Article

Shifting towards Electric Vehicles: A Case Study of Mercedes-Benz from the Perspective of Cross-Functional Teams and Workforce Transformation

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Abstract: The automotive industry’s shift towards electric vehicles (EVs) is driven by technological advancements and environmental concerns. This paper examines Mercedes-Benz’s strategy in this transition, highlighting the challenges and opportunities involved. Using thematic analysis of semi-structured interviews with key professionals at Mercedes-Benz, the study reveals a dual strategy: integrating new talents with specific EV competencies and upskilling the existing workforce. This approach reflects the company’s recognition of evolving vehicle development requirements and commitment to maintaining a skilled workforce. Emphasis on data-driven functions highlights the industry’s shift towards technological advancements. The transition significantly impacts workforce roles, necessitating role reassignment and collaborative planning, indicating a culture of inclusivity and proactive change management. Challenges include the importance of mindset change and adaptability among employees, as well as managing overlapping traditional and EV projects, leading to increased workloads and compressed timelines. Tailored training and development strategies are essential for a comprehensive transition. Mercedes-Benz’s commitment to an electric-only strategy signals a clear future direction. However, this raises questions about workforce preparedness and ongoing skill development. The study offers insights into managing workforce transformation in the EV transition, contributing to academic discussions and providing practical guidance for industry professionals.

Keywords: electric vehicles; workforce transformation; automotive development; cross-functional teams; upskilling; organizational change; strategy

1. Introduction

The automobile sector, a key driver of technological progress and environmental responsibility, is presently undergoing a significant transition towards electric vehicles (EVs). This change, driven by swift technological developments and increasing environmental awareness, goes beyond just modifying vehicle propulsion systems. It is fundamentally transforming the framework of automotive development and the dynamics of the workforce [1].

Furthermore, this transition brings both considerable challenges and opportunities. Critical issues involve managing cross-disciplinary teams, reshaping the workforce, and incorporating new technologies. Effective strategies for workforce training and development are essential, as the skills needed for EV production are significantly different from those required for traditional vehicle manufacturing [2]. The strategic transition to EVs involves navigating complex challenges such as integrating new technologies, redefining workforce roles, and fostering collaboration among cross-functional teams. Effective strategies include continuous employee training, fostering inter-departmental communication, and leveraging diverse expertise to ensure a seamless shift in automotive development.
projects [3,4]. The strategic realignment highly involves overcoming financial and logistical hurdles, such as the high cost of EV technology and the need for widespread charging infrastructure [5].

This paper examines these challenges and strategies, using Mercedes-Benz as a case study, to provide insights into the comprehensive management required for a successful transition to electric vehicles in the dynamic automotive industry. By scrutinizing the company’s comprehensive strategy, this work aims to uncover how Mercedes-Benz, a forerunner in the automotive industry, navigates the complexities of this industry-wide change, particularly its impact on workforce roles, the integration of emerging technologies, and future strategic planning [4]. Understanding how the company aligns its human resources with technological advancements is critical, especially in an industry that is as dynamic and evolving as automotive manufacturing [2].

This research commences with a literature review, providing a historical overview of electric vehicles, tracing their evolution from emerging concepts to their current market prominence. This highlights the technical advancements, market trends, and policy factors driving EV adoption. Furthermore, this work examines the traditional automotive development processes and the resulting workforce transformation necessitated by electrification. An in-depth look at Mercedes-Benz’s “Ambition 2039” strategy [6], which aims for a net carbon-neutral vehicle fleet by 2039, underscores the company’s commitment to sustainability and innovation.

Employing a qualitative research methodology, primarily through thematic analysis, this study seeks to gain a profound understanding of the internal strategies and workforce dynamics at Mercedes-Benz. Semi-structured interviews with professionals within the company provide detailed insights into the EV transition. These interviews reveal key themes critical to understanding Mercedes-Benz’s path towards a sustainable automotive future. Such themes include the company’s approach to integrating new talents with specific EV competencies, the impact of the transition on various workforce roles, the challenges encountered during this shift, and the future technologies and plans anticipated by the company.

2. Market Trends, Future Outlook, and Challenges

2.1. Market Growth and Future Prospects

The electric vehicle (EV) sector is experiencing remarkable growth, with sales surpassing 10 million units in 2022. This represents a significant increase from a 4% market share in 2020 to 14% in 2022. In the first quarter of 2023 alone, 2.3 million electric cars were sold, marking a quarter-over-quarter growth of 25%. Projections suggest that by the end of 2023, EV sales could reach 14 million, reflecting an impressive annual growth rate of 35%. This surge is anticipated to elevate the EV market share to 18% of total vehicle sales by the year’s end, largely driven by national policy incentives and escalating oil prices. The transition to electric vehicles offers substantial environmental benefits, including the potential to reduce global oil consumption by 5 million barrels per day by 2030. This reduction plays a crucial role in the decarbonization of road transport, which currently accounts for 16% of global emissions [7].

Examining market distribution, China dominated with a 60% share of global EV sales in 2022, making it the clear leader in the sector. Europe and the United States followed, both demonstrating notable growth rates and increasing market shares [5]. This trend highlights the global shift towards EVs, with each region contributing significantly to the overall market expansion. China’s leadership in the EV market is underpinned by strong governmental policies and substantial investments in EV infrastructure. Europe’s growth is driven by stringent emissions regulations and significant advancements in battery technology, while the United States is seeing increased consumer interest and support from federal incentives. The rising market shares in these regions underscore the promising future of EVs in combating climate change and reducing dependency on fossil fuels. As more countries adopt supportive policies and as technological advancements continue, the global
EV market is poised for continued expansion. This growth trajectory not only signifies a shift in consumer preferences, but also represents a broader movement towards sustainable transportation solutions. The anticipated environmental impact, coupled with the economic and technological advancements in the sector, positions EVs as a pivotal element in the global strategy to address climate change and promote energy independence [5].

2.2. Challenges and Future Policy Implications

Despite the promising growth and environmental benefits, the transition to EVs faces several challenges, including high upfront costs, range anxiety, and inadequate charging infrastructure [8–10]. Government intervention, such as the U.S. Infrastructure Investment and Jobs Act allocating USD 7.5 billion for a nationwide charging network, is crucial in addressing these barriers [11]. Strategies employed by leading countries include regulatory standards and economic tools to bridge the cost gap between electric and traditional vehicles [10]. Research suggests that road priority measures for EVs, such as access to bus lanes, are more effective than direct financial subsidies in promoting adoption [12]. Looking ahead, electricity is poised to play a more significant role in final energy consumption, potentially surpassing oil by 2040, driven by advancements in renewables, nuclear power, and carbon capture technologies [7]. Policy-makers need to prioritize road priority measures for EVs, expand charging infrastructure, and invest in long-term research and development to sustain the EV market’s growth and ensure continued environmental benefits [10,12].

2.3. Automotive Development Process and Workforce Transition to EVs

The automotive industry is a complex sector characterized by intricate supply networks and a multitude of specialized professionals. The product development process is a multidisciplinary, long-term endeavor that spans from pre-program planning to product discontinuation, requiring rigorous project management and coordination among departments like product planning, industrial design, and engineering [13]. The rise of the EV industry adds further complexity, necessitating new specialized skills and creating new workforce roles.

The EV sector’s expansion is more intricate than merely adding jobs. Factors like automation, policy considerations, and evolving skill requirements significantly influence employment. Research indicates a mostly optimistic projection for job growth globally, but the transition also drives the need for initiatives in educating, reskilling, and upskilling the workforce to adapt to new technologies and sustainable practices [11,14].

The automotive product development process is comprehensive and highly structured. It involves phases such as pre-program planning, concept development, detailed engineering, manufacturing development, marketing planning, production, and product discontinuation. Each phase involves specific tasks and timing, managed by experienced professionals across various departments [13,15]. Developing an automotive product is a multidisciplinary effort requiring collaboration among professionals from various specialized fields. Teams focus on specific vehicle systems, guided by a vehicle program manager who leads the highest-level team of managers and chief engineers. Moreover, project managers play a critical role, overseeing all aspects from design to decision-making, ensuring that performance metrics like design quality, manufacturability, cost, and lead time are met [13].

The automotive industry is a very multi-disciplinary industry, requiring specialized skills. Key areas in its workforce mainly include the following [13,16]: (a) Product Planning, which involves mechanical engineers, market researchers, business management experts, economists, and financial planners; (b) Market Research, which requires specialists in business management, economics, and operations research; (c) Industrial Design, mostly requiring studio designers, engineers, CAD modelers, graphic artists, and other specialists; (d) Body, Powertrain, and Chassis Engineering, involving mechanical, structural, and materials engineers; (e) Electrical Systems Engineering, enlisting electrical, electronics,
and computer systems engineers; (f) Human Factors Engineering and Ergonomics, which requires industrial engineers and ergonomists; and (g) Manufacturing, Production, and Assembly Engineering, which includes process engineers, materials engineers, and safety engineers. The transition to EVs significantly impacts the automotive workforce, requiring new skills and creating different roles. This transition demands comprehensive training programs to reskill and upskill employees, facilitating the shift from internal combustion engine technologies to electric powertrains and advanced manufacturing techniques [11,17].

In this light, the demand for specific skills and roles in the EV industry encompasses several key areas. Notably, this transition requires experts focused on enhancing battery life and reducing recharging times. Engineers, software developers, and industrial designers are essential for translating scientific advancements into commercial applications. Additionally, the industry needs assemblers, machine operators, and industrial production managers, who often require specialized skills beyond those used in conventional vehicle manufacturing. Urban planners and electrical engineers are also critical, as they will be responsible for installing charging stations and ensuring that the electrical grid can handle the increased load [11,16]. Research by Günther et al. [14] indicates that the transition to EVs will result in significant job growth across multiple locations by 2030, particularly in Eastern Europe and China. The lithium-ion battery market, dominated by China, is expected to see substantial growth in Europe, creating numerous jobs in battery production and related sectors [18]. A study by Boston Consulting Group [19] suggests that the net impact of EVs on employment will be minor through to 2030, though traditional automotive sectors may experience job losses. The shift to EVs will create jobs in new sectors like batteries and charging infrastructure, requiring strategic workforce planning and reskilling initiatives [20].

As the EV market evolves, continuous training and reskilling are essential. Programs focusing on digitalization, alternative powertrains, and sustainable practices are vital for SMEs and larger corporations alike [21,22]. Government initiatives and private sector collaborations are crucial in developing human resources for the next-generation automotive industry [22].

In this light, the transition to EVs is a complex interplay of market dynamics, technological advancements, and human capital transformation. While the overall impact on job numbers may be minor, the underlying shifts within industries and job profiles are profound, requiring strategic interventions from governments, companies, and individuals. The focus must be on reskilling and upskilling the workforce to ensure a smooth transition and to harness the full potential of the EV revolution [20,23].

3. Workforce Strategy at Mercedes-Benz

Mercedes-Benz, a leading name in the automotive industry, is making a strategic shift towards EVs, inspired by its historical innovators like Gottlieb Daimler, Carl Benz, and Wilhelm Maybach. This transition is part of the company’s “Ambition 2039” initiative, which is a comprehensive plan to achieve a fully electric vehicle line-up and net carbon neutrality by 2039. Initiated in 2019, this strategy covers all stages from technical development to raw material extraction, production, service life, and recycling. By 2030, the company aims to halve CO₂ emissions per passenger car compared to 2020 levels. This involves extensive use of renewable energy in production, improved battery technology, increased use of recycled materials, and ensuring that vehicles are charged with green energy.

Mercedes-Benz plans to be fully electric by 2030, market conditions permitting. The firm already offers a wide range of battery electric vehicles, from compact models to SUVs. Starting in 2025, all new vehicle architectures will be exclusively electric. The company is investing over EUR 60 B by 2026 to achieve this transformation, aiming to expedite the widespread adoption of electric vehicles. Since 2022, all Mercedes-Benz manufacturing facilities have achieved net carbon-neutral production, with plans to expand renewable energy sources further.
The firm’s workforce strategy, known as the “People Plan”, is crucial for navigating the transition to electric mobility. It emphasizes reskilling and upskilling employees, fostering a culture of innovation and sustainability. The company will invest over EUR 1.3 B by 2030 in Germany alone to ensure employees are equipped with the necessary skills for future roles. In a nutshell, the “People Plan” comprises three core pillars: “Re-Shape”, “Re-Skill”, and “Re-Charge”; “Re-Shape” focuses on reorganizing the company to emphasize new expertise and product offerings while ensuring job security, “Re-Skill” aims to provide employees with the essential skills and knowledge required for future roles and responsibilities, while “Re-Charge” seeks to maintain Mercedes-Benz’s appeal as an employer by offering attractive work conditions and fostering an inclusive corporate culture. The company collaborates with employee representatives to ensure the transition is socially fair and future-focused, offering individual training and development programs, while also entering into agreements that guarantee job security until the end of the decade.

Mercedes-Benz is investing in the development of its management culture to meet evolving technical, strategic, and cultural demands. Initiatives like “Gear-up” and “Shaping the Future” target executives, focusing on innovation, sustainability, cooperation, and personal resilience. Hybrid teams with cross-divisional expertise develop blueprints for successful team dialogues and provide managers with direct engagement opportunities with board members.

Considering the above, the firm’s transition to EVs represents a comprehensive approach involving technological advancements, a sustainable business strategy, and a profound transformation of its workforce and management culture. Through significant investments in training, development, and strategic workforce planning, the company aims to navigate this transition successfully, ensuring its long-term success and maintaining its legacy of innovation and quality in the automotive industry.

4. Research Methodology

This study aims to explore Mercedes-Benz’s approach to transitioning to EVs, with a focus on the complexities and challenges encountered during this shift. It delves into the effects on workforce roles, the adoption of emerging technologies, and the company’s future plans regarding EVs. A primary emphasis is placed on managing workforce transitions within automotive development projects to ensure human resources are aligned with technological progress. This research seeks to shed light on the current and future dynamics of the workforce in EV development, contributing to academic discussions on strategic workforce management and providing practical insights for other organizations undergoing similar transformations.

This research utilized qualitative methodology to investigate the automobile sector’s transition to electric vehicles, applying thematic analysis to identify patterns within qualitative data [24]. Semi-structured interviews were employed, combining open-ended questions with the flexibility to explore emerging themes [25,26]. This approach allowed for in-depth exploration of participants’ perspectives and experiences. The interviews were designed to address various aspects of the EV transition, including organizational strategies, workforce transformation, and technological integration.

In this light, we conducted interviews with a total of seven experts from Mercedes-Benz, who were selected through purposive sampling to ensure a diverse range of insights. The sample included individuals of different roles within the company, such as managers, a component management engineer, and a product development coordinator. Specifically, the sample included one development engineering manager, two development engineering team leaders, one functional safety team leader, one team leader of the strategy department, a component management engineer and a coordinator within the development engineering department. The diversity of the participants was a key consideration during the sampling process. In principle, the participants were chosen to represent a cross-section of the workforce involved in the EV transition, providing a holistic view of the challenges and strategies employed by Mercedes-Benz. In this context, the sample comprised senior management
personnel, who provided strategic insights, as well as technical experts directly involved in EV projects, ensuring that both high-level and operational perspectives were captured. Moreover, experts were selected based on their high position in the management hierarchy of the company, so as to ensure their involvement in the understanding and formation of the company’s strategy. One of the individuals holds a high management position, while four of them hold team lead positions, which belong to the management sector. The component management engineer and the coordinator belong to the development engineering team. The interviewees were six males and one female, with varying experience within automotive development projects. Two of them have worked more than 10 years within the automotive industry, three of them more than 20 years, and two of them have more than 30 years of experience.

The semi-structured interview protocol was designed to explore key themes relevant to the study. It included open-ended questions on participants’ roles, their involvement in the EV transition, and their views on future strategies and technological advancements. This structure allowed for flexibility in probing deeper into specific topics as they emerged during the interviews. More specifically, the interview protocol encompassed participants’ roles, current transition plans, and future strategies. It included questions that address the complexities of adapting organizational culture, the challenges faced, the strategies employed, and the impacts on the workforce. Additionally, it covered anticipations and preparations for future advancements in EV technology and workforce dynamics.

The interviews were conducted either in person or via video conferencing, and each session lasted approximately 30 min. The interviews were conducted either in English or German. All interviews were recorded and transcribed verbatim to ensure accuracy in data analysis. The data were then systematically coded and analyzed using thematic analysis, following Braun and Clarke’s [27] six-phase approach. This rigorous methodological framework ensured the reliability and validity of the study’s findings, providing a robust foundation for analyzing Mercedes-Benz’s EV transition. More specifically, the steps taken for the analysis of the data are the following:

Step 1: The process begins with detailed transcription, repeated readings, and initial notes in the effort to become familiarized with the data: All interviews were transcribed verbatim and reviewed multiple times to immerse ourselves in the data. This initial phase involved reading and re-reading the transcripts to gain a deep understanding of the content.

Step 2: The second phase involves the generation of a systematic coding of significant data features into a comprehensive framework. To that end, we systematically coded the data by identifying significant features relevant to our research questions. In this context, we applied codes to specific segments of the text, capturing essential elements related to organizational strategies, workforce transformation, and technological integration.

Step 3: After initial coding, within the third phase, we examined the codes to identify patterns and broader themes. Codes were grouped based on their similarities and relationships, forming preliminary themes that encapsulated the main ideas emerging from the data.

Step 4: Within the fourth phase, we critically reviewed the preliminary themes to ensure they accurately reflected the data. This involved two levels of review: first, we checked the coherence of the themes in relation to the coded extracts; second, we examined the validity of the themes concerning the entire data set. Adjustments were made to refine the themes, merging or splitting them as necessary.

Step 5: In the fifth phase, we defined and named each theme, providing clear definitions and ensuring each theme captured the essence of the data it represented. This step involved detailed analysis to articulate the scope and focus of each theme.

Step 6: The sixth and final phase concludes with a detailed report linking findings to the research question and the existing literature. To that end, we compiled a comprehensive report that included illustrative quotes from the interviews to support and exemplify each theme.
To validate our findings, we employed member checking, where participants reviewed the themes and provided feedback on their accuracy and relevance. This process ensured the credibility and reliability of our thematic analysis, offering a robust foundation for our study on the EV transition at Mercedes-Benz.

Interviews conducted in German were translated to English, ensuring data accuracy and consistency. Transcripts were prepared and imported into NVivo Software (Version 14) for detailed analysis. Initial readings allowed for immersion in the data, followed by systematic coding of relevant text segments. Similar codes were grouped under broader themes related to the transition to electric vehicles. Themes were continually reviewed and refined to ensure accurate representation of the data. The final phase involved synthesizing the findings, using NVivo tools, and critically analyzing them to make connections between themes and derive conclusions about the organizational transition to electric vehicles. A comparative analysis was conducted to understand the diversity and commonality of experiences and perceptions within the organization.

5. Results and Discussion

As already mentioned, the primary objective of the present qualitative study is to explore the strategy adopted by Mercedes-Benz in transitioning to EV development and the resulting impacts on workforce roles and emerging technologies. Through thematic analysis of semi-structured interviews with key professionals at Mercedes-Benz, the study identifies a dual approach in workforce strategy, integrating new talent and upskilling existing employees. The research also examines how the company aligns with customer needs, manages sustainability, and navigates the broader challenges of organizational and technological change in the EV era. In the following Sections 5.1–5.5, key results of the qualitative analysis are presented and discussed for the four thematic fields: strategy, role impacts, challenges, and future plans, respectively. While Sections 5.1–5.5 present the primary data collected from the interviews with Mercedes-Benz professionals, we recognize the importance of grounding these findings in the broader academic context. Therefore, in Section 5.6, we provide a detailed comparison of our interview insights with the existing literature. This section aligns the key themes identified in our study with relevant research on EV development, workforce transformation, and technological integration.

The selection of the four thematic fields in our study emerged from a systematic and iterative analysis process. Initially, open coding of the interview transcripts identified numerous patterns and concepts relevant to the participants’ experiences with Mercedes-Benz’s transition to electric vehicles. Through iterative comparison and refinement, these codes were grouped into broader themes that encapsulated the core issues, namely “Corporate Strategy”, “Role Impacts”, “Challenges”, and “Future Plans”. This thematic framework was further validated by referencing the existing literature [2,4], which provided a theoretical foundation for the selected themes. These studies highlight similar challenges and strategic considerations in workforce transformation and technological integration, thereby supporting the relevance of our thematic fields. By aligning themes with established research, we ensured our analysis is both theoretically grounded and empirically robust. This approach enhances the credibility of the study and contributes new insights specific to Mercedes-Benz’s EV transition, providing a comprehensive understanding of the multifaceted impacts of this industry shift.

5.1. “Corporate Strategy” Thematic Field

In transitioning to EV development, Mercedes-Benz adopts a dual approach, integrating new talents with specific EV competencies while concurrently upskilling the existing workforce. This strategy addresses the evolving requirements in vehicle development, emphasizing the importance of software and data-driven expertise. An interviewee who is holding a team lead role within the strategy team with more than 10 years of experience noted, “we acquire new players...to get new expertise. But also, there has been significant programs throughout the whole company to upskill and re-skill current employees to meet new roles”. The
focus on acquiring technical expertise reflects a broader shift in skill requirements within the automotive industry. Another interviewee, a coordinator of the development team, emphasized the necessity for vehicles to be “technically developed to keep up with the times”, highlighting the potential for new technologies in electromobility. This approach indicates that future vehicle development will increasingly rely on technological advancements.

The strategy also emphasizes aligning with customer needs and market trends. An interviewee, holding a high management position with more than 20 years of experience within the automotive industry, pointed out the importance of "understanding what the customer wants and making the new technologies appealing to the customer", signifying a shift from purely technical proficiency to a market-aware and customer-centric perspective.

The emergence of a dual strategy in Mercedes-Benz’s transition to EV development highlights a nuanced understanding of the changing automotive landscape. By integrating new talents with specific EV competencies and concurrently upskilling the existing workforce, the company demonstrates a comprehensive approach to managing technological evolution. This strategy shows an awareness of the need for both specialized knowledge in emerging areas and the enhancement of existing skills. The emphasis on software and data-driven functions underscores the growing importance of these areas in future vehicle development. This focus aligns with the industry’s shift towards more technologically advanced vehicles, ensuring that Mercedes-Benz remains competitive and innovative. Additionally, the strategy includes aligning with customer needs and market trends, marking a pivot from a purely technical perspective to one that is market-aware and customer-centric.

Understanding and responding to customer preferences is essential for the successful adoption of new technologies and maintaining market relevance. The varied emphasis on sustainability knowledge among respondents suggests diverse understandings of its role in EV development, indicating an area for further strategic focus. While some see it as crucial for future success, others view it as secondary and easily transferable knowledge. This diversity in perspectives highlights the need for a more unified approach to integrating sustainability into the company’s overall strategy.

In summary, Mercedes-Benz’s dual approach to transitioning to EVs—combining new talent acquisition with upskilling the current workforce, emphasizing technological advancement, and aligning with market and customer needs—demonstrates a robust strategy for navigating the complexities of the evolving automotive industry. However, the varied views on sustainability knowledge suggest that this area may require additional strategic alignment to fully integrate into the company’s vision for the future.

5.2. “Role Impacts” Thematic Field

The transition to EV development at Mercedes-Benz significantly affects employee roles, encompassing role reassignment, adaptation of existing positions, and personal impacts on employees. A key aspect is the strategic, collaborative approach to workforce adaptation. Decisions about role transitions are made in cooperation with employees, fostering a proactive and inclusive approach to workforce evolution. An interviewee, head of the engineering development department, noted, “Internally within departments, between our leadership teams, we see ourselves as one big team… it was a collaborative team workshop process to say, where do we need to go and how can we all shape this together”.

The reassignment and redirection of employees to new roles are crucial. A development engineering team leader, with more than 30 years of experience, highlighted that his colleague, a department leader, shifted from working on combustion applications to developing electric components, emphasizing a strategic realignment of skills to meet evolving technological demands. This shift underscores the significant changes in roles and responsibilities required by the transition to EVs.

A phased approach to transitioning from traditional automotive roles is also evident. Traditional roles focusing on exhaust systems and internal combustion engines are undergoing retraining and will eventually be phased out. This strategic, gradual redirection
ensures a smooth transition, balancing the need for new skills with the realities of existing job functions.

Personal impacts of this transition vary among employees. An interviewee holding a strategy department leading role shared, “For me personally… it was a great opportunity because there were new roles coming up and new tasks to learn when it comes to electrification”. Others, already engaged in EV projects, experienced minimal changes but noted increased interdisciplinary collaborations and interactions with new departments.

The findings on role impacts reveal a dynamic adaptation process within Mercedes-Benz. The strategic approach to workforce adaptation, characterized by collaborative planning, reflects an organizational culture that values inclusivity and proactive change management. The transition involves not just the reassignment of roles but a deeper transformation in how employees engage with their work. The phased approach to transitioning from traditional roles indicates a deliberate strategy, balancing the need for change with existing skill sets and job functions. This methodical transition helps mitigate the abruptness of change, providing a smoother adaptation process for employees.

The personal impacts of this transition vary widely, presenting both challenges and opportunities. Some of the employees see the transition as a chance for new roles and learning, while others experience minimal impact but note increased collaboration. This diversity highlights the complexity of managing such a significant organizational change and underscores the importance of tailored support and training programs to facilitate the transition.

To conclude, the role impacts theme demonstrates Mercedes-Benz’s thoughtful and inclusive strategy for workforce adaptation during its transition to EV development, highlighting both organizational and personal dimensions of this significant change.

5.3. “Challenges” Thematic Field

The shift to EV development at Mercedes-Benz introduces numerous complexities and challenges, especially in managing changes to organizational culture and cross-functional team dynamics. One major challenge is the overlap of ongoing traditional projects with the new EV initiatives, leading to increased workloads and compressed timelines. The development engineering department manager noted that “we had to handle old projects and electromobility at the same time… two heavily overlapping topics”, emphasizing the need for simultaneous management of both project types.

The shift to EVs is viewed as a monumental transformation in the company’s history, with extensive impacts across the organization. An interviewee, the strategy department team leader, described it as “the biggest transformation in the history of our company and of the automotive industry”, highlighting the collective path the company must navigate with its employees. Departments already familiar with electrical technologies faced fewer challenges, whereas those focused on traditional automotive technologies encountered significant hurdles. This exclusive focus on EVs carries inherent risks, as one interviewee, a development engineering team leader with several years of experience, mentioned that “the transition to electric only is not entirely comprehensible within our organization”.

Managing cross-functional teams in EV development projects also poses challenges. Clear structures are needed to manage conflicting schedules, priorities, and roles. One interviewee, holding a functional safety team lead role, emphasized the issue of resistance to change within teams, noting that “resistance to change within the team is certainly something that every change has”.

Resistance to the transition varies among employees. Younger colleagues familiar with EV technologies adapt more readily, while older employees attached to combustion technologies exhibit more resistance. Some employees are enthusiastic and willing to adapt, while others show reluctance or lack interest in new technological paradigms. An interviewee, working as a component management engineer, observed that “you can have very interesting courses on electric drive on every level… but as I mentioned, not everybody is that interested in electric mobility”, highlighting the challenges of managing organizational
change within a diverse workforce. This situation suggests a need for tailored strategies in training and development to ensure a comprehensive and inclusive transition.

The challenges encountered in shifting to EV development at Mercedes-Benz provide valuable insights into the complexities of managing large-scale organizational change. The overlap of traditional and EV projects, leading to increased workloads and compressed timelines, underscores the practical difficulties in balancing the old with the new.

5.4. “Future Plans” Thematic Field

Mercedes-Benz is fully committed to an electric-only strategy, with no explicit alternative plans. One interviewee, working as an engineering manager, confirmed, “our company is fully committed to electric-only. I am not aware of any emergency plan”. The strategy involves a gradual shift, focusing on electric vehicles in prepared markets while continuing to improve combustion engine vehicles in other regions. Another interviewee, part of the strategy management team, noted that “The whole industry and so our company will become fully electric, and this cannot happen overnight. So, obviously, we are preparing our portfolio and our company to go fully electric in the markets that are ready for it”.

Emerging technologies, especially battery technology, are crucial to EV development, influencing vehicle design and performance, including weight and range. An interviewee, part of the engineering management team, stated, “The battery actually influences everything comprehensively of the electric vehicle”. Vehicle-to-grid (V2G) technology and renewable energy integration also emerged as significant. V2G technology allows private individuals to use their EVs as power storage, enhancing energy efficiency. Renewable energy integration is deemed essential for environmental sustainability.

While the primary focus is on electric technology, other technologies, such as biofuels and hydrogen, were acknowledged. Biofuels are seen as having potential alongside electric technology, and hydrogen is considered a promising alternative, particularly for heavy vehicles like trucks, though it remains in a research phase.

The transition to EVs may lead to a decrease in workforce size in some sectors due to the reduced complexity of EVs compared to traditional vehicles. One interviewee, who is leading the development engineering team with more than 30 years of experience in the automotive sector, noted: “I expect a significant decrease in necessary personnel if we were to fully switch to electric vehicles in development”. Outsourcing key components like batteries to external suppliers is also a factor in workforce transformation, potentially leading to job reductions. However, there is an anticipated increase in workload and employee count in areas related to electric drive development and software.

Governmental policies and regulations heavily influence strategies, with concerns about customer acceptance and the feasibility of a complete EV fleet in regions with infrastructural limitations. The shift towards EVs is driven by a combination of strategic focus within the company and external factors like market demands and legal requirements.

In this context, Mercedes-Benz’s unwavering commitment to an electric-only strategy signals a clear and strong direction for the future, though it carries risks due to potential technological shifts or market changes. The emphasis on emerging technologies like battery technology and vehicle-to-grid integration demonstrates a forward-thinking approach but highlights the need for continuous skill development within the workforce. Moreover, the anticipated changes in workforce size and structure reflect the multifaceted impact of technological change, affecting not only the products but also the employees. The blend of strategic internal focus and external market and regulatory factors shapes Mercedes-Benz’s approach to electric mobility, underscoring the complex dynamics involved in this transition.

5.5. Analysis of Employee Insights on the Transition to Electric Vehicles

The transition to EV development at Mercedes-Benz, as detailed in Sections 5.1–5.4, outlines a comprehensive strategy involving workforce upskilling, strategic alignment with market needs, and the navigation of various challenges and future plans. To deepen this
analysis, direct employee insights from the conducted interviews are further analyzed by highlighting the interconnected themes of development, challenges, technologies, workforce, strategy, and sustainability. These insights reveal the practical implications of the company’s dual approach to talent integration and upskilling, the obstacles encountered in managing cross-functional teams, and the pivotal role of emerging technologies such as battery advancements and vehicle-to-grid systems. Additionally, the diverse employee perceptions and the emphasis on sustainability underscore the multifaceted nature of the transition, illustrating both the internal and external factors influencing Mercedes-Benz’s journey towards an electric-only future. This integration of qualitative interview data provides a nuanced understanding of the strategic, organizational, and technological dimensions of the EV transition, reinforcing the need for a unified and adaptive approach to successfully navigate this significant industry shift.

In this light, Figure 1 presents the main keywords from the interviews, grouped into distinct clusters to illustrate their interconnection and relevance. Each cluster represents a thematic area discussed during the interviews, with nodes depicting key terms related to these themes. The figure visually captures the complexity and interrelated nature of the themes, providing a clear overview of the critical areas discussed in the interviews. The clustering includes keywords related to:

(a) Development (orange bubbles), with keywords like “transition”, “electric vehicles”, and “internal combustion engine”, which reflect the shift in development focus.

(b) Challenges (purple bubbles), with keywords including “resistance to change”, “cross-functional teams”, and “technological barriers”, highlighting the obstacles faced during the transition.

(c) Technologies (purple bubbles), with keywords like “battery technology”, “autonomous driving”, “renewable energy”, and “Vehicle-to-Grid”, pointing to critical technological advancements.

(d) Workforce (red bubbles), including terms such as “Upskilling”, “hiring”, “re-training”, “expertise”, and “collaboration”, which emphasize the human resource strategies necessary for the transition.

(e) Strategy (yellow bubbles), which comprises “market readiness”, “strategy”, “cost”, “weight”, “customer needs”, “management”, and “innovation”, indicating strategic considerations.

(f) Sustainability (blue bubbles), with keywords such as “sustainability”, “energy efficiency”, and “environmental impact”, reflecting the focus on long-term ecological goals.

The responses of the participating executives at Mercedes-Benz during interviews show a diverse attitude in respect to their reactions towards the company’s shift to EVs. In Figure 2, responses are categorized into positive, neutral, and negative perceptions. Positive responses reflect enthusiasm and support for the company’s transition, highlighting opportunities for innovation and career growth. Neutral responses indicate ambivalence or a wait-and-see approach, while negative responses capture concerns and resistance due to uncertainties or attachment to traditional technologies. Visualization of the responses underscores the diverse attitude within the workforce, emphasizing the need for strategic communication and support during the transition period.
positive, neutral, and negative perceptions. The figure illustrates the frequency of responses for each category. As illustrated in Figure 3, there are several primary obstacles faced by Mercedes-Benz during its shift to EVs. The interviewees identified key challenges such as overlapping projects, increased workloads, resistance to change, managing cross-functional teams, technological barriers, and the need for clear roles and responsibilities as the most crucial barriers. Overlapping projects and increased workloads were frequently mentioned, indicating that managing traditional and new EV initiatives simultaneously strains resources. Resistance to change also emerges as a significant hurdle, particularly among employees accustomed to traditional automotive technologies. Challenges in managing cross-functional teams underscore issues with communication and coordination across departments. Technological barriers reflect the need for new expertise and adaptation to emerging EV technologies. Lastly, the lack of clear roles and responsibilities indicates
organizational structure issues that hinder efficient transition. Figure 3 encapsulates the complex and multifaceted nature of transitioning to EVs, emphasizing areas that require focused attention and strategic intervention.

![Figure 3. Challenges in EV transition.](image)

### 5.6. Managerial Insights

The findings from the interviews on Mercedes-Benz’s strategy for transitioning to EV development reveal a dual approach, integrating new talent with specific EV competencies and upskilling the existing workforce. This strategic direction aligns with the increasing market share of EVs driven by customer preferences and policy incentives [11]. The emphasis on acquiring technical expertise, particularly in software and data-driven functions, reflects the evolving skill requirements in the automotive industry [13,15]. These works highlight the complexity of automotive product development and the necessity for specialized skills, paralleling the interviewees’ focus on technical capabilities in EV development.

The strategic alignment with customer needs and market trends observed in the interviews is also supported by the literature. Expanded vehicle choices, improved range, and long-term cost savings shape consumer demand for EVs [11]. The automakers’ commitment to electrification, highlighted in the interviews, corresponds with broader industry shifts noted in the literature, which stress the impact of policy initiatives on workforce requirements and the importance of restructuring, skill acquisition, and continuous training [22]. Further elaboration on these “drivers of change” emphasizes the role of training programs in facilitating skill transferability and efficient apprenticeship markets [21].

The interviews reveal that transitioning to EV development affects employee roles by necessitating role reassignment and collaborative planning. This strategic approach aligns well with other studies [16,17], which highlight the diverse roles emerging in the EV industry and the need for role adaptation. The automotive product development structure described in the literature mirrors the interview findings on strategic role transitions and team collaboration [13]. The increasing demand for software developers in EV control systems, noted in the interviews, is also consistent with the literature. The growing software-centric nature of the EV experience projects significant employment growth for developers [17]. This is further supported by the highlighting of job growth in roles related to electrical and mechanical engineering, essential for developing EV systems and parts [11].

The primary challenges identified in the interviews, such as managing overlapping projects during the transition to EVs, correlate with the findings of other works [13,15], which highlight the complexities of automotive development and overlapping project management. The strategic impact of focusing exclusively on EVs, highlighted in the interviews, is also reflected in the literature. The challenges faced by cross-functional teams
(CFTs), such as inter-departmental conflicts and geographical barriers, are explored in the literature, resonating with the interview findings on managing CFTs in EV projects [28,29].

The firm’s commitment to an electric-only strategy and focus on emerging technologies, like battery technology and renewable energy integration, also aligns with the literature. The strategic importance of battery and emerging technologies is emphasized in the literature, matching the interview findings [11]. The challenges and policy implications related to EV adoption, such as range anxiety and charging infrastructure, are discussed in the literature, highlighting the role of governmental policies in promoting EV adoption, which corresponds with the interview insights on external influences like market demands and legal requirements [8,10,12].

Regarding workforce size, some interviewees anticipate a potential decrease in sectors rendered redundant by the simpler nature of EVs, a view supported by the literature [20]. Conversely, the interviews also suggest an increase in workload and employee count in areas related to electric drive development and software. The positive employment impact, emphasizing new opportunities in advanced EV technologies and renewable energy integration, is widely supported by the literature [11,14,18].

5.7. Limitations of the Study

Undeniably, the automotive industry’s shift towards EVs is not uniform, and different companies adopt diverse strategies and structures to navigate this transition. While our study focuses on Mercedes-Benz, a leader in automotive innovation, it is essential to recognize that the findings may not be universally applicable. Companies vary in size, market focus, organizational structure, and strategic priorities, which can influence their approach to workforce transformation and technology integration. For instance, smaller firms might face resource constraints that larger companies like Mercedes-Benz do not, leading to different challenges and solutions in the EV transition. Similarly, companies with a strong market presence in regions with advanced EV infrastructure might experience a smoother transition compared to those in emerging markets [11]. Understanding these differences is crucial for contextualizing this study’s results and drawing broader conclusions. To that end, future research should aim to include a comparative analysis across multiple automotive companies to provide a more comprehensive view of the industry’s adaptation to EVs. This will enhance the generalizability of the findings and offer deeper insights into effective strategies for managing the workforce and technological changes in the evolving automotive landscape. Such comparative studies would also benefit from considering regulatory environments and market demands in various regions, as these factors significantly impact the adoption of new technologies.

Another limitation of the present study is the relatively small sample size of seven participants. While this is appropriate for qualitative research and allows for in-depth exploration of individual experiences, taking also into consideration that it refers to experts who are positioned high in the company’s management structure, a small sample does not always capture the full diversity of perspectives within a company. A larger sample size could provide a more comprehensive view of the workforce’s experiences and opinions, leading to more robust and generalizable findings. Additionally, the reliance on semi-structured interviews and the fact that findings are based on self-reported data is another limitation, since these can be subject to biases such as social desirability or recall bias. To mitigate these biases, findings were triangulated with evidence from the literature (see Section 5.6) to enhance the validity of the conclusions.

Lastly, this study’s focus on a single case study of Mercedes-Benz limits the breadth of the analysis. While the insights gained are most valuable, they are context-specific and may not fully represent the complexities faced by other companies undergoing similar transitions. Future research should consider incorporating multiple case studies across different companies and regions to provide a more comprehensive understanding of the industry’s adaptation to EVs. This approach would allow for the identification of common challenges and successful strategies, contributing to a broader and more generalizable
body of knowledge on workforce transformation and technological integration in the automotive industry.

6. Conclusions

The transition of the automotive industry towards EVs, crucial for global sustainability goals, is the focus of this work, with a specific emphasis on the case of Mercedes-Benz. This study explored the challenges and strategies in this transition, particularly in managing cross-functional teams and transforming the workforce within automotive development projects. More specifically, the analysis revealed Mercedes-Benz’s dual strategy: integrating new talents with specific EV competencies while concurrently upskilling the existing workforce. This approach reflects the company’s recognition of evolving vehicle development requirements and its commitment to maintaining a skilled, adaptable workforce amidst technological advancements. The emphasis on software and data-driven functions underscores the shift in skill requirements within the automotive industry.

Moreover, a significant finding of the present work refers to the impact of the EV transition on workforce roles. Mercedes-Benz’s strategic approach, characterized by collaborative planning, indicates a culture valuing inclusivity and proactive change management. The transition involves reassigning roles and transforming how employees engage with their work, balancing the need for change with existing skill sets.

The study also highlights challenges during the shift to EV development, such as managing overlapping traditional and EV projects, leading to increased workloads and compressed timelines. The latter underscores the importance of mindset change and adaptability among employees and management. Tailored strategies in training and development are essential for an inclusive and comprehensive transition.

Looking towards future plans, Mercedes-Benz’s commitment to an electric-only strategy signals a clear future direction. The focus on emerging technologies, such as battery technology and vehicle-to-grid integration, demonstrates a forward-thinking approach but raises questions about workforce preparedness and ongoing skill development. Anticipated changes in workforce size and structure due to the EV transition highlight the multifaceted impact of technological change.

In conclusion, this work provides a comprehensive analysis of the strategies, challenges, and workforce implications of the shift to EV technology at Mercedes-Benz. It contributes to academic discussion on electric vehicles and offers practical insights for industry professionals facing similar transformations. While findings are specific to Mercedes-Benz and may not be generalizable across the entire industry, they offer valuable perspectives on managing workforce transformation in the EV transition. As the automotive industry rapidly evolves, such insights can guide other organizations towards sustainable and technologically advanced mobility solutions.

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