

Original Article

# The Integration of Operational Excellence and its Impact Factors in Moroccan Automotive Companies

Mohammed Hamoumi<sup>1</sup>, Mariam Benhadou<sup>2</sup>, Abdellah Haddout<sup>3</sup>

<sup>1,2,3</sup>*Industrial Management and Plastics Forming Technology Team  
Mechanics, Engineering and Innovation Laboratory, LM2I, National High School of Electricity and Mechanics –  
ENSEM- Hassan II University, Casablanca, Morocco.*

<sup>1</sup>*Corresponding Author: hamoumi@gmail.com*

Received: 26 December 2023

Revised: 30 March 2024

Accepted: 01 April 2024

Published: 26 May 2024

**Abstract** - Morocco's geopolitical position and expertise place it at the forefront of tourism car production in Africa and the 25th position globally in 2021 and 2022 respectively, and 8th worldwide in terms of growth by 15%. This performance warrants a thorough study of the sector both statistically and in terms of integrating the philosophy of Operational Excellence (OpEx). To date, no large-scale research has been conducted on the state of adoption and integration of the OpEx approach in Moroccan automotive companies. This research aims first to identify and analyze all Moroccan automotive companies based on several characteristics (origin, ecosystem, location, etc.) and to examine the level of integration and the impact factors of OpEx within these companies. Specifically, the study will focus on the level of implementation of OpEx for optimizing performance in the Moroccan automotive ecosystem. To achieve this objective, a benchmark analysis of the automotive ecosystem, as well as survey research through questionnaires and direct interviews, are used. The results of this study, based on descriptive statistics, are subsequently analyzed.

**Keywords** - Automotive Industry, Automotive Ecosystem, Industrial Performance, Operational Excellence, Morocco.

## 1. Introduction

The concept of Operational Excellence refers to a horizon of efficiency based on eight normative principles that reflect a desire to move away from Taylorism-Fordism. The application of this concept aims to highlight culture, innovation, and initiatives for the success and performance of the company [1].

To succeed in the OpEx project, it is necessary to find the right combination between a change in the organizational culture, which is saturated by the Lean attitude, and a change in the practices and tools adopted at the operational level [2], as well as a culture of continuous improvement [3].

Thus, many studies highlight that human resources and cultural change are critical factors for the adoption of Lean [4]. The human factor must be taken into account, and a culture that supports the Lean project must be established for the successful transformation to Lean [5].

Success Factors of OpEx: Motivation, involvement, and agility of individuals are key factors for the success of such an approach [6]. Additionally, teamwork, problem-solving, learning, innovation, and continuous improvement are crucial [5].

Furthermore, the commitment and leadership of top management and the communication of any project-related changes to the entire organization are essential [7].

Technical expertise ensures that decisions are aligned with the activities and constraints of the organization; it is as important as the commitment and leadership of top management [7]. To illustrate interactively and simply (see Figure 1) the success factors of ExOp, we will use the McKinsey 7S matrix [10].

Failure Factors of OpEx: However, based on the literature, organizations wishing to undertake Lean projects face both internal and external obstacles (see Figure 2).

Resistance to change and lack of time and skills are the main barriers to implementing Lean, followed by poor management of Lean projects in terms of monitoring actions undertaken and centralizing information and decision-making at the project cell level without involving all collaborators [11]. Another difficulty for companies wishing to apply lean management is the large number of available tools, with more than 100 tools being discussed [12]. Therefore, the lack of mastery of these tools leads to their misuse and subsequently results in no added value.



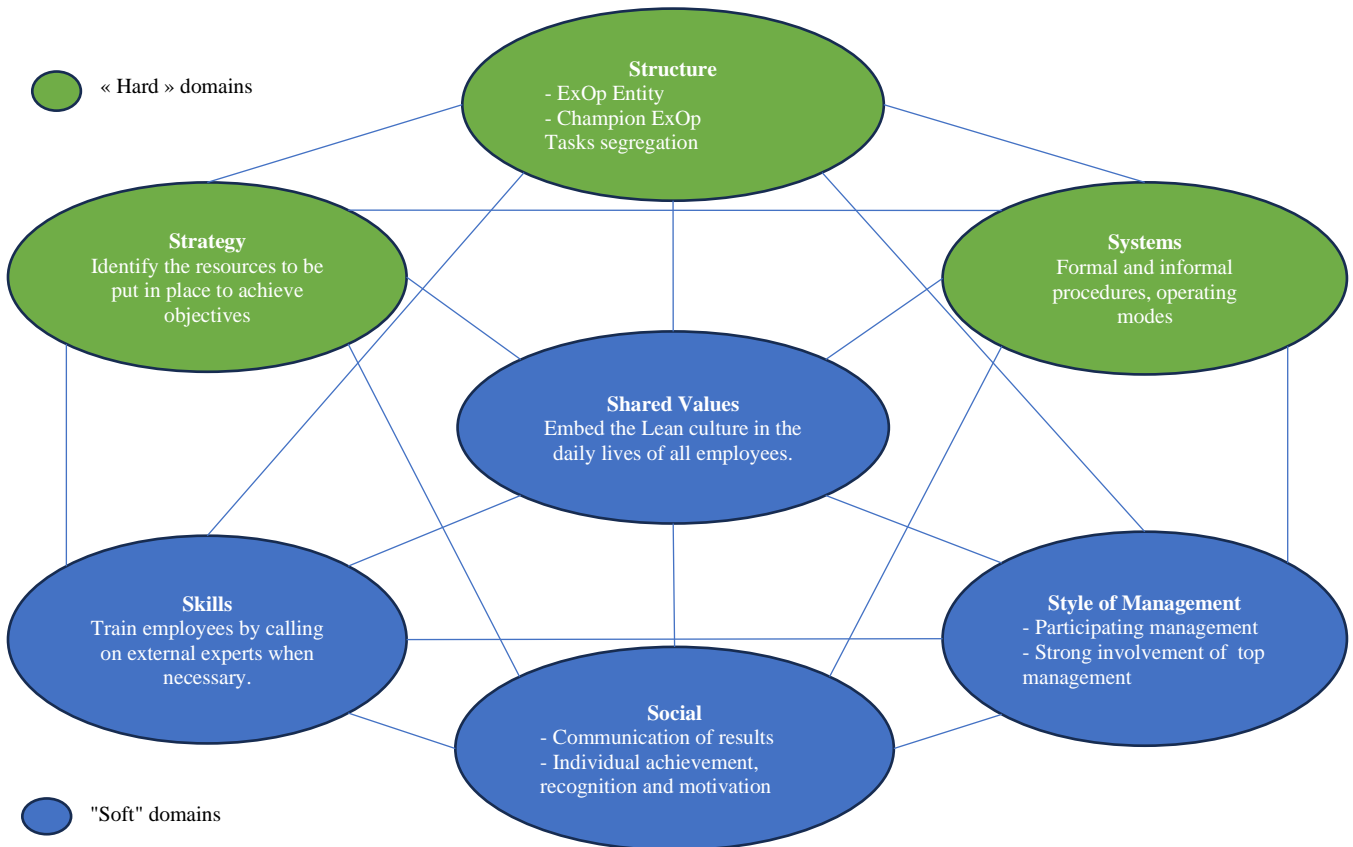


Fig. 1 Success factors of ExOp according to the McKinsey 7S matrix [8].

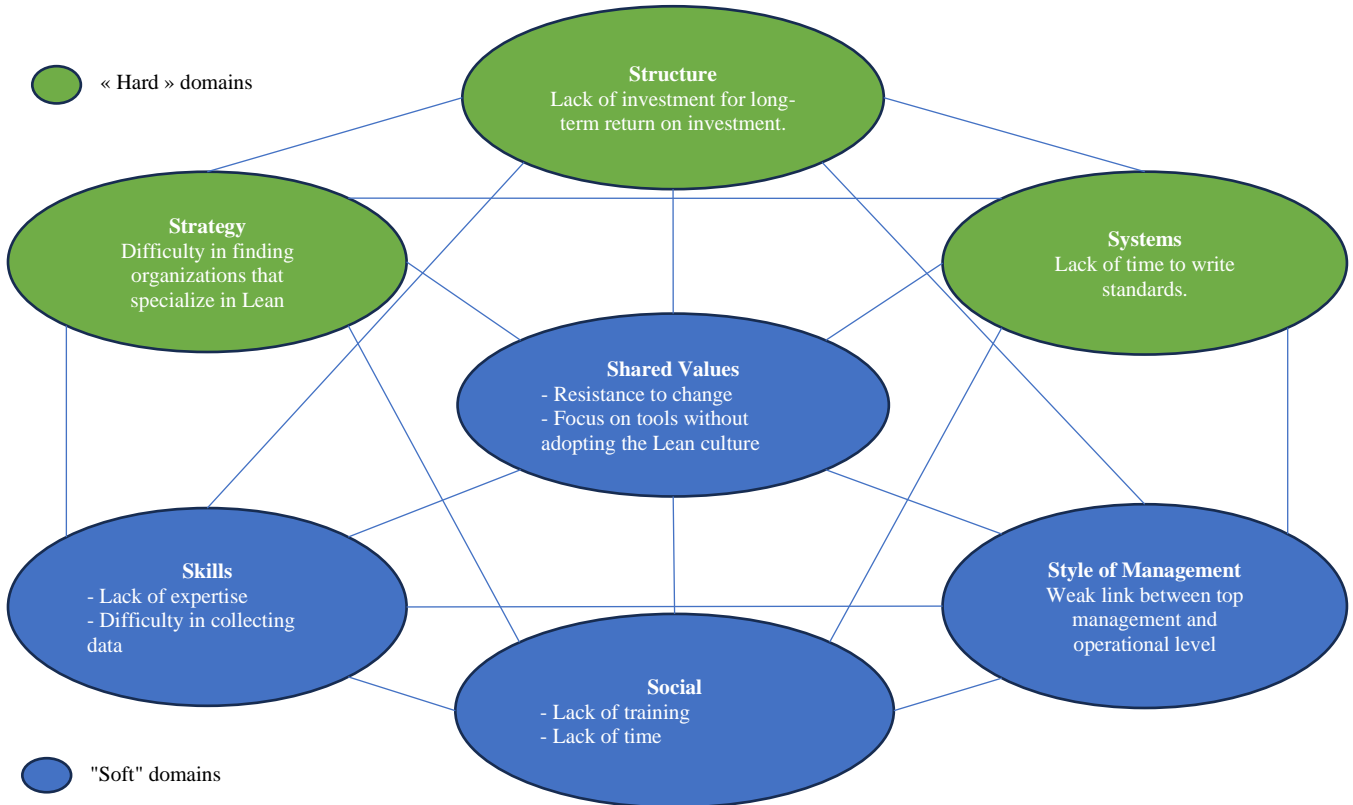


Fig. 2 Key failure factors of ExOp according to the McKinsey 7S matrix [8]

**Table 1. Morocco's world ranking in vehicle production**

Year	Production	Ranking
2023	535825	24
2022	464864	25
2021	403007	25
2020	248430	30
2019	394652	26
2018	402085	27
2017	376826	27

Source: International Organization of Motor Vehicle Manufacturers (OICA) [12]

Regarding external factors, the difficulty in finding specialized organizations in lean is an obstacle that makes the implementation of this approach challenging. Lean Management emphasizes the customer and supplier relationship and highlights that the external networks of a company are necessary for production while minimizing waste as much as possible [11].

After a benchmark analysis of the automotive ecosystem, our research is focused on an extensive, in-depth survey on the integration and development of operational excellence practices in the Moroccan automotive industry, a sector experiencing intense competition and constant evolution.

Our exploration primarily aims to confirm the hypothesis of the role of the Moroccan sociocultural context in the flourishing of the 'OpEx culture' and to dissect the impact factors in comparison with the literature.

## 2. Statistical Study: Analysis and Benchmarking

### 2.1. The Global Automotive Sector

In 2022, approximately 85.1 million cars were produced worldwide, compared to 80.1 million in 2021 and 58.4 million vehicles in 2000, marking a 6% increase. In this international context, Morocco ranks 25th with 464,864 vehicles produced in 2022 and 8th worldwide in terms of growth, with a 15% increase compared to 2021 (see Table 1).

### 2.2. Leading Countries in the Automotive Industry Over Time

As shown in the graph below, based on information from the OICA (International Organization of Motor Vehicle Manufacturers) [12], the global ranking of countries producing the most automobiles has evolved significantly over the years.

Most of the world's cars are manufactured in China. For instance, in 2021, China was in the top 10, ranking 8th globally. However, just a decade later, it had already climbed to the first position and has remained unchallenged since. The gap between China and the second-largest producer is now substantial. European countries have all regressed (Germany,

Spain, and France). For example, Germany fell from the second to the sixth rank within twenty years, and France dropped several places, exiting the Top 10 by only producing 1.3 million vehicles, a loss of 2.3 million, despite being the fourth-largest producer previously with 3.6 million vehicles.

Notably, India entered the Top 10 with a production of 4.4 million in 2021 and an increase of 11% over the last decade, placing it at the 4th rank. Two Latin American countries, Mexico and Brazil, have continued to progress, ranking 7th and 8th with a 42% increase.

In 2022, there were no major changes, except for Thailand entering the TOP 10 at the expense of Russia.

Thus, the global automotive market is undergoing a profound transformation. Major producers in the industry and their partners must now commit to massive investments and redefine their industrial and commercial strategies to meet a range of new challenges accelerated by both the post-pandemic context and the ongoing geopolitical reconfiguration.

Among these challenges are the disruption of internationalization, increased competitive intensity with the arrival of new, more agile, and digital entrants, the need for critical mass in terms of innovation, the transformation of demand in a cross-cutting manner, the consideration of environmental constraints, and the adaptation of the production tool.

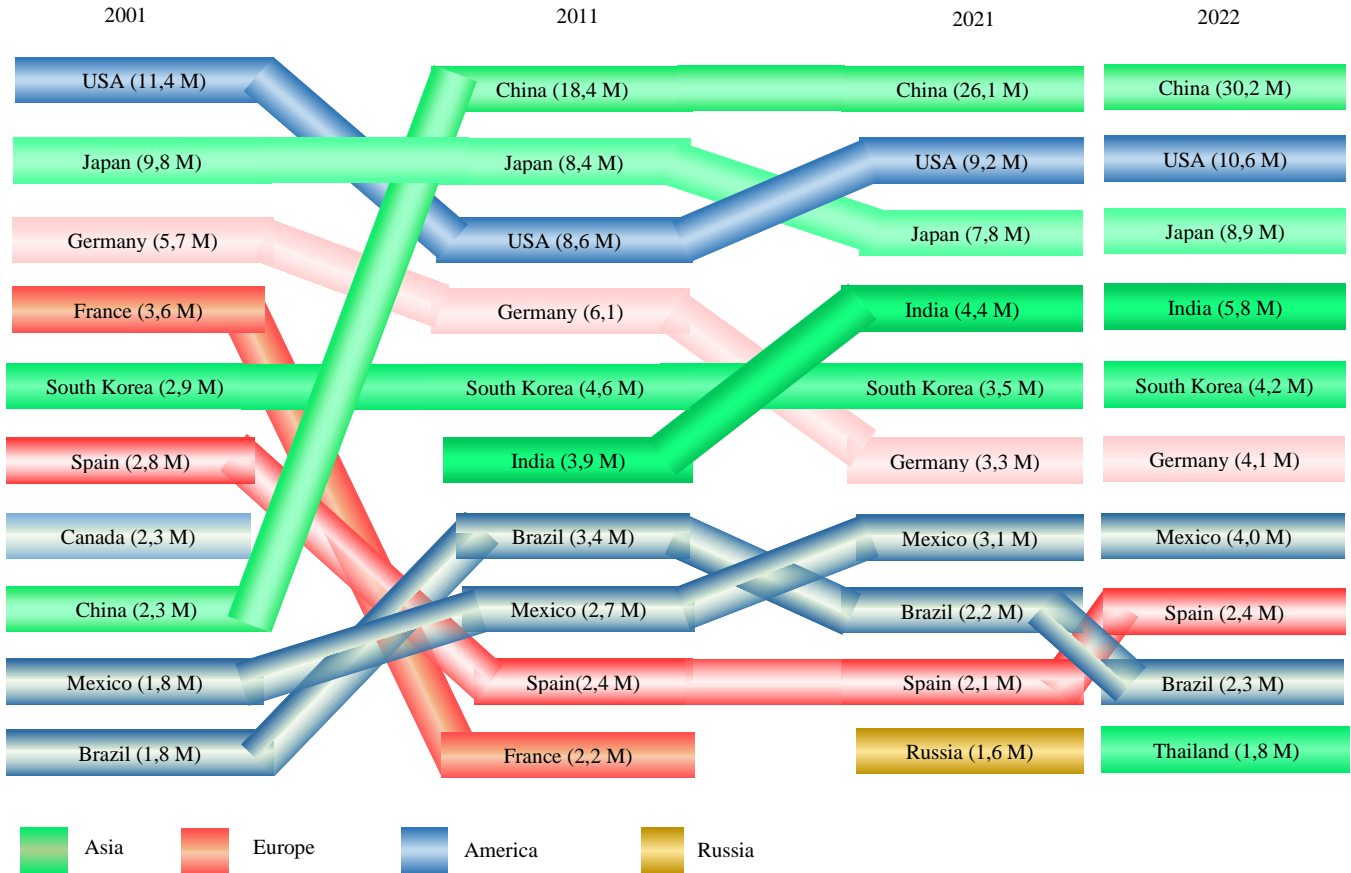
It would be interesting to study the Indian, Mexican, and Brazilian models as part of a benchmarking objective to draw lessons in terms of operational excellence.

### 2.3. Benchmarking with the Best Performances in the Automotive Industry

The selection of India, Mexico, Brazil, and South Africa for comparison with Morocco's industrial performance is not arbitrary. In fact, the first three countries have demonstrated strong growth in the Top 10, and the choice of South Africa provides insight into the African continent.

We notice that the larger the number of automobile manufacturers in a country, the better the production and, consequently, the higher the ranking. Morocco's performance remains very strong when considering only this indicator, even with only two manufacturers.

In the same vein, the greater the number of automakers, the larger the number of equipment suppliers becomes, and this is justified by the need for ecosystems alongside the assembly plants. Aside from India, with a population of 1.393 billion and a minimum wage (SMIG) of 41.2 €, the comparison of other countries in this study remains similar in terms of minimum wage, with Morocco in a favourable position.



Source: (OICA), adapted by the author.

Fig. 3 Annual ranking of countries according to the volume of vehicles manufactured

Table 2. Comparison of the best performances in the automotive industry

Country	Rank	Number of Manufacturers	Number of Equipment Suppliers	SMIG (2022)	Contribution to GDP	Population (Million) 2021
India	4	19 Passenger Vehicles and 14 Commercial Vehicles Maruti Suzuki 50%, Hyundai 16%, M&M 8%, Tata 6%, Honda 5%, Toyota 4%, Renault 3%, Ford 3%, (Nissan, FCA, VW, Skoda, Isuzu) 5%	500 Equipment Manufacturers and 10,000 Automotive Suppliers.	41,2 €	7.1 %	1393
Mexico	7	24 : Nissan, Volkswagen, General Motors, FCA (Fiat-Chrysler), Ford, Honda, Toyota, Audi, Kia Motors, MercedesBenz, Infiniti, Mazda, Chevrolet and BMW	1300 (350 are tier 1 suppliers, and almost 950 are tier 2 and 3)	227,2 €	4 %	130
Brazil	8	27: GM (18,2%), FCA (13,40%), Volkswagen (12,5%), Ford (9,5%), Hyundai (9,3%), Toyota (8,8%), Renault (7,7%), Honda (6%), Jeep (4,10%), Nissan (3,60%), PSA Peugeot Citroën (1,20%).		192,1 €	4%	214
South Africa	21	12: BMW, General Motors, FCA, Isuzu, Ford, Toyota, Volkswagen, Nissan, MAN, Mercedes-Benz, Tata, FAW, DAF Trucks.	500	212,6 €	7.5 %	60
Morocco	25	2: Renault Nissan and PSA	250	209,4 €	16%	37

Country	Rank	Strengths	Weaknesses
India	4	<ul style="list-style-type: none"> <li>- Availability of a skilled workforce at a low cost.</li> <li>- The automotive industry provides direct and indirect employment to over 29 million people in India.</li> <li>- Robust R&amp;D centers.</li> <li>- Opportunity for partnerships with numerous Indian automotive manufacturers and suppliers to achieve technological advancements or optimization of local production units.</li> <li>- Market leader Maruti Suzuki, owned by the Japanese firm Suzuki, accounts for 50% of passenger vehicle sales on its own.</li> </ul>	<ul style="list-style-type: none"> <li>- The Indian automotive ownership rate is only 25 vehicles per 1,000 inhabitants, in contrast to rates of over 350 in Russia or Brazil and 175 in China.</li> <li>- The Indian automotive market is known for its volatility. Factors such as the rupee's appreciation, oil prices, interest rates, and more can lead to fluctuations in sales. Due to these sometimes contradictory factors, the Indian market is unpredictable.</li> <li>- Inadequate infrastructure.</li> </ul>
Mexico	7	<ul style="list-style-type: none"> <li>- Competitive and cost-effective production (labor and logistics).</li> <li>- A strategic location (in North America, with 42 million vehicles in Mexico).</li> <li>- A skilled workforce.</li> <li>- Developed infrastructure (communication, highways, and ports).</li> <li>- More than forty trade agreements with several countries for free trade.</li> <li>- Agreements with four Mercosur countries, including Argentina, Paraguay, Brazil, and Uruguay.</li> </ul>	<ul style="list-style-type: none"> <li>- The minimum wage does not necessarily make production conditions in Mexico more advantageous.</li> <li>- Increasing crime related to drug cartels and trafficking.</li> <li>- High level of corruption: The World Bank estimates it at 9% of the GDP.</li> </ul>
Brazil	8	<p>The emergence of the automotive sector dates back to 1921 with the establishment of Ford, followed by the American giant General Motors in 1925, the German manufacturer Volkswagen in 1957, and the Italian Fiat in 1976.</p>	<ul style="list-style-type: none"> <li>- A development strategy based on debt since 1970, which places Brazil among the top countries with a debt crisis.</li> <li>- In 1980 Starting, Brazil began selling state-owned companies to repay the debts.</li> </ul>
South Africa	21	<ul style="list-style-type: none"> <li>- The automotive industry in South Africa began in 1924 with Ford's construction of its factory in Port Elizabeth.</li> <li>- Starting from 2013, the government has encouraged investment attractiveness in the automotive industry with a 25% tariff on imports.</li> <li>- Automotive manufacturers target the local market, which ranks first in the continent and then the rest of Africa with 60%.</li> <li>- Investing in a Supply Chain mutualization project towards Kenya, Congo, and Nigeria to optimize costs</li> </ul>	<ul style="list-style-type: none"> <li>- Unfavorable geographical distance from Europe and the United States.</li> <li>- Social issues manifesting in strikes.</li> <li>- Energy problems due to a lack of electricity (frequent power cuts).</li> <li>- High unemployment rate of 27%.</li> </ul>
Morocco	25	<ul style="list-style-type: none"> <li>- Morocco positions itself as a "Best Cost" country in the global automotive sector.</li> <li>- Morocco benefits from its geographical location between Europe and Africa.</li> <li>- Advanced telecommunications infrastructure.</li> <li>- A recognized high-quality workforce (for example, Renault's factory in Tangier).</li> <li>- Compliance and alignment with international standards.</li> <li>- Easing of regulations.</li> <li>- Strengthening of regulations related to environmental aspects.</li> </ul>	<ul style="list-style-type: none"> <li>- The presence of only two automotive manufacturers</li> <li>- Highly educated workforce with a potential weakness in practical skills.</li> <li>- Weak research and development to attract investment</li> </ul>

**2.4. Recommendations**

The Moroccan automotive industry should enhance its investment attractiveness by continuously improving production costs and increasingly focusing on new technologies: digitization, autonomy, and artificial intelligence.

Morocco should develop a new electric battery system to keep up with market trends and enter the global value chain to attract new manufacturers. Furthermore, it should further strengthen its regulations, align with international environmental standards, and develop renewable energy sources.

Finally, the country should reinforce its human capital by providing more support to R&D laboratories and training centers and also encourage joint ventures between Moroccan automotive companies and multinational corporations to accelerate technology transfer.

**2.5. Study of the Moroccan Automotive Sector**

Over the past decade, Morocco has seen a significant and noteworthy advancement in its automotive industry. This success is primarily attributed to its strategic geographical location, skilled workforce, and robust industrial ecosystems. Various programs have been adopted over the years, which have enhanced Morocco's integration into the Global Value Chains (GVCs) of the automotive industry [13, 14, 15]. These efforts have improved its competitive position and attracted global investments [16, 17].

Indeed, to further enhance its competitive stance, Morocco has implemented several strategies. These include

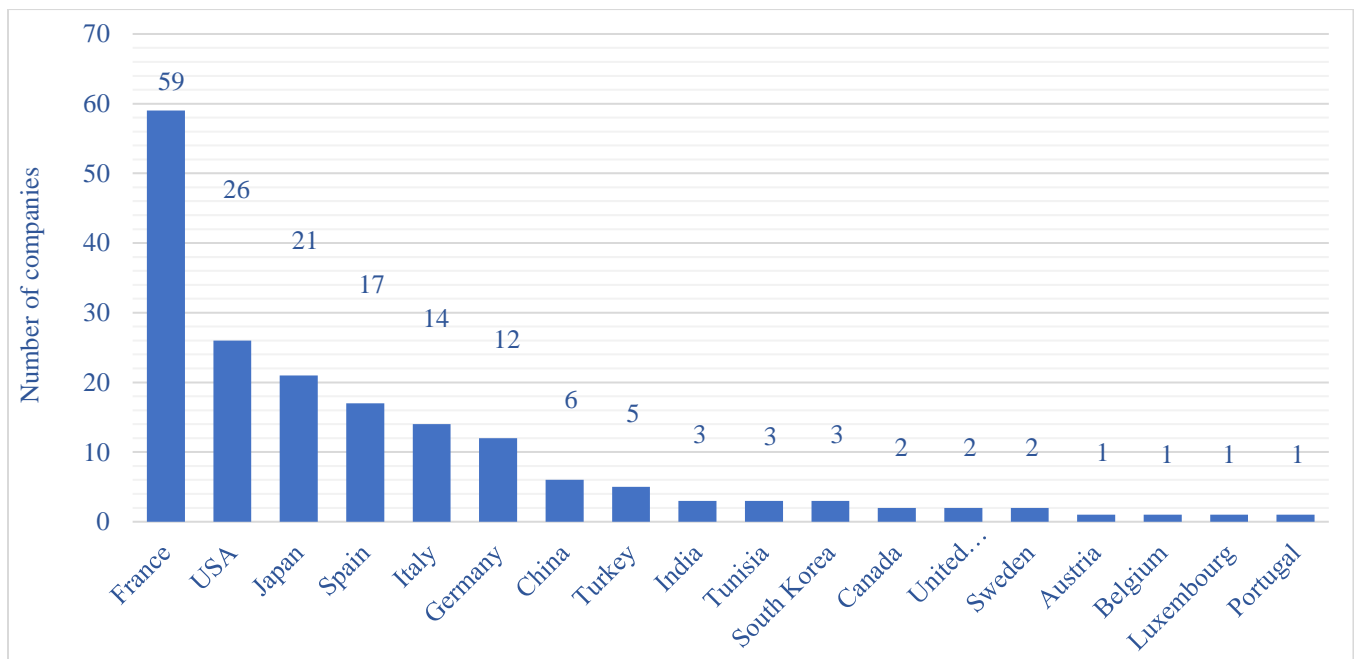
the National Pact for Industrial Emergence (PNEI), launched in 2005, followed by the Industrial Acceleration Plan 2014-2020, and most recently, the new Industrial Recovery Plan 2021-2023, aimed at mitigating the damages caused by the COVID-19 pandemic.

The automotive value chain in Morocco is comprised of the following elements:

- Over 250 national and international players.
- Three automobile manufacturers: Renault, PSA (Peugeot Société Anonyme), and the Chinese company BYD (project in progress).
- More than 220 automotive equipment manufacturers.
- Over 50 factories for Tier 1 equipment suppliers are currently under construction.
- 10 ecosystems: Wiring, vehicle interiors and seats, metal stamping, batteries, PSA, engines and transmission, RENAULT, APTIV, LEONI, and VALEO.
- 3 newly created ecosystems: Engineering, spare parts, and vehicle exteriors.

The study aims to delve deeper into the composition of the Moroccan automotive sector by analyzing data from each company. An extensive analysis of Moroccan automotive companies has been conducted, focusing on their profession, origin, location, and ecosystem. As of November 2023, there are 265 automotive companies identified in Morocco.

Initial statistics reveal that the Moroccan automotive industry comprises 86 purely Moroccan automotive companies, accounting for 32% of the sector. Meanwhile, 179 companies are foreign enterprises established in Morocco, making up 68% of the industry.



**Fig. 4** The origin of foreign automobile companies established in morocco – Number / Country (November 2023)

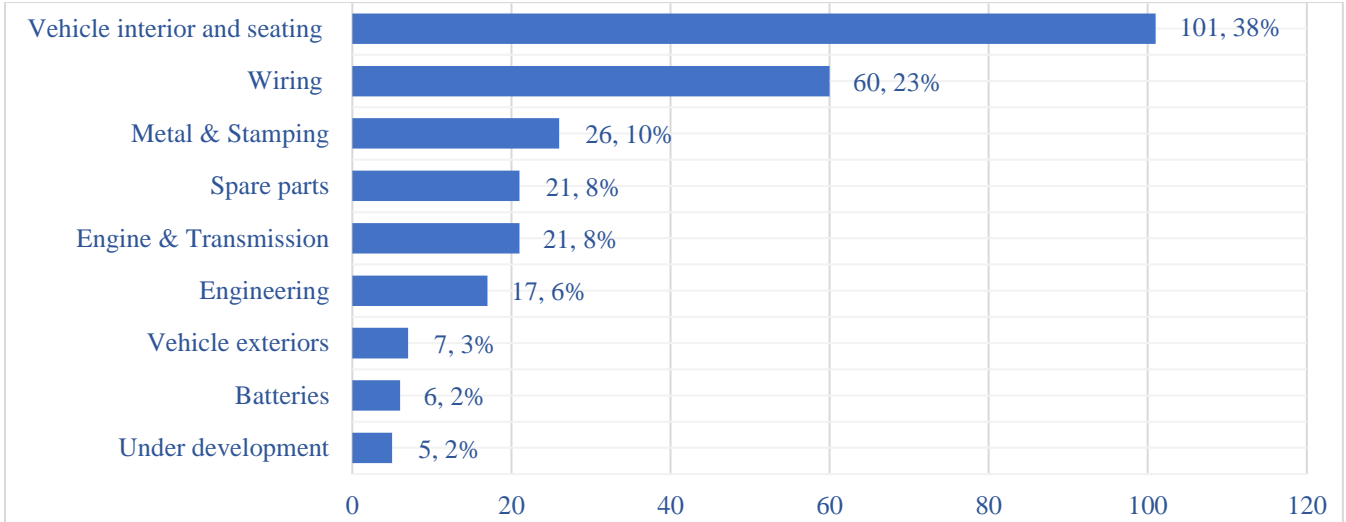


Fig. 5 Ecosystems – Number; Percentage / Ecosystem (November 2023)

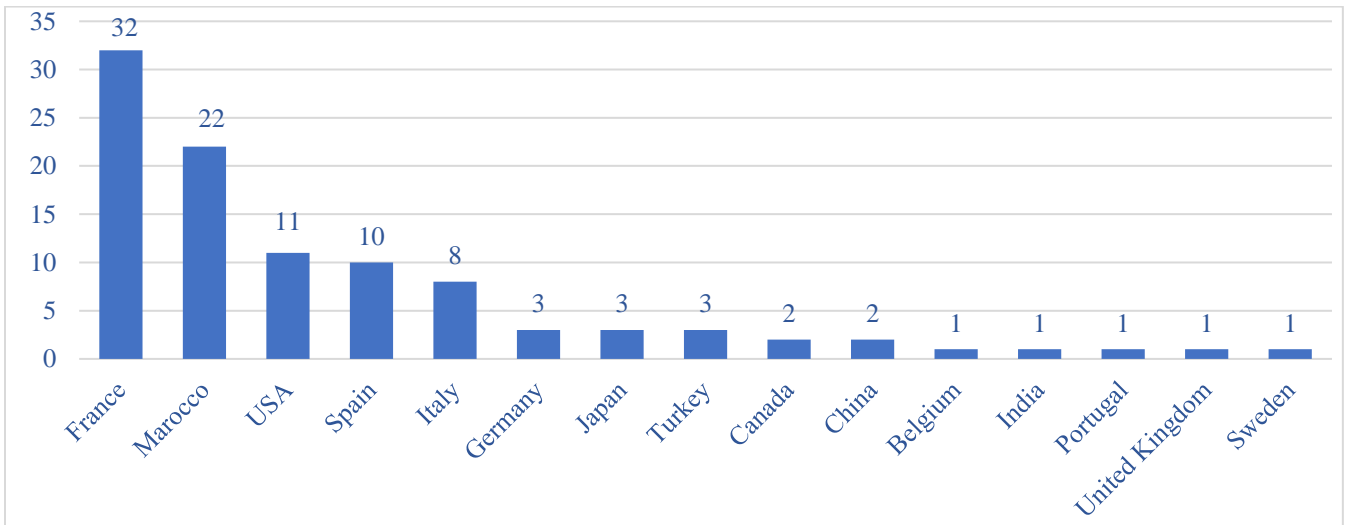


Fig. 6a Origin: The "Vehicle Interior and Seating" Automotive Ecosystem (November 2023)

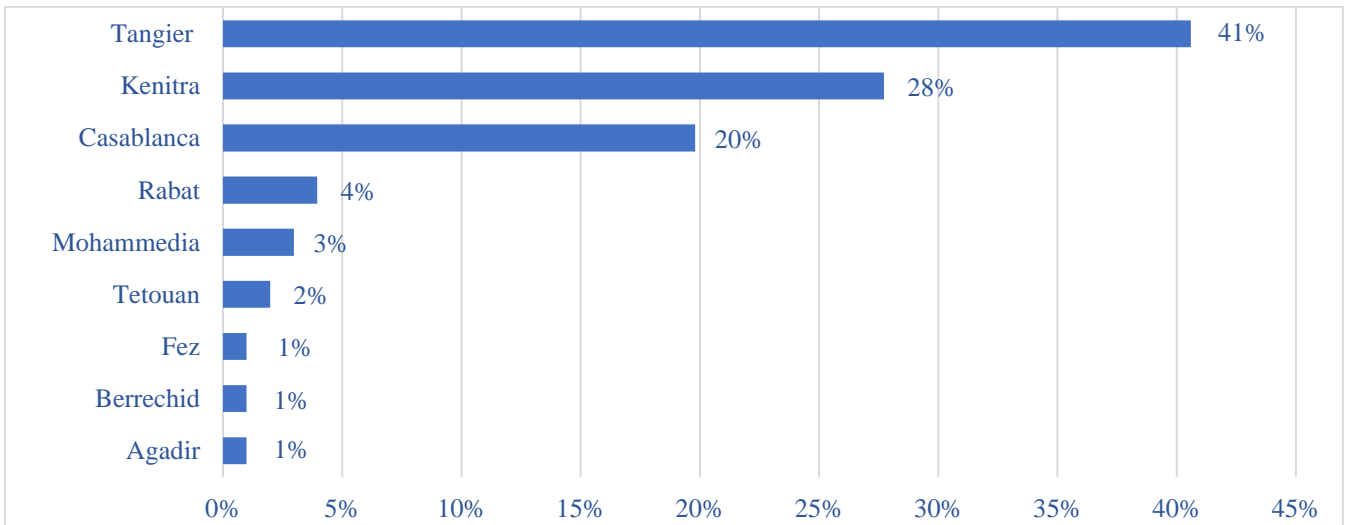


Fig. 6b location: The "Vehicle Interior and Seating" Automotive Ecosystem (November 2023)

2.5.1. The Moroccan Automotive Ecosystem

The automotive ecosystem is a platform that brings together national or multinational companies of levels 1 and 2 and subcontractors working in the same sector or on the same product. This concept unites various players to complete the value chain and contributes to enhancing the performance and competitiveness of the automotive sector. The primary goal of the ecosystem is to increase local integration.

The Industrial Acceleration Plan (PAI, 2014-2020), with its development of integrated industrial ecosystems, remains an innovative idea.

In the continuation of our study, we will focus on the top 3 automotive ecosystems in Morocco: "Vehicle Interior and Seating," "Wiring," and "Metal & Stamping."

2.5.2. The "Vehicle Interior and Seating" Automotive Ecosystem

In total, 101 companies. 32% of them are French companies, and 41% of the companies in this automotive ecosystem are located in Tangier.

2.5.3. The Automotive Ecosystem "Wiring"

It concerns 60 companies. We observe a dominance of Japanese companies with 25%, and 37% of the companies in this automotive ecosystem are located in Tangier.

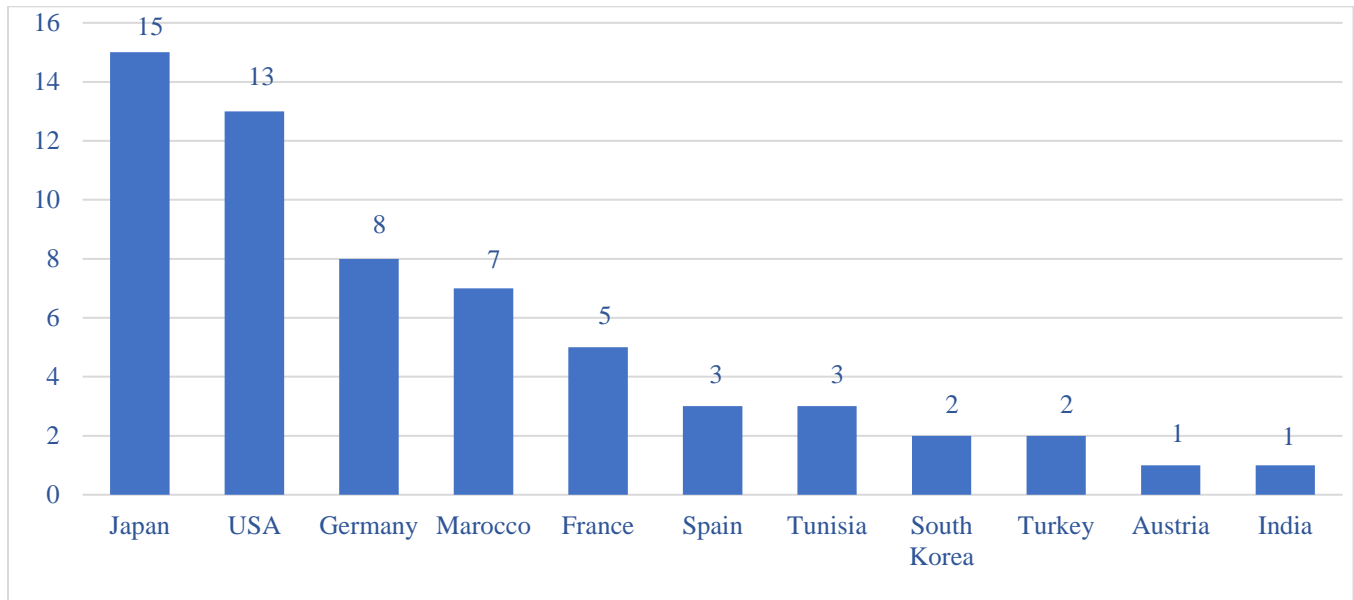


Fig. 7a Origin: The "Wiring" Automotive Ecosystem (November 2023)

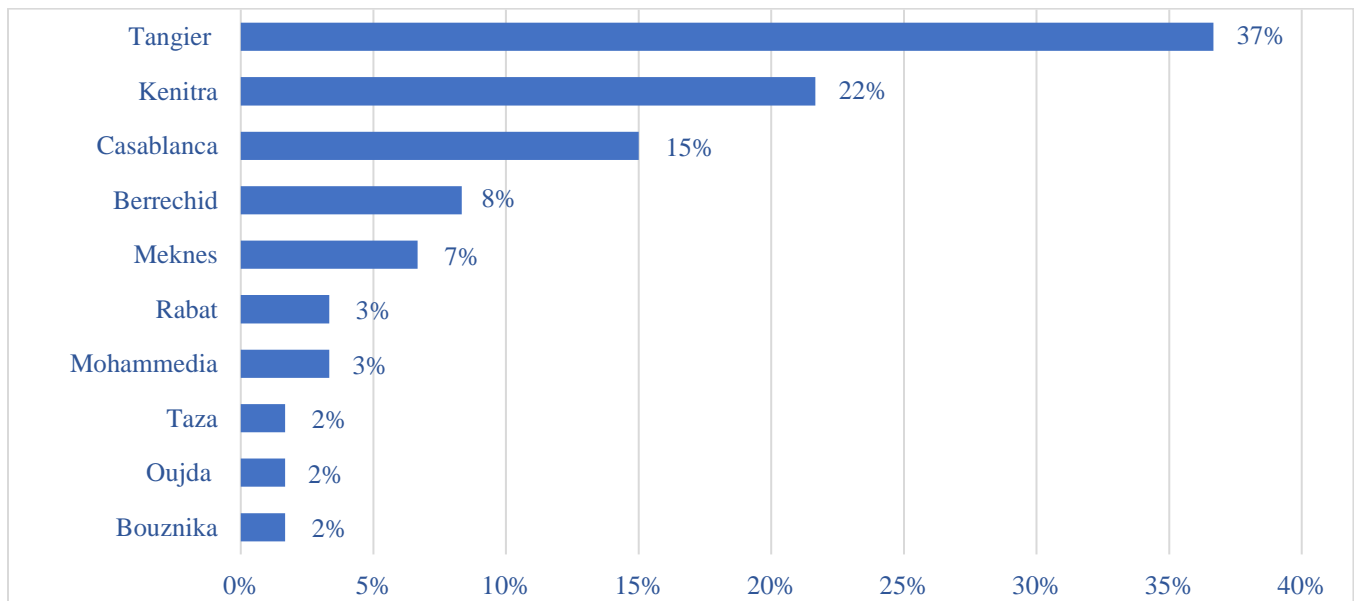


Fig. 7b Location: The "Wiring" Automotive Ecosystem (November 2023)



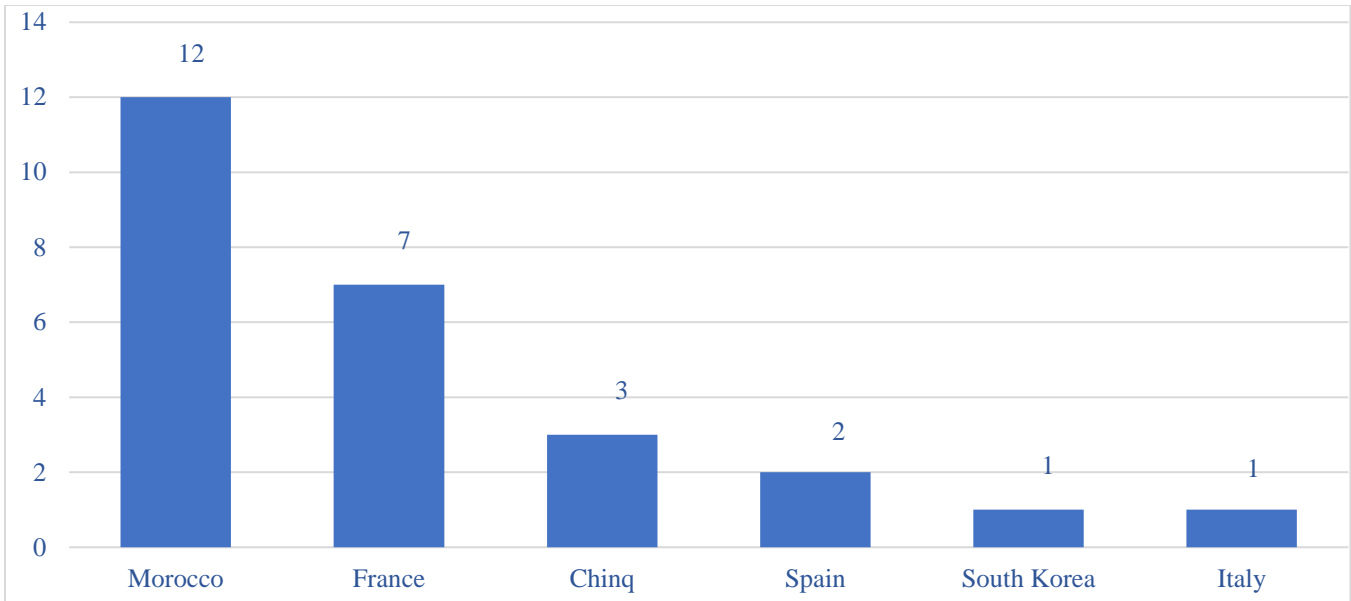


Fig. 8a Origin: The "Metal & Stamping" Automotive Ecosystem (November 2023)

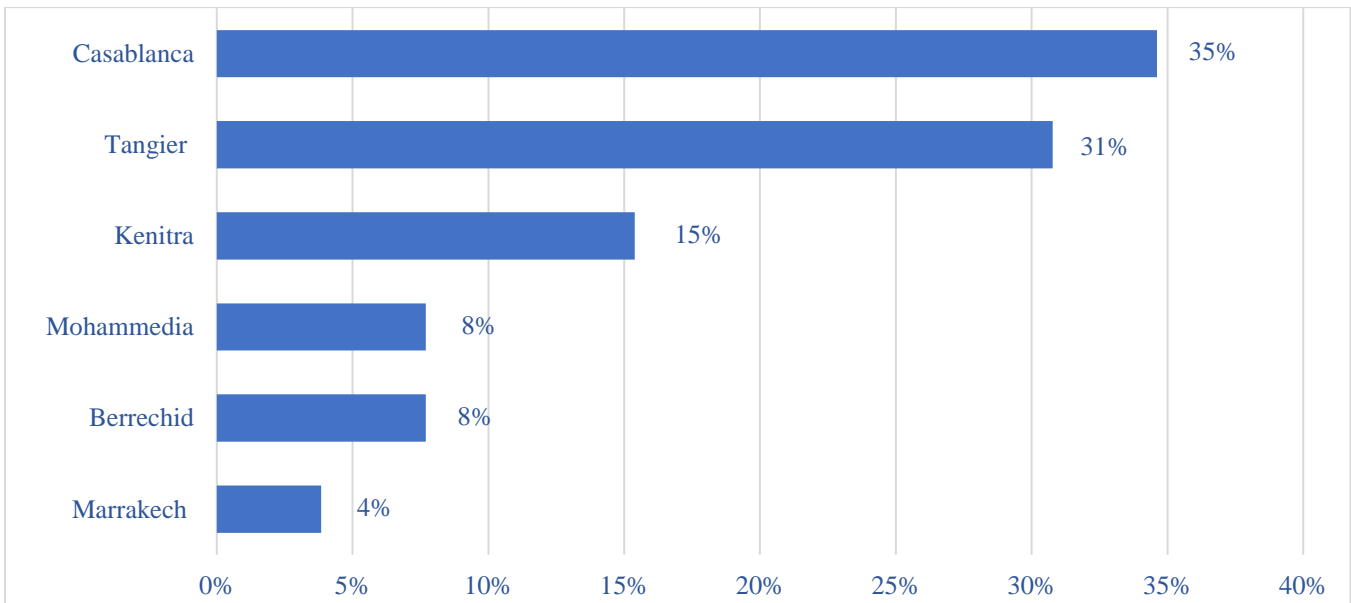


Fig. 8b Location: The "Metal & Stamping" Automotive Ecosystem (November 2023)

#### 2.5.4. The Automotive Ecosystem "Metal & Stamping"

26 companies have been identified. 46% of them are Moroccan companies, and 35% of the companies in this automotive ecosystem are located in Casablanca.

#### 2.5.5. Geographic Distribution of Automotive Equipment Suppliers in Morocco

The distribution shown in Figure (9) indicates a concentration of 83% of automotive companies in three cities (Tangier, Casablanca, and Kenitra). To enhance the attractiveness of foreign investments and encourage the growth of economic activity, Morocco has built export-free zones with tax advantages.

#### 2.5.6. Joint Venture (JV)

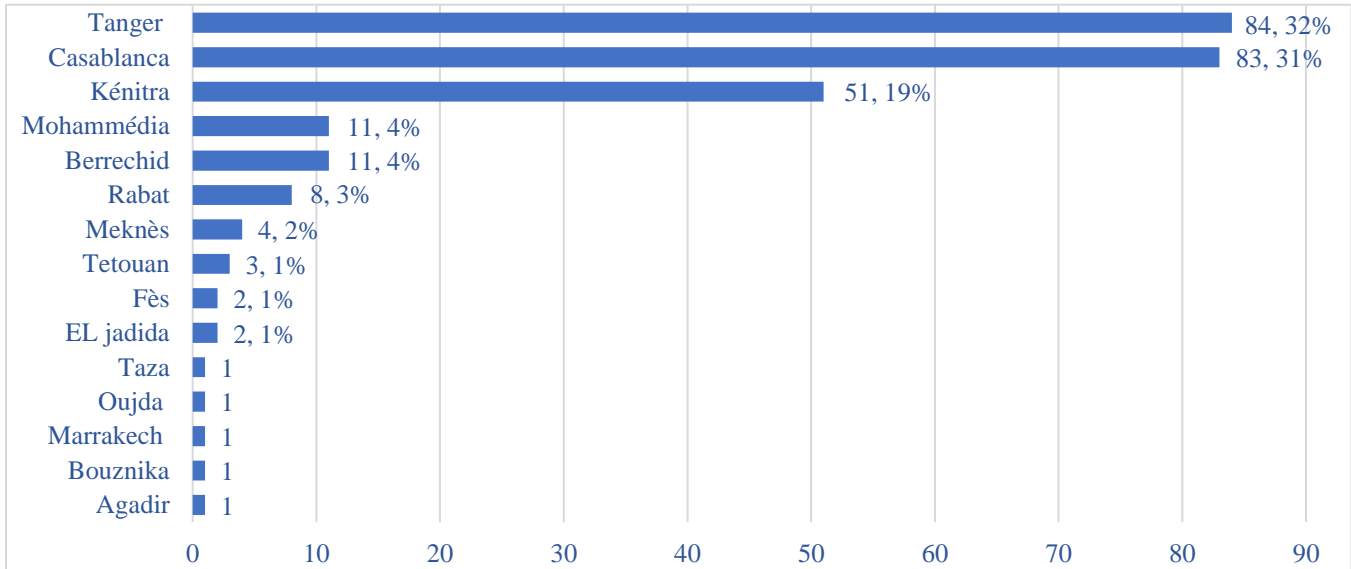
It is important to note a very significant lever for the development of the Moroccan automotive sector, which is the partnerships between international automotive equipment manufacturers and Moroccan companies.

This encourages technology transfer and alignment with international standards.

- Induver and AGC
- Tuyauto and Gestamp
- Dolidol and Jobelsa Mafaco and Trèves TSC

**Table 2. SWOT Analysis of moroccan automotive industry**

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>- The geographical location of Morocco in proximity to Europe.</li> <li>- The successful experience with the Renault and "Stellantis" groups and their suppliers.</li> <li>- Political and economic stability.</li> <li>- A policy of economic and trade openness (free trade agreements).</li> <li>- Progress in infrastructure levels.</li> <li>- Development of ecosystems in the automotive industry.</li> <li>- The ability to produce "low-cost" cars intended for consumers with modest purchasing power, particularly in emerging countries.</li> </ul>	<ul style="list-style-type: none"> <li>- Dependence on French manufacturers.</li> <li>- Lack of expertise in research and development.</li> <li>- The need to train high-tech profiles according to international standards.</li> </ul>
Opportunities	Risks
<ul style="list-style-type: none"> <li>- The Kingdom's macroeconomic indicators are in constant positive evolution.</li> <li>- The African market is growing rapidly.</li> <li>- Strategies for the relocation of automobile manufacturers.</li> <li>- The electrification of vehicles by materializing agreements with the global leader BYD.</li> <li>- Joint venture (JV) *</li> </ul>	<ul style="list-style-type: none"> <li>- Competitive intensity of countries to attract investments in the automotive industry.</li> <li>- The decline in the outlook for the European market.</li> <li>- The repatriation of European production.</li> </ul>



**Fig. 9 Geographical distribution of equipment manufacturers – Number; Percentage / City (November 2023)**

**2.5.7. Strategic diagnosis: SWOT of the Moroccan automotive industry**

There is nothing better than a SWOT analysis of the Moroccan automotive sector; following the resulting outcomes, one will be able to define the objectives and adopt the best strategic choices clearly. It is a strategic diagnosis aimed at confronting the conclusions of internal and external strategic analysis in order to identify the best strategic orientations which is shown in the table 2.

**3. Experimental Study: A Field Study**

**3.1. Framework of the Research and Data Analysis**

The empirical research took place during the year 2023. A survey questionnaire was developed and adapted, taking into account the research instruments, and sent to the 265

automotive companies in Morocco identified in the statistical study, followed by meetings and direct interviews with representatives: Top management, Human Resources Directors, and Middle management. The architecture of the survey questionnaire was developed on the basis of the technical and organizational background of Operational Excellence. The questionnaire allowed us to determine the following:

- The different perceptions of Operational Excellence management.
- Identification of the impact factors of Operational Excellence in a Moroccan sociocultural context.

We were able to obtain 214 responses out of 265, a very encouraging result that allows for an objective analysis.

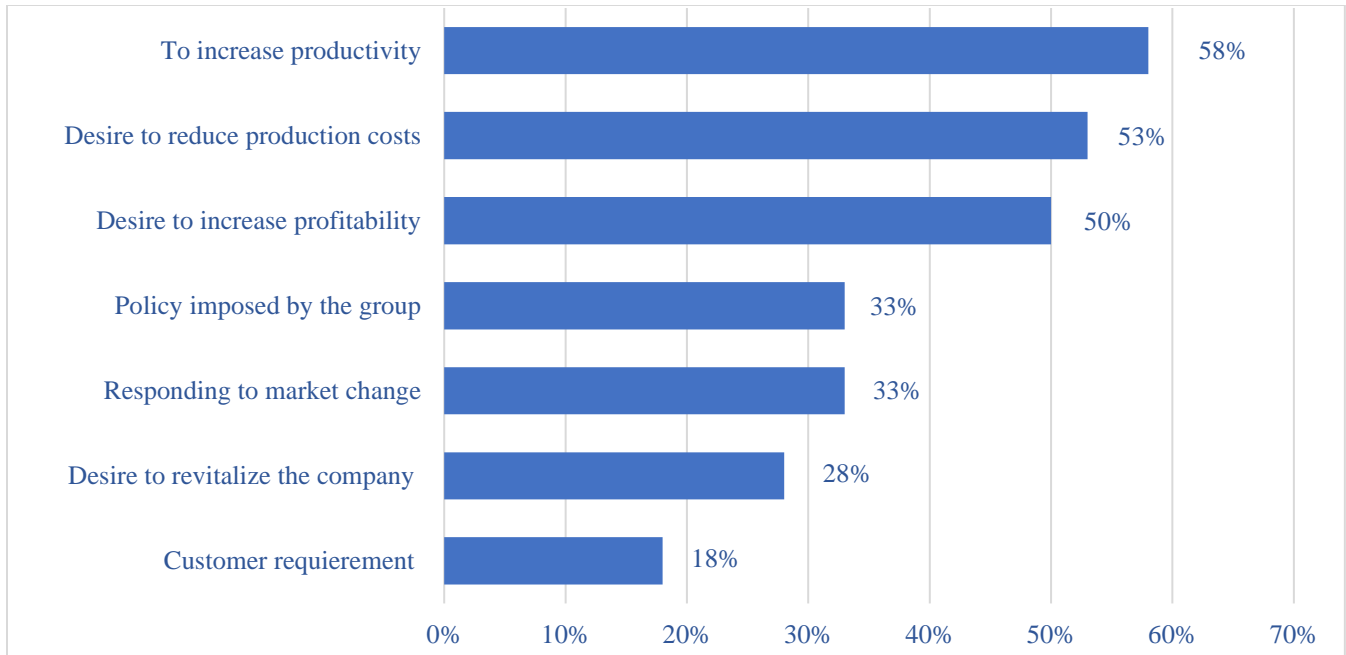


Fig. 10 Perception of the objective behind the deployment of operational excellence

### 3.2. Results, Data Analysis, and Discussion

The first expected result was that 92% of respondents declared having implemented a process of continuous improvement, such as Operational Excellence. Indeed, the automotive sector is considered a leader in integrating new concepts of continuous improvement.

The participating companies are generally large enterprises. In fact, 87% of the companies have more than 500 employees, and only 13% are small businesses with a workforce not exceeding 50 employees.

### 3.3. Perception of the Objective Behind the Deployment of Operational Excellence

Next, we analyzed the respondent's perception of the objective of such an approach (see Figure 10). Indeed, 58% are convinced that the purpose is to increase productivity. Also, the results show a low intensity in the communication of objectives by strategic levels, which has the role of cascading the vision to tactical and operational levels. In fact, only 33% of respondents consider that it is a policy of the group to be deployed. Unfortunately, a structured communication process can increase their feeling of involvement in performance improvement.

### 3.4. Success Factors for the Deployment of OpEx in Moroccan Automotive Companies

Almost 99% of Moroccan companies place great importance on the training of tools and practices of Operational Excellence in the course of such a method. Adding to this, 60% of respondents prioritize training on change management. Indeed, the company must invest in

training all personnel, including OpEx as a necessary but not sufficient skill in its journey towards OpEx. In order to anchor the OpEx culture, it is necessary to seek to change attitudes and act on behaviors, and only at that moment will perpetuation be possible. In other words, integrating workshops and activities into training modules will allow participants to be confident competent, and reinforce their knowledge for adapting to change. This is how a range of methods and teaching should be developed throughout the training, including plenary discussions to get a view of the participants and opinions, as well as group activities to allow participants to work as a team, demonstrations, and case studies to facilitate the appropriation of tools.

### 3.5. Risk Factors for the Deployment of OpEx within Moroccan Automotive Companies

However, the results of the study indicate that the cultural aspect is considered one of the risk factors for the success of OpEx, with 27% of the participating companies representing the majority of the Moroccan automotive sector. Culture is the invisible link that unites the members of a community. When it comes to improvements, companies should transform into a cultural framework where each person is involved. The trait of the culture of involvement consists of three main indices that differentiate this trait from other cultural traits; these indices include empowerment, team orientation, and capacity development.

Secondly, the pursuit of quick gains with 25% aligns with the result of the perception of OpEx and where the participating companies responded that the objective is to increase productivity.

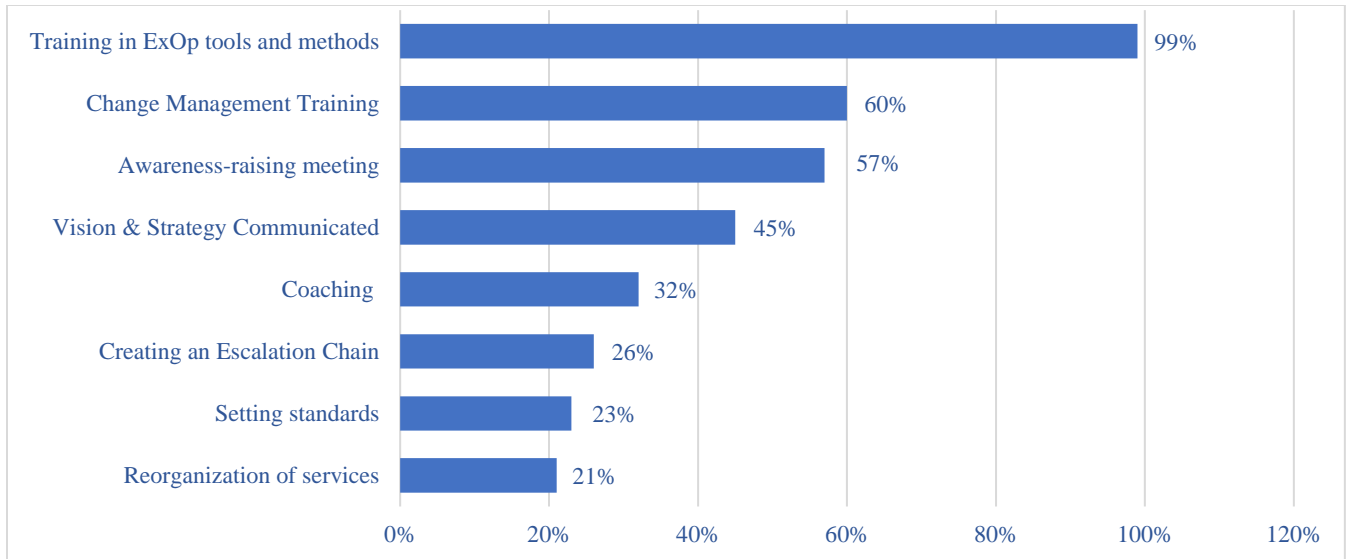


Fig. 11 Success factors for the deployment of ExOp within Moroccan automotive companies



Fig. 12 Risk factors for the deployment of ExOp within Moroccan automobile companies

#### 4. Conclusion

The goal of this in-depth research is to fill a gap in scientific research on operational excellence in Morocco. It aims to assess the integration and adoption of the Operational Excellence philosophy in Moroccan automotive companies. We began with a statistical study that showed the evolution of the global automotive sector, the ranking and progress of leading countries in automotive production over time, as well as Morocco's international positioning. Then, we benchmarked the Moroccan automotive sector against the world's best performances. This allowed us to perform a strategic diagnosis of the Moroccan automotive industry based on a SWOT analysis. After listing 265 companies representing the entirety of the Moroccan automotive industry, a questionnaire was developed to achieve our main

objective of 1) Identifying the different perceptions on the management of Operational Excellence and 2) Determining the impact factors of Operational Excellence in the Moroccan sociocultural context based on the previously established literature review, illustrated according to the McKinsey 7S matrix [9]. We received 214 responses out of 265, a very encouraging response rate of 81%, allowing for an objective analysis. In summary, we can conclude that the survey's output elements correspond to and confirm the existing theory on the perception of Operational Excellence. This concept is perceived in the Moroccan automotive industry primarily as an approach to increase productivity. Other results show a low intensity in the communication of objectives by Top Management. Finally, we studied what promotes the success of Operational Excellence in Morocco.

The study's results confirm, by almost all companies, the important role of tool training in the successful deployment of Operational Excellence. The other top three success factors are training in change management, awareness meetings, and communication of vision and strategy. On the other hand, the

study's results indicate that the cultural aspect, the pursuit of quick gains, and the lack of a sustainability method are the primary risk factors for the success of this concept. These results allow for a better integration of Operational Excellence practices in Moroccan automotive companies.

## References

- [1] Thomas J Peters, and Robert H. Waterman, "In Search of Excellence," *Nursing Administration Quarterly*, vol. 8, no. 3, pp. 85-86, 1984. [[Google Scholar](#)] [[Publisher Link](#)]
- [2] Paul Sparrow, and Lilian Otaye-Ebede, "Lean Management and HR Function Capability: The Role of HR Architecture and the Location of Intellectual Capital," *The International Journal of Human Resource Management*, vol. 25, no. 21, pp. 2892-2910, 2014. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [3] Pius Achanga et al., "Critical Success Factors for Lean Implementation within SMEs," *Journal of Manufacturing Technology Management*, vol. 17, no. 4, pp. 460-471, 2006. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [4] M.L. Emiliani, "Origins of Lean Management in America: The Role of Connecticut Businesses," *Journal of Management History*, vol. 12, no. 2, pp. 167-184, 2006. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [5] Pedro José Martínez-Jurado, and José Moyano-Fuentes, "Lean Management, Supply Chain Management and Sustainability: A Literature Review," *Journal of Cleaner Production*, vol. 85, pp. 134-150, 2014. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [6] Peter Hines, Matthias Holweg, and Nick Rich, "Learning to Evolve: A Review of Contemporary Lean Thinking," *International Journal of Operations & Production Management*, vol. 24, no. 10, pp. 994-1011, 2004. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [7] J.P. Womack, and D.T. Jones, "Lean Thinking-Banish Waste and Create Wealth in your Corporation," *Journal of the Operational Research Society*, vol. 48, no. 11, pp. 1148-1148, 1997. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [8] McKinsey Quarterly, "Enduring Ideas: The 7-S Framework," *McKinsey & Company*, 2008. [[Google Scholar](#)] [[Publisher Link](#)]
- [9] Sandra Dubouloz, "Barriers to Organizational Innovation: The Case of Lean Management," *Management International*, vol. 17, no. 4, pp. 121-144, 2013. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [10] S.J. Pavnaskar, J.K. Gershenson, and A.B. Jambekar, "Classification Scheme for Lean Manufacturing Tools," *International Journal of Production Research*, vol. 41, no. 13, pp. 3075-3090, 2010. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [11] Roberto Panizzolo, "Applying the Lessons Learned from 27 Lean Manufacturers: The Relevance of Relationships Management," *International Journal of Production Economics*, vol. 55, no. 3, pp. 223-240, 1998. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [12] 2022 Production Statistics, OICA, 2022. [Online]. Available: <https://www.oica.net/category/production-statistics/2022-statistics/>
- [13] Abdelaaziz Ait Ali, and Mohamed Obaidy, *Current Account Adjustments and Exchange Rate Arrangements: What Regime for African Countries?*, Policy Center for the New South, pp. 1-32, 2019. [[Google Scholar](#)] [[Publisher Link](#)]
- [14] Nada El Khatir, "Morocco: What Positioning in the Global Automotive Value Chain?," *International Journal of Management Sciences*, vol. 4, no. 4, pp. 159-182, 2021. [[Google Scholar](#)] [[Publisher Link](#)]
- [15] Farah Benomar, Hicham El Bouanani, and Abdelaaziz Ezziani, "The Integration of Morocco and South Africa into Global Value Chains: Case of the Automotive Sector," *International Journal of the Researcher*, vol. 3, no. 2, 2022. [[Google Scholar](#)] [[Publisher Link](#)]
- [16] Sabrine Belqasmi, and Mohamed Azz el Arab Debbarh, "Contribution of FDI Confidence to the Emergence of the Moroccan Business Ecosystem, Case of the Automobile Industry in Tangier: Exploratory Study," *Moroccan Journal of Entrepreneurship, Innovation and Management*, vol. 2, no. 2, pp. 86-104, 2017. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [17] Imad Bakkali et al., "The Evolution of the Automotive Industry in MOROCCO: Comparative Study with South Africa during the Period 2011-2021," *International Journal of Financial Accountability, Economics, Management, and Auditing (IJFAEMA)*, vol. 4, no. 1, pp. 23-29, 2022. [[CrossRef](#)] [[Publisher Link](#)]