



MASTER
MANAGEMENT AND INDUSTRIAL STRATEGY

MASTER'S FINAL WORK
DISSERTATION

**A BUSINESS NETWORK PERSPECTIVE ON THE TRANSITION
TOWARDS SUSTAINABLE PUBLIC SERVICES: A CASE STUDY
ON ELECTRICAL MOBILITY**

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ABSTRACT

This study explores the transition to electric public transport, specifically the adoption of electric buses. Through a business network lens, it aims to understand how public policy, together with business relationships and networks, both affect and are affected by the strategies of public and private actors engaged in shaping the public transport market.

A single case study was conducted, centered on the Portuguese transportation company Rodoviária, which is currently at an early stage of transitioning to electric mobility. Some of its operational units have integrated electric buses in their fleets, while others have not, offering a relevant context to examine the complexities and strategic decisions involved in such a transition. The study draws on both primary and secondary data, collected through semi-structured interviews with two employees from Rodoviária and through literature and news sources related to the company and the broader transition to electric mobility.

The main contributions of this study are twofold. First, it highlights the critical role of business networks and relational alignment in enabling sustainability transitions in public transportation. The research shows that successful implementation requires more than just technology or investment, it demands coordination among partners, supportive policy, and shared motivation. Second, by applying a market shaping perspective, the study demonstrates how transport companies and public authorities collaboratively shape the direction of market change.

Keywords: Sustainability, Mobility, Public Transport, Business Relationships, Strategy

RESUMO

Este estudo explora a transição para o transporte público elétrico, em particular a adoção de autocarros elétricos. Através de uma perspetiva de redes de negócio, procura compreender de que forma as políticas públicas, juntamente com as relações e redes empresariais, afetam e são afetadas pelas estratégias dos atores públicos e privados envolvidos na configuração do mercado de transporte público.

Foi realizado um estudo de caso, centrado na empresa portuguesa de transportes Rodoviária, que se encontra atualmente numa fase inicial da transição para a mobilidade elétrica. Algumas das suas unidades operacionais já integraram autocarros elétricos nas suas frotas, enquanto outras ainda não, oferecendo assim um contexto relevante para analisar as complexidades e decisões estratégicas envolvidas nesta transição. O estudo baseia-se em dados primários e secundários, recolhidos através de entrevistas com dois colaboradores da Rodoviária e de fontes bibliográficas e noticiosas relacionadas com a empresa e com a transição mais alargada para a mobilidade elétrica.

Este estudo tem duas contribuições principais. Em primeiro lugar, realça o papel fundamental das redes empresariais e do alinhamento relacional na viabilização de transições sustentáveis no setor dos transportes públicos. A investigação demonstra que uma implementação bem-sucedida exige mais do que tecnologia ou investimento: é necessária uma coordenação entre parceiros, políticas públicas favoráveis e uma motivação partilhada. Em segundo lugar, ao adotar uma perspetiva orientada para a transformação dos mercados, o estudo mostra como as empresas de transporte e as autoridades públicas contribuem de forma colaborativa para moldar a direção e o ritmo da mudança no setor.

Palavras-Chave: Sustentabilidade, Mobilidade, Transporte Público, Relações de Negócio, Estratégia

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1.INTRODUCTION

Amid growing sustainability concerns and the urgent need to decarbonize urban environments, cities around the world are under mounting pressure to transition to greener mobility solutions. Being one of the biggest contributors to greenhouse gas emissions, the transportation sector plays a pivotal role in this process. In this context, electric mobility, particularly the use of electric buses, has appeared as a viable and necessary alternative to traditional, fossil fuel-based transportation systems.

While research on the transition keeps growing, much of the existing literature approaches this transition as a merely technical one, typically centering on comparisons between electric buses and other alternatives, such as traditional diesel or the more sustainable hydrogen-powered vehicles. Thus, the underlying organizational complexity of the transition towards electric mobility is often overlooked, particularly in terms of how it affects and is affected by business relationships and networks. In addition, due to being approached as a merely technological transition, there is a gap in the existing literature regarding how transportation companies strategically navigate this transition and how public authorities influence or orchestrate this shift.

This context forms the foundation for the present study. From a business network perspective, this study explores the transition to electric public transport, particularly the adoption of electric buses. In detail this study aims at understanding how policy together with business relationships and networks affect and are affected by private and public companies shaping the public transport market. This research develops a case study centered on the transportation company Rodoviária and municipality A.

The municipality was facing a problem related to the city's train station parking lot, which would get completely full in the very first hours of the morning, thus making it difficult for a big number of commuters to park their cars. To solve this, municipality A decided to develop a new parking lot in a less central area of the city, accompanied by a free shuttle service to transport commuters between the parking lot and the train station.

To align with its sustainability goals and make this solution more attractive, the municipality decided that this shuttle should be operated using an electric bus. The municipality

proceeded to assess the feasibility of this shuttle service with the local transport operator, Alpha, one of Rodoviária's operational units. Thus, the operator was questioned on its capacity to incorporate the service in its daily operations and whether it was possible for it to be done by an electric bus.

What seemed to be a straightforward case, actually revealed the complexity behind transitioning to electric mobility. This case is illustrative of how such a simple request can trigger a series of challenges that span infrastructure, funding, technology and inter-organizational coordination. Hence, it is a reflection of the critical role played by business relationships, as no firm nor its relationships act in isolation, but within a network defined as a web of relationships that shapes and constrains a company's behavior (Håkansson and Snehota (1995, p.25)).

Adding to these relational dynamics, such transitions demand strategic anticipation from companies, from the moment market changes of this sort are on the table, companies must decide whether they will strive to lead market change or simply respond to the new market conditions (Pedersen and Ritter, 2022).

Accordingly, the following chapter presents a literature review, which covers the theoretical approaches mentioned, namely business relationships and networks, market shaping strategies and the role of the State as a market orchestrator in sustainability transitions. This is followed by a methodology chapter, where the research design and data collection methods are explained. Next, the case study is formally presented and analyzed in depth, and a discussion confronting theory with practice is then presented. Finally, the paper is concluded with a summary of the key findings from the case study, followed by the limitations and implications for future research.

2. LITERATURE REVIEW

2.1. Business Relationships and Networks

In a manner analogous to that of human beings, companies are heavily dependent on the relationships established with their business partners. In recent decades, the establishment

of appropriate connections and effective integration within business networks has become a crucial element of companies' development strategies. The complexity of business relationships and networks has attracted the attention of academics and business experts, who have designated this topic as a highly relevant area of study.

Håkansson and Snehota (1995, p. 26) define relationships as the “result of an interaction process where connections have been developed between two parties that produce a mutual orientation and commitment”. Business relationships are guided by the presence of several key values, namely collaboration, communication, dependency, compromise and mutual trust (Zaefarian et al., 2017). Research conducted on their characteristics has allowed the identification of some typical features, including adaptations, cooperation and conflict, social interaction and routinization (Håkansson and Snehota (1995, p. 9)).

The capacity to adapt by both parties involved constitutes a key component for any relationship to evolve, as new challenges, demands and developments will always require adaptation, not only for the company itself, but for the relationship as well. Constant adaptation is a quintessential characteristic of any successful relationship, whether technical or administrative, it is what fuels the companies to grow together, reflecting their commitment to the prosperity of the partnership.

However, in the real world, it is rare for business relationships to be without issues, if not impossible. As Håkansson and Snehota (1995, p. 26) state “It is the heterogeneity of relationships and their specificity that poses problems for management, while also providing some interesting opportunities”. Conflicts are inevitable and healthy in relationships, provided that the fundamental values are not overlooked, these divergencies may foster cooperation, encouraging the identification of constructive solutions that preserve value-creating trade-offs (Gadde and Snehota, 2000).

The notion that adaptation and conflict are always present highlights that “continuity, rather than stability, is an important feature of business relationships” (Håkansson and Snehota, (1995, p. 10)), as these go through constant changes, the most important thing is to maintain the relationship.

Business relationships have been identified as a significant tool for competitiveness, given that they enable firms “to mobilize resources that they do not control themselves, that is, business relationships deal with issues relating to resource dependencies” (Zaefarian et al., 2017). The establishment and maintenance of effective business connections, which refers to having access to the necessary resources, has been shown to offer a range of benefits for a company, ultimately leading to a competitive advantage and a positive impact on profitability.

Håkansson and Snehota (1995, p. 13-17) present the following interdependencies as the ones most encountered in business relationships: technology, knowledge, social relations, administrative routines/systems and legal ties.

In the contemporary business landscape, business relationships are heavily reliant on technological integration. Technological interventions enhance communication between the parties involved in the dyad, increase efficiency and foster innovation. The possession of technical expertise and the utilization of advanced technology have emerged as significant competitive assets. The advancement of technology within a given company or relationship often serves as an incentive for similar developments in other organizations, thereby pointing to an interdependence among companies in terms of technological integration.

The engine of a company lies in its human and physical resources. The establishment of business relationships enables companies to fuel this engine through a combination of their knowledge with that of their business partners. This exchange of knowledge between business partners serves as a catalyst for innovation, as stated by Håkansson and Snehota (1995, p. 13): "It is in relationships that existing knowledge is confronted with the knowledge of other parties and new knowledge is created". In this sense, a company's expertise is not merely a reflection of the way it combines its human and physical resources, but also a result of the know-how acquired and developed by the companies and organizations with which it maintains relationships.

Relationships established between companies are handled by individuals, each having their own personal networks. The roles of these individuals in professional relationships are influenced by their respective backgrounds, surroundings and social relations. Hence, the importance of having the “right” background and connections is frequently observed in professional networks.

Communication is essential in business relationships, with administrative activity playing a pivotal role in this regard. Ensuring the adequate processing and exchange of information can be costly and demanding. To face this, some companies develop specific systems and routines to be utilized within their network. Divergencies regarding administrative systems/routines are often decisive for the establishment of a business relationship.

Furthermore, Häkansson and Snehota (1995, p. 17) highlight that the texture of interdependencies regarding legal ties merits attention from businesses. Such interdependencies, as the authors point out, “connect different business units with privileged ties”.

In their 1997 article, “What are relationships in business networks?”, Holmlund and Törnroos, 1997 characterized relationships as the “core aspect which connect actors, resources and activity in a business network”. To analyze the nature of business relationships, Häkansson and Snehota (1995, p. 28) identify three layers of substance in business relationships, being actor bonds, activity links and resource ties.

People are at the heart of a company’s existence, because it is people who drive a company and fill it with life. Without individuals, there would be no business, as even with the most advanced technologies, human presence will always be crucial for a business to function. Within the context of business relationships, these are naturally brought to life by individuals, and it can therefore be stated that “it is individuals who endow business networks with life” (Häkansson and Snehota (1995, p. 192)). The commitment inherent in business relationships fosters the establishment of bonds, which in turn influence the behaviors and identities of the involved companies. Consequently, these bonds must be given due consideration when analyzing business relationships, as they influence not only the company's perceptions of others but also the perception the others have of the company.

Another element that cannot be disregarded when analyzing the substance of a business relationship is the activity links established between the companies involved. A company's operations encompass a diverse array of activities, namely within the technical, administrative and commercial domains, thereby giving rise to a complex activity structure. In this regard, the interaction between two companies also establishes links in terms of their activities. The integration of these links contributes to enhanced performance, thereby exerting considerable

influence on the activity structures of both parties, and consequently on their respective levels of productivity and that of their counterparts. (Håkansson and Snehota (1995, p. 28-29))

The very foundation of a company's operations is built upon multiple resources. A company cannot exist without possessing the necessary tools, skills, and materials that enable it to function effectively. These resources are of pivotal significance for the company to survive, grow and succeed. Business relationships facilitate the parties involved to mobilize and access resources that they do not control, using them to their advantage. These resource ties, formed within a business relationship, constitute a unified resource structure, which can be referred to as a "resource constellation". Such resource constellations are a valuable asset for companies, serving as an important competitiveness tool. The effects of which must be considered when conducting an analysis on the content of a business relationship. (Håkansson and Snehota (1995, p. 30-31))

In the analysis of the effects produced by business relationships, Håkansson and Snehota (1995, p. 27) highlight three fundamental elements that must be considered. Firstly, the impact of the relationship on the dyad, that is to say, the links established between companies in terms of actors, resources and activities. Secondly, the impact of the relationship on each company, and the relationships they establish with other counterparts. A third, more complex, perspective concerns the network, as the interconnectedness of relationships implies that a single relationship exerts influence on third parties, thereby affecting their respective relationships and so on.

Business relationships are understood to be part of a broader context, as they are interconnected (Anderson et al., 1994). Relationships extend beyond the dyad, as illustrated by the example of three companies that are connected by two separate relationships, in which the interaction between any of the companies will affect the third company. In this sense, as stated by Håkansson and Ford, 2002, "What happens in one relationship will always affect all connected relationships". Therefore, in addition to being contingent on the actors involved in the dyad, business relationships are also dependent on other business relationships in which any of the two actors participate, the wider network.

The broader context in which relationships are embedded is referred to as a "network". Håkansson and Ford, 2002 define a network as a "structure where a number of nodes are related

to each other by specific threads”, with the nodes representing business units (manufacturing and service companies) and the threads representing the relationships between them. In this sense, it becomes evident that in the context of business relationships, there are no individual or isolated exchanges between companies. Rather, each company, with its own resources and expertise, establishes bonds between them and explores a range of different exchanges among their relationships.

The integration of an organization within a network can prove advantageous, yet it is not without its drawbacks. The management of an organization’s actions, positioning, and relationships within the network poses a series of questions for managers to address in order to formulate suitable strategies, such as the following three (Håkansson & Ford, 2002). The first question pertains to the nature of special opportunities and restrictions that a network can offer a company. Secondly, the dynamics of influence between companies and the implications for strategic management must be explored. Thirdly, the question of how companies can exercise control over networks and the potential consequences of such actions for both the network and the company itself must be addressed. These three managerial questions are grounded on a significant paradox pertaining to the nature of business networks or relationships.

The initial paradox refers to the “opportunities and limitations in networks”. The root of this paradox lies in the juxtaposition between the actors’ intentions and capabilities, and the lock-ins that are imposed by interdependencies. Companies that are embedded in a network find themselves lacking the autonomy to act in accordance with their own will, thereby rendering them unable to disregard the potential ramifications their actions may have on the network. This scenario creates a certain difficulty for companies to act in the network, while simultaneously conferring heightened significance upon their actions. In order for a company's strategy to be implemented within a network, it is imperative to present a comprehensive overview of the action in question, seeking the consent of all involved companies. This underlines the notion that change within a network environment takes time. Hakansson and Ford (2002) characterize the structure of the network as a “brake on innovation because of its investment in existing ways of working and because of the requirement to enlist the co-operation of those with which the innovator does not have relationship”.

The second network paradox explores the interplay between influencing and being influenced, as it is evident that a company cannot operate in isolation; it will always be dependent on its customers, suppliers, distributors and even competitors (Anderson et al., 1994). It is not possible for a company to exploit its own resources because these interdependencies are at the heart of the company; there would be no company without its relationships and partnerships, but at the same time there would be no relationships without companies. The history of a company is intricately linked to its network of relationships, and the future of a company is also influenced by the relationships it maintains with its counterparts (Ford and Mouzas, 2013). Consequently, business relationships are outcomes of the actors' networking, but the actors themselves are also characterized by the outcomes of their relationships. This observation underscores the notion that companies will always influence and be influenced by the networks in which they are embedded. This emphasizes the critical nature of this management issue, which lies in the effective navigation of the intricate system of influence.

Finally, the third paradox pertains to the fact that companies try to have complete control of the network, but no company has the knowledge and resources to do so. The navigation of this paradox is imperative for managers to formulate strategies in terms of network activity, as they must strategize based on their knowledge and experience (Ford and Mouzas, 2013). Given that each company is likely to possess its own unique perspective, which differs from that of others, it is crucial for a company to examine the network not only from its own viewpoint, but also from a broader perspective. This highlights the dual nature of relationship interactions, where companies cannot merely engage in relationships for their own benefit; reciprocity, leveraging each other's resources, knowledge and creativity is imperative for successful outcomes. A company that prioritizes its own gain disregarding the effects it may have on its counterparts is likely to face challenges in network contexts. Strategic management within a network is characterized by a "complex pattern of action and reaction to events and to actions and reactions of others" (Hakansson and Ford, 2002). It is only through this dynamic interaction that a clear strategy can be developed for each situation, relationship and network activity.

The relationships established by companies in the network form a constellation of actor bonds, activity links and resource ties, which affect third parties that are not part of the dyad.

Hence, any change in the dyad's dynamic influences the overall structure of actors' relationships, activity arrangement and resource ties in the network. This concept of interconnectedness within a network underscores its inherent dynamism and complexity. Consequently, it is imperative for managers to equip themselves with the appropriate tools to navigate the vast array of possibilities that the network encompasses.

In conclusion, it is evident that business relationships and networks are of pivotal significance in driving the success and growth of any company. The relationships cultivated by a business, whether with suppliers, clients, stakeholders or partners, establish a framework for collaboration, innovation and mutual benefit. The effective management of these relationships has been shown to exert a considerable influence on a company's market position. Moreover, nurturing these relationships has been demonstrated to enhance competitiveness and unlock new opportunities in the business landscape.

2.2. Market Shaping Strategies

Markets are dynamic structures, subject to constant change. A combination of factors, namely technological advancements, economic conditions, social and cultural shifts, government policies and regulations, shifts in demand and supply, and global events, are pivotal elements that manipulate a market's dynamics. It is therefore fundamental for companies to understand and forecast these changes in order to succeed in the face of adversity. By adapting their strategies to current market tendencies, companies are fighting to remain competitive in the ever-changing business landscape.

However, it is important for companies to go beyond a strategy of simply responding to the market's existing conditions; they should also adopt strategies that influence and shape a market's dynamics, structure and behavior. This concept of “market shaping” behavior is receiving mounting academic attention, mostly due to the contemporary competitive landscape, which pushes businesses to reframe their strategies to ensure success.

Market shaping, or market-driving strategy (MDS), can be defined as the manipulation of the structure of a market and/or the behavior of its participants, with the objective of enhancing the company's competitive edge and performance (Stathakopoulos et al., 2022).

Hence, the array of market shaping strategies is composed by the activities employed by a company to shape a market with the aim of increasing competitiveness and giving rise to new opportunities (Flaig et al., 2021).

In the context of the literature on market shaping, several questions are posed, namely: “(1) what is being shaped, (2) why are shaping strategies pursued, (3) when is shaping done, (4) who is the shaper, (5) how is the shaping done, and (6) what are its consequences” (Storbacka et al., 2022).

When answering the question of what is being shaped, it is important to analyze the theoretically defined three-layered structure, which includes the micro, meso and macro levels. In this sense, the micro layer refers to the actors, while the meso and macro levels refer to the business landscape and socio-economic-technological systems (Nenonen and Storbacka, 2021). Thus, it can be said that market shaping strategies primarily serve to change the structure, norms, dynamics and competitive patterns of a given market or industry.

Furthermore, the literature on market shaping emphasizes the difference in the way market shaping strategies are approached. In their research paper entitled “Market-shaping strategies: A conceptual framework for generating market outcomes”, Flaig et al. (2021) highlight two different strategies. Two such outcomes of market-shaping strategies are “market expansion” and “market contraction”, alluding to the growth and reduction of a market, respectively. The implementation of these strategies may also aim to prevent changes in the structure of a market, a process referred to as “market maintenance”. Finally, the concepts of “market creation” and “market innovation” are introduced, the former referring to the creation of new markets as a result of market-shaping strategies, the latter suggesting the transformation of an existing market structure.

There are numerous rationales for the implementation of market shaping strategies. Organizations that pursue market-shaping strategies are able to drive change in the market rather than simply responding to its dynamics. This approach enables organizations to enrich their competitive advantage and financial performance, fuel innovation, create new markets, influence consumer behavior, establish synergies with their stakeholders and networks, and more (Storbacka et al., 2022). However, the impetus to adopt market shaping strategies can

originate not only from the firms' own initiatives but also from external pressures, particularly in the context of social responsibility and sustainability issues.

In recent years, sustainability concerns have been increasing, and it is evident that there is a need for disruptive actions to address the environmental crisis. This sense of urgency exposes the paradigm shift from a focus on minimizing a business's negative impacts to a commitment to generating a positive impact for the society and the environment. Consequently, market shaping strategies can be employed as a tool to mitigate negative market externalities, with actors strategizing to enhance sustainability within their operations. Nevertheless, it remains challenging for organizations to disregard short-term financial incentives, and thus only a few firms can prioritize environmental concerns and focus on long term growth, which are referred to as "hybrids". The main purpose of these "hybrid" is to generate a positive environmental impact, hence focusing on their long-term viability and partnering with their competitors to fuel such change (Syväri et al., 2025).

As a consequence of the actions of the actors involved, markets are subject to constant change and exhibit a greater degree of receptiveness to shaping strategies during periods of instability (Storbacka et al., 2022). Firms that adopt market-shaping strategies behave in a proactive manner, aiming to disrupt the prevailing market dynamics. These actions pose as attempts to bring change to a market, rather than simply responding to the prevailing industry standards (Stathakopoulos et al., 2022). This contrast between reaction and proactive shaping is particularly pronounced in contexts of crisis, such as the environmental crisis and the recent COVID-19 pandemic. The pandemic, for instance, has demonstrated how such volatile times can present both threats and opportunities, with that which was a threat for some being an opportunity for others (Pedersen and Ritter, 2022).

In such contexts, it is common for these strategies to coexist, as such realities demand adaptability, meaning crisis management, whilst concurrently creating an opportunity to influence the structure and dynamics of the market. Accordingly, adopting a reactive behavior during a crisis can serve as a catalyst for exploring "proactive market shaping opportunities" (Pedersen and Ritter, 2022). Moreover, when analyzing the timing to implement shaping strategies, it must also be taken into account that these strategies take a long time to produce

the desired outcomes. Consequently, they must be regarded as long-term strategies, serving merely as a means to achieve competitive advantage in the short term (Storbacka et al., 2022).

Whilst commercial firms are widely regarded, in market-shaping literature, as the primary agents of market shaping strategies, it is imperative to acknowledge the importance of other actors in this regard. In addition to commercial firms, consumers can also play an important role in market shaping actions, as changes to their preferences, demands and behaviors can drive change in certain market dynamics. Furthermore, governments are also influential market shapers in their own right, given their capacity to establish rules, devise incentives, regulate behaviors, make investments in innovation and infrastructure, and thereby exert considerable influence over the structure of markets. (Storbacka et al., 2022)

The process of shaping is defined in literature as consisting of three distinct phases, namely "origination", "mobilization" and "stabilization" (Storbacka et al., 2022). Each phase is representative of central stages regarding how market actors – being commercial firms, consumers or governments – exert influence and implement strategies to reshape the market over time.

The initial phase, designated as the origination phase, pertains to the realization of a novel market opportunity, concept or innovation that has the potential to provoke change within an existing market or to generate a new market. At this stage, the shaping actor, primarily companies, develop a vision and value proposition in order to meet unmet needs or disrupt existing market conditions (Storbacka et al., 2022). The following example is provided to illustrate this point: the possibility for the future existence of autonomous vehicle markets, which, as Purchase et al. (2024) note, will undoubtedly disrupt the existing automobile and transportation markets. The creation of these markets stems from the identification of the potential for a new market, one where vehicles operate without human intervention. The origination phase here pertains to the emergence of the technology itself and the awareness of its potential to address several needs, including improved road safety, reduced traffic congestion, and an overall transformation to mobility.

Subsequent to the origination phase, the mobilization phase is characterized by the active mobilization of resources by market-shaping actors, the alignment of stakeholders, and the initiation of the implementation of their vision. It is at this stage that the necessary

momentum to bring the market-shaping strategies to life is attained. This phase entails the coordination and mobilization of resources, encompassing financial investments, human capital, and technological capabilities (Storbacka et al., 2022). In the context of the aforementioned example, it is at this stage that concrete steps are taken in the promotion of the development of AVs (autonomous vehicles). At this time, it is essential to establish alliances and partnerships, secure investments in infrastructure and government involvement, and achieve public engagement (Purchase et al., 2024).

The final phase, designated as the stabilization phase, is the stage at which the newly shaped market matures and becomes established (Storbacka et al., 2022). Throughout this phase, the market reaches a state where its new processes, structures and practices become consolidated and normalized, through routinization, institutionalization and materialization activities (Pedersen and Ritter, 2022). In the context of the AV market, this phase is expected to culminate in the establishment of a sustainable and functional ecosystem. By this time, such ecosystem will have clearly defined roles and standards, and regulations will be solidified. Consequently, the market will attain a degree of maturity in which AVs will be widely accepted and used (Purchase et al., 2024).

In summary, the three shaping phases explored in market-shaping literature demonstrate how actors implementing such strategies are able to identify opportunities, gather support, and consequently establish a new market or change the dynamics of an existing one. Drawing upon the aforementioned example, the autonomous vehicle market is currently at the mobilization stage of the mentioned shaping efforts. This is evidenced by the fact that the market is not yet at full-scale deployment, but stakeholders are coming together, investments are flowing, and regulatory frameworks are evolving in that direction.

Because they enable companies to improve their competitiveness and overall performance, to manage change and to channel their objectives, market shaping strategies should not be neglected by managers. They need to see the market as a complex, dynamic structure rather than a static arena that only provides value when competitors are outcompeted. Since the market is a product of its actors and their interactions, changes in the market's actors and their interactions will, of course, constitute changes in the market, and vice versa, since "the market influences the firm as much as the firm influences the market" (Flaig et al., 2021).

To conclude, the current body of literature on market shaping highlights the dynamic and volatile nature of market structures, thereby emphasizing the significant impact that market actors and their behaviors have on shaping market dynamics. Market shaping encompasses a series of activities and outcomes, ranging from the shaping of consumer preferences to the redefining of industry standards and the generation of new demand. Consequently, market shaping strategies foster both competitive and cooperative dynamics, thus rendering them crucial tools for businesses seeking to navigate increasingly volatile and interconnected global markets.

2.3. Public Policy as a Market Orchestrator

In the context of the market orchestration framework, public policy is regarded as a proactive and strategic agent that plays a pivotal role in the formation, coordination, and maintenance of emergent market configurations. The role of policy actors in orchestrating the emergence of a functioning market is of crucial importance, as is their capacity to coordinate interests across the networks of public and private stakeholders. This section provides a brief overview of the relevant literature on the role of policy in the orchestration of markets.

Literature on the role of policy in market orchestration increasingly recognizes public policies as active mechanisms for shaping markets, fostering innovation, and reconfiguring the ecosystems in which firms operate. So, rather than merely serving as instruments for resource allocation – such as funding R&D – public policy is seen as a knowledge diffuser and a connection establisher within the market network. As Mazzucato (2016) argues, “the market is embedded in and shaped by the state”, thus highlighting the relevance of the state’s role in shaping markets.

Naturally, the role of the State as a market orchestrator is more relevant in sectors with strong public involvement, such as health, infrastructure and social welfare, by coordinating networks to align diverse actors towards common goals and foster market change.

Recent literature emphasizes the critical role of public policy in driving sustainability transitions. It highlights that markets alone often lack the necessary direction, incentives and coordination to achieve transformative change. In response to complex environmental and

social challenges, strategic policymaking enables governments to establish long-term goals that align public and private investments, thereby fostering innovation. For instance, Van Dokkum et al. (2023) argue in their article 'Understanding the role of government in sustainability transitions: A conceptual lens to analyze the Dutch gas quake case', demonstrate how governments can 'politicize the side effects of gas extraction... challenging their legitimacy and thus destabilizing the regime', highlighting that, in addition to shaping market dynamics, governments actively transform institutional ecosystems. Through the effective mobilization of regulatory, fiscal and institutional instruments, the State assumes a pivotal role as an architect of sustainable futures.

To conclude, public policy plays the main role in market orchestration. By acting as more than a regulator or funder, public policy serves to actively coordinate actors, knowledge and resources within a network (Nasiritousi et al., 2022). However, this demands sophisticated governance capabilities, collaboration across several sectors and an inclusive policymaking. By facilitating conditions for innovation, the State is increasingly seen as an orchestrator of change.

3.MEHODOLOGY

This study aims to analyze the transition to electric public mobility, specifically electric buses, through the lens of business relationships and networks. Besides, it also investigates the market-shaping roles played by corporate strategies and public authorities within this context.

To achieve this goal, a deductive research approach was employed (Hyde, 2000). This allowed for a combination of exiting theoretical frameworks and literature to guide the research design and confront it with empirical findings (Saunders et al., 2019).

A single case study methodology was chosen, as it enables a detailed exploration of a complex, real-world context (Yin, 2022). This study focuses on the company Rodoviária, specifically its unit Alpha, due to its crucial role in the public transport ecosystem of its operating territory and its relationship with the municipality A. Given that Rodoviária is in the early stages of transitioning to electric mobility, with some of its units incorporating electric

buses and others not, it is well placed to demonstrate the complexity of this transition, considering the market-shaping potential of its strategies and those of public authorities.

The data collected for this study was gathered through interviews with two Rodoviária employees, representing a form of primary data (Saunders et al., 2019). The two interview guides were developed using secondary data (Saunders et al., 2019), which was obtained by researching articles related to the company, particularly concerning the transition to electric mobility, as well as the literature analyzed in the literature review chapter of this paper. Combining these forms of secondary data enabled the interview guides to be developed in a structured way, ensuring the interviews covered the desired topics and facilitating a smooth conversation that encouraged the interviewees to share more information regarding their experience.

The research follows a qualitative methodology, as non-numerical data is used to understand aspects of behavior, strategy and relationship dynamics within the transaction (Saunders et. al., 2019). This method is suited for exploring actors' perspectives, market's responses and complex organizational processes.

As mentioned, gathering the data involved interviewing two Rodoviária Group employees. The first interview, with one of the group's administrators, was conducted via Microsoft Teams and lasted approximately 30 minutes. This conversation provided an overview of the company's overall strategic direction and perceptions of market dynamics. The second interview, which lasted about 40 minutes, was conducted in person with the Operations Manager of Alpha. This interview offered a micro-level perspective, including detailed accounts of operational challenges and practical experiences related to the transition.

Both interviewees were given access to the interview questions in advance so that they could familiarize themselves with the content of the interviews. The interviewees requested anonymization for themselves and the company, so throughout this paper, all information regarding the parties involved (company, names, location, etc.) is addressed using fictional names/descriptions.

4. CASE STUDY AND DISCUSSION

In the quiet early hours of each weekday, the train station of City A becomes the heart of movement. Commuters from the suburbs of the city stream in, hoping to catch the early morning trains that will carry them to work, school and beyond.

But as the city's reliance on rail grows, a problem has become increasingly hard to ignore, there is not enough space for commuters to park their cars. The limited parking lot fills up within minutes of dawn, forcing drivers to circle the area several times, park their cars in inappropriate places, or worse, abandon their plans altogether. It's a scene that repeats itself day after day – clogged streets, stressed commuters and a public transportation system struggling with an issue that reveals itself before anyone even boards the train.

With the aim of battling this issue, the municipality proposed a rather simple solution: a new parking lot, farther from the station, where commuters could safely leave their cars. This way, commuters would start their days more peacefully and the municipality would utilize a space that doesn't serve much purpose throughout the year.

The idea seemed to be rather simple. Once the municipality approved the creation of a new parking lot to ease congestion near the train station, it became clear that a shuttle would be needed to connect it to the station. The route was short – around 4 kilometers- but it was essential as the parking situation in the station parking lot kept getting worse. And, in line with broader goals of environmental sustainability and modern urban mobility, the municipality idealized this new shuttle to be a sustainable, free electric bus.

The city saw in this solution a way to eliminate the bottleneck ruining commuters' mornings and an opportunity to signal a commitment to cleaner and more modern public transport. The electric bus would thus reduce noise and emissions in a central area of City A and make this service more attractive for commuters. This was a pilot, but also a prototype for what the future of mobility in the city could look like.

The vision was clear: a simple route, a short distance, one electric bus. What followed was a journey that unveiled the complexity of such a "simple solution" when the systems, relationships and infrastructure needed to bring it to life aren't yet aligned.

The project moved beyond a simple municipal initiative and began to activate a network of actors. Alpha, the private company holding the concession for the public road transportation services in municipality A, was brought in to assess the operational viability of running this route, and the possibility of this shuttle being an electric bus. With the green light of Alpha to include this new route in their operation, making the electric bus a reality, brought in a necessity to involve more players.

As Alpha does not have an electric bus in its fleet, several actors needed to be involved, namely electric bus suppliers, infrastructure providers for charging solutions, regulatory bodies, among others. From a business network perspective, this moment represents the beginning of a web of actor bonds, where relationships are established through shared or conflicting goals, past experiences and mutual dependencies. Each organization is a part of the solution, however, aligning all these actors is far from easy when each one is operating on different timeframes, with different priorities and internal constraints.

To assess the feasibility of implementing an electric shuttle service, Alpha contacted Karsan, a Turkish electric bus manufacturer. The proposal centered on renting an electric bus rather than purchasing one, given the uncertainty surrounding the service's duration, which posed a significant financial risk for the operator. Since the municipality did not know how long the shuttle would operate, committing to a full-scale investment in an electric bus was too risky. Renting offered a flexible, less capital-intensive alternative. However, this approach came at a cost: the overall price of operating the electric shuttle was considerably higher than that of a traditional diesel bus. Nevertheless, the issue at hand extended beyond financial constraints, highlighting the complexities involved in transitioning to electric mobility.

This early phase of the project highlights an important aspect of business network theory: no company acts alone. Even when a firm like Alpha is ready to participate in innovation, its ability to act is deeply influenced by its position in a larger network of relationships (Häkansson and Snehota (1995,p.33)). Introducing an electric shuttle in City A didn't just require a bus, it demanded the activation of a coordinated network, in which each actor had to play its part.

Rather than merely responding to the available options of diesel buses, limited infrastructure and conventional procurement timelines, the municipality tried to push the local

transport ecosystem beyond its current state. As a public actor, the municipality aimed to reconfigure existing systems, wanting to create new expectations for commuters, stimulate innovation, and foster shared goals.

However, the market surrounding electric mobility, especially in smaller urban contexts such as City A, is still slow-moving and highly dependent on interlinked decisions. While in bigger cities, electric buses are starting to be observed in several routes, in City A, Alpha does not have any electric bus in its fleet. There are several impeding factors slowing down this transition, and operators like Alpha, although very willing to engage in this change towards more sustainable mobility, cannot act alone.

Thus, there is a gap between the municipality's vision and market readiness. Municipality A attempted to introduce a new market dynamic to the city by providing an electric bus to transport commuters from the car park to the train station free of charge. However, the existing market in smaller cities is still structured around diesel supply chains, so the regional operator, Alpha, was not ready to operate this route under the conditions envisaged by the municipality.

Alpha was expected to respond to the municipality's demand, as this would also align with the company's goal of including electric vehicles in its fleet and broader policy trends. Nevertheless, the operational and financial constraints impeding the realization of the municipality's vision were significant, particularly the uncertainty surrounding infrastructure and vehicle funding, the lack of accessible electric buses and the unclear timeline for the company's ability and readiness to transition in this direction.

This challenge was captured clearly by an administrator at Alpha during the interview: *“Investment in charging infrastructure is being covered by European co-financing programs for the acquisition of clean vehicles. The opening of these types of calls creates windows of opportunity for companies to invest not only in “rolling” stock, but also in charging systems. In this sense, the timing of operators’ investment cycles is mainly shaped by the availability of external funding opportunities.”*

This insight highlights the central tension between political ambition and operational reality. Operators such as Alpha depend heavily on external enablers to drive progress; the

success of such transitions is closely linked to the timing and availability of co-financing opportunities, which dictate the timing and scope of investments. Clearly, policy intent and market readiness do not always evolve in sync. For market transformation to take place, a coordinated set of actions must be undertaken within the network, meaning that suppliers, infrastructure, and financing opportunities must be aligned within procurement cycles.

This challenge is common in the early stages of transitions when actors are willing, but the system is not yet ready. Alpha was receptive to change but was unable to act accordingly due to the bureaucratic pace of vehicle procurement, infrastructure deployment and funding allocation. Market-shaping efforts such as this one will be strong in intention but limited in effect as long as the multiple stakeholders within the network are not operating within the same time framework.

When asked about his views on the pros and cons of electric mobility, the interviewed administrator from Alpha stated that: *“The most relevant positive aspects are the attractiveness of electric vehicles and their significant contribution to reducing companies’ carbon footprint. The negative aspects that stand out are the high financial cost to companies of acquiring this type of vehicle, the uncertainty surrounding its actual life-cycle cost, and the fact that investing in a fleet of this nature requires further investment in supporting infrastructure”*. While such a statement recognizes the symbolic and environmental value of electric vehicles, it also highlights ongoing concerns relating to significant financial and infrastructural demands.

It is unrealistic to expect the operator to make a disproportionate investment in a project of this scale, which would not only involve acquiring a bus costing more than a diesel equivalent, but also investing in charging infrastructure and technical adaptation. Such an investment would carry high risk and an uncertain return.

The municipality's desire for an electric shuttle was more of a visionary statement than a strategically orchestrated and realistic plan. This is because the wider network — the financing bodies, infrastructure providers, and the operator itself — were not sufficiently aligned for the project to move forward. This case demonstrates that market-shaping efforts will hardly be transformative if they are not backed by a coordinated network.

The discrepancy between the municipality's vision and the transportation company's capacity highlights the need for clear role definitions, resource allocation and timelines. Neither of the two main parties involved in this case had the authority to coordinate the stakeholders. Therefore, there is a need for a network orchestrator: an entity that can coordinate interdependencies, align timelines, and facilitate communication between public and private stakeholders.

According to the administrator interviewed from Alpha, this network orchestration should be conducted by the State: *“The commitment to electric vehicles is based on the principle of sustainability. This concept is often viewed too simplistically. An equation made up of three variables should be considered: environmental, social, and economic. Each stakeholder is expected to focus on the variable that is closest to their interests. For this reason, it is essential that there is an organization responsible for balancing the equation. In my opinion, that entity should be the State.”*.

As the administrator of Alpha highlighted, the timing of co-financing opportunities is a decisive factor. Operators must align their procurement and infrastructure investments with short funding windows that often open unpredictably, or with requirements that are difficult to meet in the short term. This creates a situation in which, although they are willing, stakeholders are unable to drive change in their operational environment. The mismatch between market ambitions and institutional procedures demonstrates the need for funding opportunities that are more predictable, transparent, and continuous.

The difficulties encountered in the case study reveal the underdeveloped nature of relationships and resource ties between relevant stakeholders. Although cooperation is present, the network still lacks resilience and confidence to adapt quickly.

This suggests that stakeholders must be prepared before a formal project is initiated. Examples of such preparation could include joint planning exercises, knowledge sharing, training sessions to prepare teams for change, and collaborative roadmaps to highlight interdependencies in this context. This case is revealing, as even though it involves a small route operated by a single electric bus, substantial implementation challenges were observed. Therefore, this small-scale pilot project illustrates deep systemic barriers and must be treated as an organizational learning experiment for both the municipality and the operator.

Naturally, mobilizing the substantial resources required to promote the transition to electric road public transport for a single bus would be disproportionate. However, if the involved parties understand these initial efforts as a network development exercise rather than an isolated procurement event, they can gain relevant insights from this experience that will facilitate a much smoother larger-scale transition in the future. Although all major stakeholders – the municipality, Alpha and the public – were willing to innovate and decarbonize, such willingness encountered barriers. However, these barriers appeared not due to a lack of conviction, but rather a lack of synchronization between political ambitions, institutional procedures and operational realities.

This study challenges the assumption that technological change is merely a matter of upgrading equipment. The difficulties encountered with funding cycles, overall actor coordination and operational risk highlight that the transition to electric mobility is as much of a relational and institutional transformation as it is a technical one.

These complexities must be addressed and understood if markets and the futures they promise are to be shaped.

4.1. The Role of Business Relationships and Networks in the Transition to Electric Buses

As previously mentioned, the transition to electric public transport is more than just a technological upgrade. It involves a complex reconfiguration of business relationships and network dynamics. This section examines how Alpha's early experience mirrors wider trends in organizational interaction, supplier realignment, and the dynamic shift in inter and intra-firm collaboration.

4.1.1. The Role of Internal Networks

Rodoviária is organized into four operational units: Alpha (currently under review), Gamma, Beta and Omega. The parent company, Rodoviária, manages tourism, express and international services. This study focuses on the transition to electric buses, which are currently mostly allocated to urban services. This division within the company could therefore be particularly advantageous for Alpha, as observing the other operational units undergoing this transition and ensuring collaboration between them could provide valuable insights into the

process. Learning from these experiences is important for Alpha to adapt and align itself with the company's broader sustainability and innovation goals (Häkansson and Snehota, 1995).

Cooperation is a key component of Rodoviária's internal dynamics and is embedded in its operational units. While each unit operates with a certain degree of autonomy, a culture of collaboration has been actively cultivated, and the transition to electric mobility is no exception. As the adoption of electric buses progresses unevenly across the group, more experienced units assume a supportive role, aiming to assist others in the early stages of implementation.

Cooperation within Rodoviária is characterized by an informal yet effective approach to sharing operational knowledge and technical expertise. This type of support helps Alpha reduce uncertainty and the need for trial and error, contributing to a more cohesive progress across the company. The Operations Manager at Alpha provided a specific example of this collaboration, stating that *"We all try to cultivate collaboration between operational units within the company. During this transition to electric mobility, it is essential that we work together to facilitate the process. For instance, when we received an electric bus from Omega for a specific service, they provided us with a great deal of helpful information and prepared our team to work with the vehicle"*.

This statement shows that this collaboration involves more than just knowledge sharing; it also involves operational support. In some cases, more advanced units have lent electric buses to Alpha on a temporary basis for short-term events or municipal demonstrations. These temporary allocations meet immediate service needs whilst enabling the unit to obtain hands-on experience with electric buses without incurring the cost of a full-scale deployment.

In conclusion, these dynamics demonstrate the value of intra-organizational relationships based on trust, straightforward communication and shared strategic objectives. Such relationships can be crucial enablers of innovation and transformation processes. Rodoviária's organizational structure demonstrates how internal business networks, even within a single company, can mirror the broader organizational network's ability to disseminate knowledge and promote overall preparedness for technological and regulatory transformations (Häkansson and Snehota, 1995).

4.1.2. The Emergence of New Market Players

The findings of this study illustrate how the dynamics of business relationships and networks are being reframed by the intersection of environmental funding mechanisms and the rise of cost-competitive, non-traditional manufacturers in the electric vehicle (EV) market. The emergence of Asian manufacturers, notably Chinese ones, has caused a disruption to long-standing supplier relationships in the European bus industry. This shift has had an impact on both procurement practices and the perception of value within operator networks.

From the perspective of business relationships and network theory, supplier relationships are regarded as more than merely transactional exchanges; they are embedded in long-term relational infrastructures characterized by trust, collaboration, interdependence, and ongoing communication (Zaefarian et al., 2017). Traditional European bus manufacturers, such as MAN and Mercedes-Benz, have established enduring ties with operators like Alpha, not just by supplying vehicles, but by offering very complete service packages. These include high-quality after-sales support, on-site technician training, and reliable access to spare parts. Such relationships are marked by close and continuous interaction, with mutual investments and well-established routines.

However, in recent years, Asian manufacturers, particularly those from China, have attracted considerable attention in the global electric vehicle market. This rise is not limited to passenger cars; it is also being observed in the transportation sector. In the face of mounting pressure to reduce carbon emissions and meet climate targets, Chinese manufacturers are increasingly becoming leading suppliers due to their competitive pricing structures. This pricing advantage can be substantial, with the cost difference between a Chinese and European electric bus reaching 100,000€ or more, making it 30 to 50% cheaper. Consequently, it is not surprising that buses from Chinese manufacturers such as Yutong, Zhongtong and BYD are often seen in major European cities.

Nevertheless, this rapid expansion is not solely attributable to affordability, as Chinese manufacturers have made substantial advancements in technology, thereby enabling the provision of electric buses with a competitive battery range and energy efficiency, thus proving to be highly reliable options. Furthermore, numerous Chinese suppliers are currently offering extended warranties, local training for maintenance crews, and are seeking to establish

partnerships with European firms to enhance regional presence and support. This strategy serves to reduce the gap that arose when comparing the post-sale service of a Chinese manufacturer to that of a European one.

The transition to electrical mobility, particularly when co-financed by environmental funding mechanisms, has increased competitiveness in public tenders, opening windows for international players. As the Administrator of Alpha explained: *“The acquisition of vehicles through environmental funding requires the purchase process to be carried out, directly or indirectly, through international public tendering. In this context, there is no competitive advantage for European manufacturers over Asian ones”*.

The long-standing ties between European manufacturers and local operators are being threatened by this new procurement landscape. The basis of their competitive advantage, which served to mitigate their significantly higher prices by offering exceptional post-sales service and close interaction, is now being challenged as Chinese manufacturers are rapidly narrowing this gap (Cristofaro et al., 2024). As the Administrator of Alpha further elaborated: *“The concept of after-sales service is deeply embedded in the European market’s perception of value, unlike in the Chinese market. Chinese manufacturers have been working to close this gap by offering extended warranties on critical components, like traction batteries, and providing specialized training to the operators’ maintenance teams – thereby sharing the after-sales commitment directly with the client”*.

From a theoretical lens, this reflects a transition in value perception: while the traditional network theories explored earlier in this paper emphasize trust, resource sharing and shared activity planning (Zaefarian et al., 2017), the procurement model exposed by the contours of environmental funding programs narrow decision-making to price and specification, at least in earlier stages of the relationship. This shift has the possibility of resulting in transactional, rather than relational, business relationships, particularly in cases such as this one, where new entrants lacking historical connections offer significantly higher cost-efficiency.

Yet, it has been observed that such a transactional nature is likely to be present only at the initial stage of a relationship. This is demonstrated by the fact that Asian manufacturers are focused on reshaping their role within business networks. It is evident that Asian manufacturers

are not merely seeking cost competitiveness; they are also striving to establish a more substantial presence within the value chain by developing capabilities that were previously dominated by European suppliers. In light of IMP terms, this can be interpreted as an attempt from these manufacturers to establish actor bonds and resource ties with operators (Anderson et al., 1994; Gadde & Snehota, 2000; Håkansson & Snehota, 1995). Despite the absence of a long-standing relationship history, such ties must originate at some point.

This case thus illustrates a novel tension between networked value and cost-based disruption, as the aforementioned push for sustainability, via public co-financing, is undermining the relational stability that was once characteristic of bus fleet procurement networks. This serves to demonstrate, once again, that the market for electric buses is not merely technical; it is also being reconfigured by new market entrants, funding solutions and an overall shift in business relationships (Håkansson and Ford, 2002).

4.1.3. Demonstration Vehicles and Pre-Sale Collaboration: A Relationship-Building Tool

In the context of the electrification of public road transport, traditional relationships between vehicle suppliers and operators have transformed. To preserve these relationships, European bus manufacturers have strategically offered electric buses on a temporary basis, allowing operators to test them in their day-to-day operational conditions. These temporary allocations serve multiple purposes, including building trust in a low-risk way, collecting technical and performance data, and introducing teams to electric buses.

Rodoviária, specifically Alpha, has benefited from this practice through its collaborations with the European bus manufacturers Karsan and MAN.

Firstly, during City A's Fair in 2024, the most important event of the year for the city and also very important at a national level, Karsan lent Alpha an electric bus. This marked Alpha's first direct experience operating an electric vehicle, offering valuable insights and learning opportunities. The company gained key insights into charging methods, time management and operational planning. It was also an excellent opportunity for drivers to familiarize themselves with the handling and dynamics of an electric bus. Following the successful use of the electric bus at the event, Karsan extended the trial period in an attempt to secure a sale. This strategy yielded positive results for Karsan, as the bus was eventually acquired by Rodoviária to be integrated into the Beta fleet.

Later that year, Alpha entered into a more structured and impactful collaboration with MAN, which lent them a high-end electric bus for three months. Alpha strategically allocated this bus to a key urban route crossing the entirety of City A. Using this vehicle in a high-visibility, high-use service was a strategic move aimed at improving public perception of the company's modernization efforts. The MAN bus distinguished itself from previous experiences within the Rodoviária group thanks to its superior autonomy, enhanced comfort and high-quality interior finishes.

The collaboration extended beyond the bus itself, with MAN also providing an advanced monitoring system that enabled real-time tracking of the bus's performance. This allowed Alpha to gather important data on energy consumption, maintenance requirements, and the bus's overall behavior during the three-month trial period.

The depth of support offered by MAN was what set this relationship apart from all others in the context of this transition (Håkansson and Ford, 2002). The operations manager of Alpha explained during the interview that *"MAN offers an exceptional sales and after-sales service, with teams highly specialized in these vehicles. They provided in-person training sessions for our maintenance teams, drivers and operational staff, delivered by expert technicians in these fields"*.

The quality of the relationship was further underlined by the attention to detail in the onboarding process: *"Our driver was accompanied by a MAN technician for two days to get fully acquainted with the functioning of the vehicle"*. This distinguished level of technical support continued during the trial: *"The bus had a minor issue- something relatively simple – we contacted MAN and a maintenance technician was sent immediately to fix the problem"*, the manager added. Such responsiveness and technical readiness constitute key differentiators in supplier evaluation.

However, despite these successful collaborations, the central dilemma previously explained remains: the cost-quality tradeoff between Asian and European manufacturers. In this sense, the demonstration of vehicles constitutes more than merely a marketing strategy, it becomes a relational one. By implementing strategies like this one, which enable tangible and operation experiences, suppliers are motivating trust, cultivating partnerships and shaping preferences in a market that is currently in a technological flux.

4.2. Market Shaping Strategies for Public Services

As public service operators adapt to growing environmental pressures and new regulatory frameworks, their role in shaping emerging sustainable mobility markets is becoming increasingly important. Alpha, one of Rodoviária's operational units, is demonstrating a strong commitment to embracing the transition to electric mobility through the development of strategic actions that will influence the way this change unfolds within its local context (Flaig et al., 2021).

4.2.1 Alpha's Strategy

Rodoviária acknowledges its proactive role in shaping the public transport market in the face of increasing environmental concerns and regulatory pressure to decarbonize cities (Pedersen and Ritter, 2022).

During the interview, the administrator emphasized that the group's main approach to promoting this transition has been to actively pursue financing opportunities, even in the absence of binding obligations from municipalities or other public authorities, by stating that *"the company's strategy has been proactive, as we seek access to all available co-financing frameworks, even when there is no contractual commitment from contracting authorities, in order to increase the number of electric vehicles in our fleet"*.

This demonstrates that, although it does not yet have any electric vehicles in its fleet, Alpha is not simply waiting for mandates or subsidies to be imposed. Instead, it is anticipating future requirements and building the internal capacity to respond effectively when the time comes.

As previously mentioned, Alpha is learning valuable lessons from its sister units. Beta is currently serving as a critical reference point in shaping Alpha's strategy. Pressured by municipality B to include 15 more electric buses, adding to the 7 it already had, in its fleet by September 2025, Beta was obliged to invest rapidly in new infrastructure capable of supporting the electric buses' charging needs.

This case has naturally been closely observed by Alpha, which has chosen to preventively invest in infrastructure and avoid dealing with such last-minute pressures. This kind of knowledge transfer within the organization demonstrates the strategic value of

operating within a larger organizational network. Rodoviária's organization enables cross-unit learning and risk mitigation, which is equipping Alpha with greater levels of preparedness and efficiency (Storbacka et al., 2022).

Similarly to its sister unit, Alpha's current bus terminal only has the electrical capacity to charge one large electric bus at a time. This limitation was identified when the operator was testing electric buses. This constraint is not compatible with the large-scale adoption of electric buses, as the operations manager noted: *"The main challenges in identifying suitable locations and installing charging stations are essentially related to the capacity of the existing electric infrastructure. In our terminal, the electric board reaches its maximum capacity when charging one large bus. Overcoming this limitation will require significant investment in new infrastructure and the installation of a dedicated transformer station (PT), for which there are no compatible financing programs available."*

The company is currently strategizing a response to concerns regarding electrical capacity and space. Alpha aims to optimize the current space and negotiate the acquisition of adjacent spaces. The company is also considering investing in infrastructure farther away from the terminal, if this would better enable it to maintain an electric fleet.

However, making such investments in infrastructure without a confirmed electric fleet or an operational mandate from the local authorities could pose a financial risk to Alpha. Nevertheless, the operator views this as a strategic, preventive investment that will reinforce its role as a proactive market shaper, positioning it to meet future demands before they become urgent (Stathakopoulos et al., 2022).

Naturally, the data gathered so far regarding the inclusion of electric buses in its fleet justifies this investment. As the administrator highlighted, even though this is a major investment, their experience with electric vehicles compared to equivalent diesel models shows that *"EVs present lower operational costs and higher availability due to their increased reliability and ease of maintenance. This offers clear added value from the perspective of the company's support activities"*.

By undertaking this strategy, Alpha is setting the stage not only for a smoother and more cost-effective transition, but also for securing the concession to operate public road

transport in the municipality when the time comes to electrify the urban routes of City A (Flaig et al., 2021).

4.2.2. The Future

Technological advancements, economic feasibility and infrastructure development are shaping the future of sustainable mobility. Consequently, it is subject to constant change. Until recently, a variety of alternatives to diesel vehicles were considered, such as hydrogen, biofuels, natural gas, methanol and electric models. However, it now seems that electric buses are the most viable and scalable solution, at least in the current context.

According to recent studies and the experience of transport operators like Rodoviária, diesel buses remain the most practical and scalable solution, thus leaving the transportation sector heavily dependent on this sort of fuel. Still, it is not environmentally sustainable, forcing the transportation sector to depend less on it and transition to alternatives.

Currently, the field of viable options is narrowed into two main ones, the battery-electric and the hydrogen fuel cell buses.

Although hydrogen technology shows great promise, its adoption is limited due to the high operational costs associated with transporting and storing it. Refueling infrastructure is limited, and the lack of proximity between production sites and consumption points increases costs and jeopardizes logistical efficiency (Siddiqui et al., 2024).

In contrast, electric buses involve substantial initial costs with infrastructure and electricity but are well-suited for the current reality of urban bus operations. Their relatively low operational costs, improved vehicle availability and enhanced reliability are making battery-electric vehicles the leading technology for fleet decarbonization (Siddiqui et al., 2024).

Even though Rodoviária is aligned with this trend towards electrification, there is a clear understanding that electrification cannot sustain the full energy transition. The company's administrator emphasized this point, stating: *"The mass adoption of electric mobility will eventually encounter limitations in charging infrastructure capacity. The expansion of hydrogen production and its distribution closer to consumption points could reduce its costs, making it a viable economic alternative. It is crucial that the energy transition evolves through a mix of solutions beyond just EVs."*

Recognizing this plurality of solutions reveals a strategic vision that goes beyond merely following trends. This strategy represents a forward-looking approach that encompasses both the risks of over-centralization and the importance of diversifying energy supply and vehicle technologies, thus displaying that firms can influence markets as much as the markets influence firms (Flaig et al., 2021). As the administrator further noted: *“The future of mobility cannot be approached in a binary way. The future must involve a mix of technologies and primary energy sources to prevent supply chain disruptions and market imbalances.”*

Accordingly, even as it moves forward with the partial electrification of its fleet, Rodoviária remains open to alternative sustainable solutions. The company’s strategy fosters a balance between short-term practicality and long-term flexibility, with the aim of promoting decarbonization across the territories in which it operates.

This vision positions Rodoviária as an active shaper of a more resilient and sustainable public transport ecosystem that does not depend on a single solution, but rather an adequate combination of complementary alternatives.

4.3. Public Policy as a Market Orchestrator

4.3.1. Aligning Local Ambition with Operational Reality

Throughout the discussion of this case study, it has become clear that public authorities, particularly municipalities, play a crucial role in the transition to sustainable public transport systems. This realization aligns with literature suggesting that governments act as more than passive regulators or funders; instead, they take on a strategic role in shaping the direction, pace, and conditions of decarbonization efforts.

The relationship between Alpha and municipality A reveals opportunities and tensions in aligning local political ambition with the operator's operational and financial resources (Munksgaard et al., 2017). In this sense, Alpha maintains an open dialogue with the municipality, as demonstrated in the presented case. The municipality clearly desires an electric bus to circulate in the city but also acknowledges the financial effort that such an investment could impose on the operator. This mutual understanding has led to a more gradual, negotiated

approach: the municipality has temporarily set aside its demands for electrification until Alpha receives funding.

This flexibility and cooperation between the two stakeholders pave the way for a smoother transition than occurred with Alpha's sister unit, Beta. Municipality B required this operational unit to expand its electric fleet significantly within a tight timeframe, increasing the number of electric buses from 7 to 22, threatening that if such goal could not be met, Beta could risk losing the concession in the municipality.

Although it is possible to secure funding through co-financing programs, the available subsidies often fall short of covering the necessary investments. Usually, these co-financing mechanisms often fail to account for the full costs of vehicle electrification, especially when it concerns the infrastructural upgrades required to support such transitions.

Evidence also suggests that municipalities are increasingly adopting more interventionist strategies, such as direct investments in electric vehicles and infrastructure. There are cases in which operators lack the financial resources needed to meet electrification goals, some municipalities have taken on the role of infrastructure providers, leaving only operational responsibilities to the private operator. As noted during the interviews with Rodoviária, this shift towards shared investment models can make transitioning to electric mobility more financially viable for operators, while ensuring that municipalities meet their sustainability targets.

This raises important questions about the distribution of responsibilities and risks between public and private actors within the context of sustainability transitions. While municipalities are acting with increasing urgency, often in response to national climate targets or public pressure, operators are dealing with operational realities characterized by limited infrastructure capacity and regulatory uncertainty. Alpha's operations manager emphasized this misalignment, pointing out that *"municipalities often underestimate the technical and financial complexity on our side."*

Besides logistical and institutional constraints, the structure of public financing mechanisms remains a rather significant hurdle. To access co-funding programs, operators must present their fleet size, annual kilometers, and the classification of their buses in terms of

carbon emissions. Thus, smaller operators like Alpha tend to be at a disadvantage in terms of this criteria. Still, making this transition is almost impossible without any help from co-financing programs, as *“electric buses come with significantly higher upfront costs, which can double that of diesel alternatives. Although long-term savings in fuel and maintenance are expected, the overall cost of ownership remains uncertain, especially when considering battery lifespan, electricity prices and residual value”*, according to Alpha’s OM. All this uncertainty makes electrification a high-risk venture without any support from public funding streams.

Moreover, the structure of public procurement processes can also impose obstacles in the financing context. Rodoviária’s administrator explained that since municipalities were designated as local transport authorities in 2015, many delegated this role to intermunicipal communities. Such entities are responsible for launching competitive tenders for service concessions, yet often lacking the technical expertise to design contracts that reflect the true costs of electrification, as stated by the administrator: *“The first generation of tenders exposed serious shortcomings – most notably, a lack of understanding of the operational risks faced by bidders. This made it very difficult for operators to commit to electric investments without compromising project viability”*.

Looking ahead, it is expected that lessons learnt from these early experiences will be taken into account in this new generation of tenders, resulting in more realistic financial requirements and enabling operators to invest in electric fleets without endangering the project's success.

4.3.2. The State as a Network Coordinator

The State and its agencies play a crucial role in multi-level transition processes, acting as coordinators and orchestrators (Mazzucato, 2016). One of the most persistent challenges identified in this case study is the lack of alignment between municipal sustainability ambitions and the technical and economic realities faced by operators. The ambitious goals for the adoption of electric buses and low-emission fleets usually outpace the actual capacity of transport providers, especially that of smaller or regional operators, to meet such expectations. As noted in interviews, operators are often left navigating a regulatory environment characterized by high financial risk, limited infrastructure and insufficient support mechanisms.

This lack of synchronization leads to fragmented and unsustainable initiatives that are difficult to scale or replicate. Thus, there is the need to have a network coordinator, able to align the strategic objectives of the various stakeholders involved into coherent, feasible and scalable transition projects. Such a coordinator should be the State, as playing this role involves building enduring institutional frameworks for collaboration (Nasiritousi et al., 2022).

Furthermore, the State can act as an intermediary that facilitates the exchange, translation and coordination of information between the different stakeholders involved in such complex processes, which are marked by rapidly evolving technological and regulatory landscapes. Many municipal authorities do not possess the expertise and market knowledge to make informed decisions about electrifying public transportation, often underestimating the heavy demands of making such a transition. So, the State can play an important role in bridging this knowledge gap, for example.

In conclusion, public policy should be viewed not only as a regulatory instrument, but also as a relational tool that can foster trust, dialogue and mutual understanding between the stakeholders involved. As the Rodoviária case illustrates, decarbonizing public transport involves much more than simply replacing vehicles; it is instead a deep institutional process. By playing the role of orchestrator, mediator, facilitator and strategic coordinator, the State can accelerate the transition to electric public transport, making it more economically viable and inclusive for operators.

5.CONCLUSIONS AND LIMITATIONS

This study explored how the transition to electric public transport, particularly the adoption of electric buses, influences and is influenced by business relationships and networks. Additionally, it also examined the role of company strategies and public authorities in shaping the current state of the public transport market.

To contextualize the relevance of this topic, the case of Rodoviária and municipality A was chosen. The case study revealed the complexities involved in what initially seemed to be a simple idea: operating an electric bus in City A to transport commuters from one part of the

city to another, allowing them to safely park their cars and avoid the overcrowded train station car park.

This desire of the municipality was significant, as having a modern, sustainable electric bus providing this shuttle service would attract more users and reduce emissions in the city center. This was definitely a symbolic wish which seemed simple to materialize. However, conversations with the city's transport operator soon revealed the complexity of this goal. What began as a municipal initiative intended to alleviate traffic and reduce emissions revealed deeper layers of network interdependencies and organizational challenges.

The findings show that the success of collaborative change is compromised when network actors operate under misaligned timelines, pursue divergent objectives or lack mutual understanding. This was evident in the case of Beta, where the company was under growing pressure from municipality B to electrify its fleet. This situation highlights the need for reciprocal commitment and investment to ensure network continuity and transformation (Häkansson and Snehota, 1995).

Furthermore, the analysis confirmed that the transition to electric mobility involves more than just technical changes. It often requires comprehensive changes, such as acquiring new infrastructure and buildings, investing in charging stations, retraining personnel and redesigning routes to accommodate charging cycles (Varghese and Pradhan, 2025). These demands have opened the market to new players, such as Chinese bus manufacturers, who are disrupting long-standing relationships between operators and traditional European suppliers. These suppliers must now develop strategies to offset the significantly higher costs of their vehicles.

Another layer of complexity arises from the issue of financing. The high capital requirements for electric transitions mean that access to funding programs is essential. These programs introduce additional stakeholders into the network and can significantly impact the pace and scope of change. Transport companies must therefore be strategic in navigating this shift. While not an active market shaper, Rodoviária adopts a proactive approach within a reactive strategy (Pedersen and Ritter, 2022). The company actively seeks funding opportunities and is open to alternative sustainable solutions beyond electric vehicles.

Moreover, the findings also suggest the need for a network coordinator. A key barrier to this transition is the lack of coordination among the parties involved. In this context, the State should assume this coordinating role not only due to its regulatory authority, but also because of its ability to mobilize and align knowledge, resources, and stakeholders across the network (Nasiritousi et al., 2022).

Rodoviária is actively preparing to integrate electric buses into its operations. However, for Alpha, the process is still in its early stages, with immediate priorities centered around identifying infrastructure solutions. For now, the municipality has accepted to maintain a diesel-powered shuttle service, recognizing the complexities of electrification. Nevertheless, this service has received criticism for failing to attract commuters and for contributing to emissions in the city's central areas. Although the current relationship between the municipality and the operator is cooperative, mounting environmental and political pressure suggests it is only a matter of time before more decisive changes are demanded. When that moment arrives, the operator must be strategically and operationally prepared.

Conflict is an inevitable part of business relationships, and Alpha's relationship with Municipality A is no exception. However, conflicts that may arise between the two parties during the transition to electric buses can prove to be beneficial (Gadde and Snehota, 2000), as was the case here. Although the electric shuttle was small-scale municipal initiative, it certainly provided some valuable lessons that will be remembered when a larger-scale transition takes place.

The lessons drawn from this case extend beyond the shift to electric buses and are relevant to many types of organizational change. One central finding is that no company can drive change in isolation. At a minimum, three elements are necessary to enable meaningful transformation: financial resources or incentives, supportive public policy or motivation, and strong partnerships. A company may possess both the funding and the drive to change, but without alignment and cooperation with its partners, meaningful progress becomes extremely difficult to achieve.

5.1. Limitations and Recommendations for Future Studies

Due to the early stage of this transition, it was not possible to observe a complete cycle of how the relationships and networks evolved. The study was limited to analyzing these

relationships within their current context, which led to a fragmented view and a lack of interconnectedness among the actors involved.

The study's scope was further limited by relying on data from a single company, which provided only one perspective on the transition. Including the views of a bus manufacturer, for example, would have offered valuable insights into how its relationships with the operators have been evolving within the current public transportation ecosystem.

Additionally, as this transition involves interaction between a private operator (Rodoviária) and public entities (such as municipalities and financing or regulatory bodies), many responses focused solely on this public-private relationship, which resulted in a lack of depth when exploring the roles of other important stakeholders.

Future research should strive to include a broader range of stakeholders, such as bus manufacturers and municipal representatives, to gain a more comprehensive understanding of the transition process from multiple perspectives.

While this small case provided useful insights, it would be beneficial to examine a larger case in a more advanced stage of the transition, such as the case of Beta, which is preparing to expand its electric fleet by 15 additional buses in the coming months. A study of this scale would provide a richer and more dynamic context for this analysis.

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APPENDICES

Appendix I – 1st Interview Guide (Administrator at Rodoviária)

1. There is an evident transition in the transportation sector towards electrical mobility. Considering this development, what measures has the company taken to align with/foster this trend?
2. Is the company's strategy more oriented towards the promotion of the transition to electrical mobility, to accompany it, or is it more of an attempt to postpone or impede this transformation?
3. Which practices does the company have that attempt to boost/delay this transition within the sector in which it operates? Can you please provide a specific example focusing on practices involving other firms?
4. Do you consider the company's strategy to be more reactive or proactive in this scenario? Why?
5. In fact, a variety of alternative fuels was recently considered in the analysis of public road transportation, such as hydrogen and natural gas. Do you believe that, despite the growing number of players involved in the pursuit of more sustainable public transportation, the range of solutions is narrowing, with most focus being canalized towards electrical vehicles only?
6. This transition to electrical mobility entails substantial investments, not only with the acquisition of electrical buses, but also with the establishment of a charging station network, the training of technical teams, and other essential requirements. What are the main implications of this change in terms of maintenance and repair networks?
7. To make the infrastructure investment worthy, can we think about a faster (or less gradual) transition? Why?
8. Given the trend toward electrification of public road transportation and the significant resources required for this transition, what are the primary stakeholders who must collaborate with the company to facilitate this transformation?
 - 8.1. Among the identified stakeholders, which practices must they have to help you conduct this transformation? Do you believe that they are already moving with the company?

9. Given your prior experience with electrical buses, could you please outline the main positive aspects and drawbacks you have observed in this sample?
10. Adopting a long-term perspective, how do you envisage the company transforming to adapt to this new reality? In your view, will combustion models ultimately be phased out?
11. In light of the company's potential acquisition of electric vehicles, the prospect of financing through environmental funds, and the emergence of new market players, specifically Asian manufacturers capable of offering cost-effective solutions, how would you assess the likelihood of a collaboration with these suppliers in terms of maintenance networks and after-sales service, in comparison to the existing relationships with traditional suppliers?
12. Do you anticipate securing the support of local authorities and financial incentives to ensure the viability of this transition in your operations? Do you believe that there is an effective coordination between the public sector and the company?

Appendix II – 2nd Interview Guide (Operations Manager at Alpha)

1. Based on the experience you've had so far, what are the key differences you've observed between electric and diesel buses in terms of daily operations?
2. Are there concerns regarding autonomy, charging times, or route flexibility with electric buses?
3. How do electric buses compare to diesel in terms of initial investment and total cost of ownership?
4. Do you feel that current financing and funding mechanisms are adequate to support electrification?
5. Does the high cost of electrification make it unfeasible for small-scale initiatives, like the single route explored in this case?
6. Who is responsible for installing and managing charging infrastructure – the company, the municipality or others?
7. What have been the main challenges in identifying locations and installing chargers?

8. So far, how as the municipality's vision for electric mobility aligned (or conflicted) with your company's operational reality?
9. What types of support (technical, financial, regulatory) would you need to accelerate your transition to electric buses?
10. Are there partnerships or funding programs you are relying on to move forward with electrification?
11. What role do you believe electric mobility should play in the short and long term for your organization?
12. Do you believe small-scale pilots (like a single electric route) can still be strategically meaningful?
13. If the necessary support were in place, would you feel ready to invest in a broader electric fleet?
14. What are the main requirements or conditions your company needs to meet to apply for public or European funding for electric buses and infrastructure?