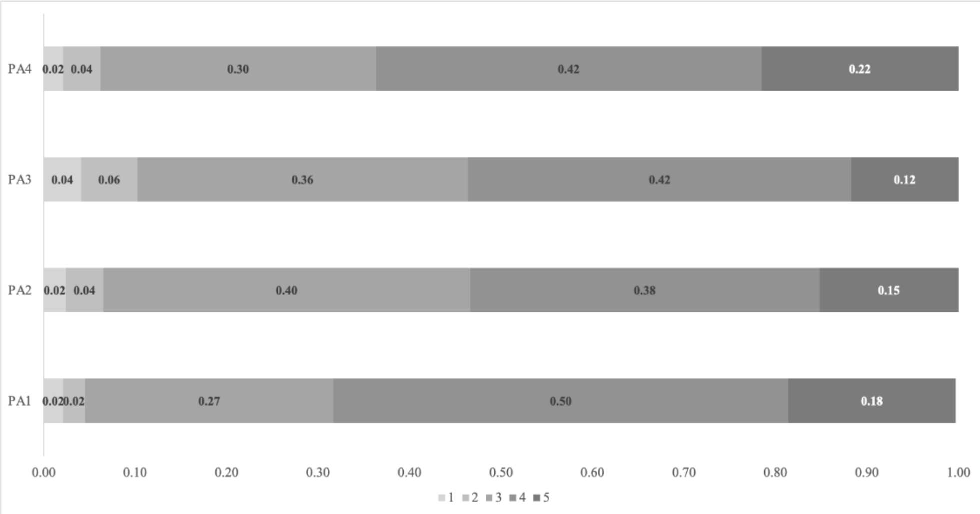

Fig.4: Public attitude towards EV transport

In our research, we constructed a WTP scale using three criteria to assess willingness to pay more for EV logistics services, evaluating voluntary and involuntary WTP for EVs, with the third criterion being indifferent to price. When examining involuntary willingness to pay (WTP1), only 19.7% of participants agreed to the proposition, while a larger portion (44.1%) opposed it. As for voluntary WTP, even when presented with more affordable alternatives, only 14.9% of participants were inclined to pay a premium for EV services. In contrast, a significant 46.3% preferred cheaper, traditional fuel-based transport. When assessing the preference for EV logistics without considering price (WTP3), 17.4% of respondents showed agreement, while 42.4% disagreed.

Consequently, it seems logical that transport costs significantly influence Latin American SMEs' decisions. Notably, across the WTP scale, approximately 38% of participants remained ambivalent on all three criteria. Results are consistent with the reported by Hidrue et al. (2011) at consumer level. However, when comparing the results with Hulshof and Mulder (2020) and Huang and Ge (2019), results obtained in our study are not consistent with the previous evidence. Therefore, it remains relevant to properly assess the socio-economical context of our study, considering that the survey was applied in five Latin American countries (Bolivia, Chile, Colombia, Ecuador and Peru).

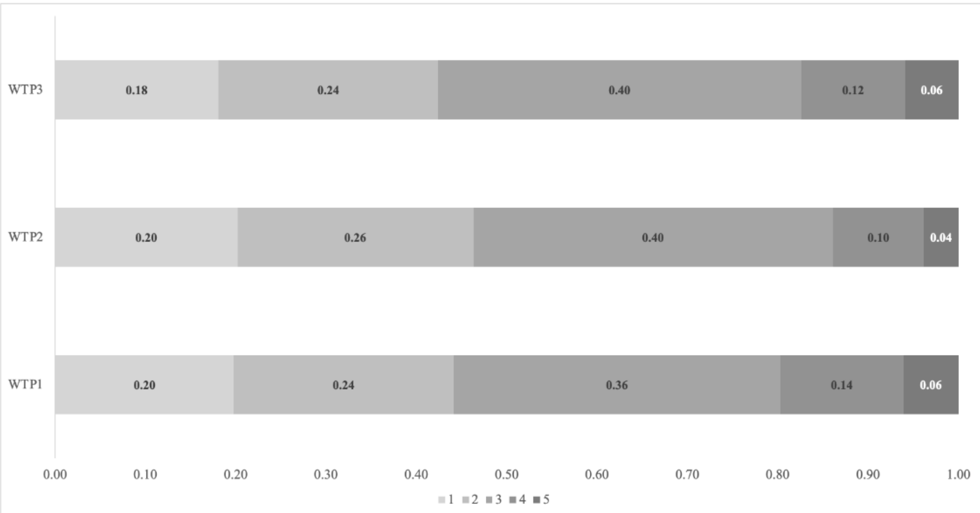

Fig.5: Willingness to pay for EV transport.

Our study aimed to identify factors that influence willingness to pay (WTP) for EV transport. Upon examining correlations among variables such as social trust, perceived benefits, perceived risks, and attitude, it was observed that WTP correlated positively with social trust, perceived benefits, and attitude. We also observed there was a small yet significant positive correlation between WTP and perceived risks. Attitude had a strong positive correlation with perceived benefits and a small negative correlation with perceived risks, suggesting participants skeptical about EV transport were less enthusiastic about its use.

Table 3: Zero-Order correlation between Scale Variables

	BEN	RISK	ATT	ST	WTP
BEN	1				
RISK	- 0.029	1			
ATT	0.558	- 0.107	1		
ST	0.417	0.219	0.512	1	
WTP	0.323	0.175	0.330	0.278	1

We employed ordered logistic regression to predict WTP for EV transport, where three dependent variables (WTP1, WTP2, and WTP3) were analyzed in a single hierarchical model for better clarity (Table 4). Then we performed several tests to meet the ordinal logistic regression assumptions. Then the regression revealed that in WTP1 (general WTP for EV transport) social trust (X_4), perceived risks (X_2), and attitude (X_3) were significant predictors. A unit increase in X_4 or X_3 led to a 27% and 24% rise, respectively, in the likelihood of respondents willing to pay more. Results obtained for WTP1 are coherent with Tcvetkov et al. (2019) in order that people can be open to use EV transport, even if they are not fully aware of the impact of EV in reducing emissions. Therefore, the implications are two-fold: regarding the theoretical point of view, our results show there is necessary to expand the body of knowledge, considering that results are not fully aligned with previous evidence. In the practical scope, results show that public agencies and private companies need to develop new initiatives to improve social trust in EV transport,

When comparing the results from WTP1 model with WTP2 (willingness to pay more for EV transport even when cheaper fuel options are available), social trust, perceived risks, and attitude were also significant predictors, though the variables displayed lower scores in WTP2. From an entrepreneurial point of view, results are in line with other studies as Selva and Arunmozhi (2020), Sattayathamrongthian and Vanpetch (2023), pointing out that cost-efficiency remains as the most important factor for entrepreneurial competitiveness. In Latin America, these results shed light about the future challenges about reducing costs in EV transport services. Hence, relevant business actors in the industry must deploy commercial efforts to improve EV adoption in SMEs.

In case of WTP3 (willingness to pay for EV transport regardless of cost) social trust, perceived risks and attitude were significant predictors as well. However, social trust shows the highest value in the three models, revealing that attitudes on EV transport require further research as shown on Krishna et al. (2020). Overall, social trust, perceived risks, and attitude emerged as significant determinants for WTP across different scenarios, underscoring their importance in the EV transport domain. Specifically, social trust has the highest effect on all three scenarios, emphasizing the importance of developing social trust in new technologies, as pointed out in Modica et al. (2020).

Table 4: Ordered Logistic Regression for WTP for EV transport.

	X_1	X_2	X_3	X_4
WTP1	0.009	-0.167	0.243	0.274
WTP2	-0.041	-0.185	0.212	0.259
WTP3	0.003	-0.191	0.115	0.310

Comprehensively, the findings indicated that participants who held favorable views on EV transportation, had confidence in the initiatives of main stakeholders, and recognized greater advantages were more inclined to pay extra for EVs. However, this did not apply to those who expressed reservations about using EVs. Regarding the limitations of our study, the geographical context of the sample (Latin American SMEs) and the sampling technique have an impact on the findings of our project, narrowing the generalizability of the results. Nevertheless, the findings add new evidence to the existing literature on green logistics, especially in the domain of small and medium enterprises. Accordingly, several implications have been provided for theory and practice, regarding the promotion of use of EV transport by public agencies and private companies in Latin America.

5. Conclusions

Our study aimed on bridging the research gap in the adoption of electric vehicles (EVs) within the supply chains of SMEs, with a focus on understanding the Willingness to Pay (WTP) for increased transport costs. Therefore, we gathered and examined SMEs' perceptions towards EV use, shedding light on key factors influencing their WTP. We found that social trust, attitudes towards EVs, and perceived risks are the primary determinants of WTP. Notably, SMEs are aware of and value the efforts by authorities and industry leaders in promoting EVs, which fortifies their trust and WTP. Conversely, perceived risks can dampen WTP, with risk-averse individuals being less inclined to support the use of EVs in logistics. Gender was not a determining factor in WTP within our study.

The main contribution of our study is significant to the literature by delineating the intricate dynamics of WTP for EV logistics and provides actionable insights for stakeholders to enhance public perception and support for EVs. The challenge extends beyond mere marketing, calling for a deepened understanding of public trust and targeted engagement, particularly with the younger demographic.

For future research, we advocate for an in-depth analysis of how neutral stances on risk perception and social trust may arise from a lack of awareness or entrenched attitudes. It is also vital to explore the relation between the identified variables further to observe their collective impact on WTP. The media's influence on public opinion warrants investigation to inform more effective communication strategies. Finally, we suggest broadening the scope to include diverse stakeholder perspectives, particularly to understand the public's viewpoint on the energy sector's transition, emphasizing the role of traditional oil companies in the shift towards green logistics.

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Appendix A

Perceived Benefits	
PB1: Investments in EV transport will benefit both the economy and the society	
PB2: EV transport use can greatly help in protecting the environment	
PB3: Using EV transport will reduce the dependence on foreign oil	
PB4: EV transport can reduce conventional fuel dependence	
PB5: The benefits of using EV transport exceed other GHG emissions reduction measures in transport	
Perceived Risks	
PR1: EV transport poses a safety concern	
PR2: A higher production of EV transport would lead to an increased competition for land	
PR3: EV industry would harm the ecosystem	
PR4: EV transport takes more energy to make than it is worth	
PR5: There is not enough supply to meet the demand for EV transport	
Social Trust	
ST1: The scientific community is doing a good job for the society by developing EV infrastructure	
ST2: EV manufacturers are helping the society	
ST3: Government have done a very good job so far in regulating EV technologies	
Public Attitude	
It is a good idea to use EV transport for the logistics management	
It would be preferable to use EV transport services	
Companies need to encourage its suppliers the use of EV transport services	
Companies are willing to know more about EV transport services for its operations	
Willingness to Pay	
WTP1: Our company would be willing to pay higher costs for EV transport services	
WTP2: Our company would be willing to pay higher costs for EV transport services even if a cheaper transport service using regular fuel is available.	
WTP3: Our company would be willing to choose EV transport services regardless of the cost.	