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Strategic alliance of transformational leadership and motivation in operational excellence

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Abstract

This study investigates the interconnected influence of transformational leadership and employee motivation on achieving operational excellence within the automotive sector. It aims to understand how these human factors interact to shape organizational performance in this specific industrial context. This research combines a literature review with quantitative analysis of large-scale empirical data collected via structured questionnaires from a significant sample (93% response rate from 265 companies). Data reliability and validity were confirmed, and SPSS 28 was used for statistical analysis. The results strongly support the proposed hypotheses, revealing statistically significant positive relationships between leadership and operational excellence, as well as between employee motivation and operational excellence. A highly significant positive correlation was also found between leadership and employee motivation. Furthermore, the study identified trends in employee motivations evolving across professional career stages, with different priorities emerging for younger, experienced, and senior employees. This study provides a nuanced understanding of the human factor's significant role in achieving operational excellence, offering valuable insights for leaders and managers aiming to build high-performing and sustainable organizations by leveraging leadership and motivation. The findings underscore the importance of focusing on leadership and employee motivation strategies alongside performance management tools to effectively achieve and sustain operational excellence.

Keywords: Automotive industry, industrial performance, leadership, motivation, national culture, operational excellence.

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1. Introduction

Operational excellence, synonymous with optimal performance and customer satisfaction, has become a paramount objective for contemporary organizations. While process optimization is a cornerstone of this pursuit, it is insufficient to guarantee sustained success. Leadership, as a human factor, plays a pivotal role in an organization's capacity to achieve operational excellence. Prior research has extensively demonstrated the importance of transformational leadership in inspiring employees and fostering an environment conducive to innovation and continuous improvement [1-3].

Concurrently, employee motivation is recognized as a key driver of performance. Motivation theories (Maslow, Herzberg, Vroom) have highlighted the complex interplay of factors influencing work motivation. In a specific cultural context such as Morocco, motivation can manifest in unique ways, incorporating spiritual and social dimensions.

However, existing research has often addressed these issues in isolation. Few studies have delved deeply into the interactions between leadership, motivation, and operational excellence within a specific context like the Moroccan automotive industry. This study aims to bridge this gap by analyzing the impact of leadership on employee motivation and, consequently, on achieving operational excellence.

More specifically, this research aims to:

- Assess the influence of transformational leadership on employee motivation in Moroccan automotive companies.
- Identify the dimensions of motivation most strongly linked to operational excellence.
- Analyze the impact of the Moroccan cultural context on the relationships between leadership, motivation, and operational excellence.
- Analyze the evolution of employee motivations throughout their professional careers.

By answering these questions, this study will contribute to a better understanding of the key factors driving operational excellence in a specific context and provide practical recommendations for managers and executives.

2. Literature Review

2.1. Global Automotive Trends and the Positioning of Morocco's Automotive Industry on the World Stage (2000–2024)

Figure 1 clearly illustrates the evolution of global automobile production between 2000 and 2023, highlighting the major trends and disruptions that have shaped the industry over this period. Based on data from the International Organization of Motor Vehicle Manufacturers (OICA), as analyzed by Hamoumi et al. [4], the sector experienced steady growth until 2007, reflecting strong industrial momentum. The global financial crisis of 2008 then triggered a significant downturn, with production reaching a low point in 2009. However, from 2010 onward, the industry saw a rapid recovery, peaking in 2017 at a record production level. Starting in 2018, a gradual slowdown emerged, followed by a sharp collapse in 2020 due to the COVID-19 pandemic. Despite this shock, the automotive sector demonstrated resilience, beginning to recover as early as 2021. By 2023, global production had nearly returned to pre-crisis levels, indicating a phase of stabilization, albeit with a less dynamic pace than in the previous decade. This trajectory underscores the industry's vulnerability to global crises, while also highlighting its capacity for recovery and adaptation.

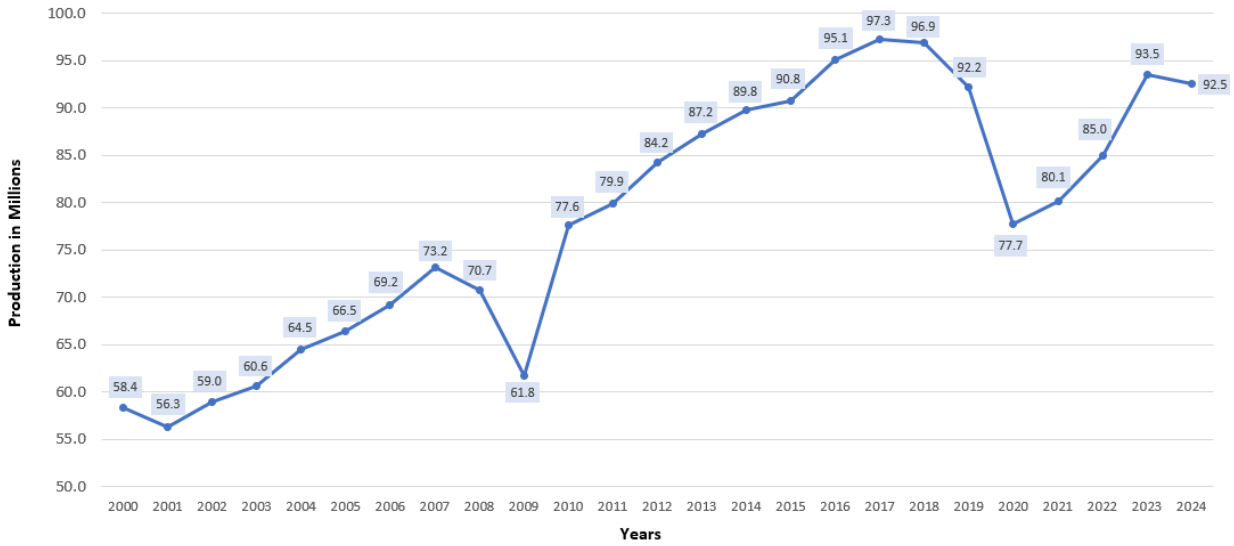

Figure 1.
Global Automobile Production 2000–2024.

Table 1 presents the evolution of Morocco's position in global automobile production between 2017 and 2024, highlighting a steady rise in both output and international ranking. According to data from the International Organization of Motor Vehicle Manufacturers (OICA), as analyzed by Hamoumi et al. [5], Morocco moved from 30th place in 2020 to 24th in both 2023 and 2024, an impressive leap in a relatively short timeframe. This upward trajectory reflects a proactive industrial strategy, supported by the establishment of major international car manufacturers and the development of a robust local supply chain. Between 2023 and 2024, production increased by 4%, reaching 559,645 units, which places Morocco 6th

globally in terms of year-on-year production growth. This momentum underscores the country's growing role in the global automotive value chain, strengthening its position as an emerging industrial hub in North Africa.

Table 1.
Morocco's Global Ranking in Automobile Production.

Year	Production	Ranking
2024	559645	24
2023	535825	24
2022	464864	25
2021	403007	25
2020	248430	30
2019	394652	26
2018	402085	27
2017	376826	27

2.2. Transformational Leadership and Operational Excellence

Transformational leadership is increasingly recognized as a key driver for achieving operational excellence in various sectors. It achieves this by inspiring and motivating employees to pursue continuous improvement, innovation, and higher performance standards [6]. Operational excellence, in turn, is defined as the continuous improvement of business processes to enhance efficiency, reduce waste, improve quality, and boost overall performance [7]. This leadership approach is significantly influenced by committed management and a culture of continuous improvement [8, 9]. As detailed in Table 2, transformational leaders secure necessary resources [10, 11] cultivate learning through continuous training [12, 13] promote autonomy in quality functions [14, 15] enhance performance via the link between compensation and results [16-18] strengthen control and audit systems [19, 20] encourage active participation in improvement initiatives [21, 22] and facilitate a shift to bottom-up management [23-25] thereby fostering innovation and ultimately achieving Operational Excellence [2, 6, 26, 27] while also considering aspects like prioritizing permanent contracts [25, 27] and promoting internal mobility [21, 28] all under strong leadership from managers and supervisors [28, 29].

Table 2.
Key Aspects of Transformational Leadership in Driving Operational Excellence.

Specific Aspects of Transformational Leadership	References
L01_Strong management commitment to continuous improvement	Yousefi et al. [6] and Chandran [7]
L02_Allocation of dedicated resources to improvement projects	Lleo, et al. [8]; Khattak, et al. [9] and Welch, et al. [10]
L03_Strong leadership from managers and supervisors	Antony, et al. [11] and Kerri [12]
L04_Continuous training for all employees, including operators	Thomas [13] and Laohavichien, et al. [14]
L05_Independence of the quality function	Son, et al. [15] and Purnomo, et al. [16]
L06_Link between individual compensation and overall performance	Diantari and Riana [17]; Haque, et al. [18] and Li [19]
L07_Rigorous control and audit system with management involvement	Ólafsdóttir, et al. [20] and Sahid, et al. [21]
L08_Active participation of managers in improvement initiatives	Etomes, et al. [22] and Lupton [23]
L09_Shift from top-down management to a bottom-up approach	Yaping [24]; Davis-Adesegha, et al. [25] and Palepu, et al. [26]
L10_Creation of a dedicated function for continuous improvement (Kaizen)	Chandran [7], Saeed et al. [27], and Cahyono [28]
L11_Prioritization of permanent contracts	Palepu, et al. [26] and Suryadi, et al. [29]
L12_ Promote internal mobility	Kerri [12] and Etomes et al. [22]

While operational excellence is a commendable goal, it extends beyond optimized processes. Leadership plays a pivotal role, as highlighted by Deming [1] and Liker [2]. Studies by Bass [3], Yousefi et al. [6], and Chandran [7] corroborate the importance of transformational leadership in embedding operational excellence within an organization's culture. The works of Lleo et al. [8], Khattak et al. [9], and Welch et al. [10] specify the required competencies: talent selection, project management, authenticity, communication, coaching, and vision creation. However, leadership does not operate in a vacuum. Cultural context, as demonstrated by Antony et al. [11] and Kerri [12], and the GLOBE project [13], influences effective leadership styles. In the MENA region, for instance, leaders are often perceived as just and charismatic [14]. Finally, Son et al. [15] study underscores the positive impact of participative leadership on motivation. In conclusion, the success of operational excellence hinges on adaptive leadership capable of inspiring and motivating teams while considering cultural specificities.

Hypothesis H1: There is a positive and significant impact of Leadership on Operational Excellence.

2.3. Motivation and Operational Excellence

The shift of organizations towards a knowledge-based economy has highlighted the critical importance of employee motivation. Management research Purnomo et al. [16]; Diantari and Riana [17]; Haque et al. [18]; Li [19], and Ólafsdóttir et al. [20] have explored the multifaceted nature of motivation, emphasizing the significance of individual needs, perceptions, and rewards. These studies have underscored the need for a personalized approach to motivation management.

Recently, transcendent motivation, particularly from an Islamic perspective [21-24], has garnered attention. This approach, which combines tangible rewards and the pursuit of meaning, offers a complementary perspective for understanding work motivation.

Empirical studies, Davis-Adesegha et al. [25]; Palepu et al. [26]; Saeed et al. [27]; Cahyono [28]; Suryadi et al. [29]; Mohanty et al. [30]; Waldman et al. [31]; Bhasin [32] and Laureani and Antony [33], converge towards a similar conclusion: motivation, whether intrinsic or extrinsic, is a powerful driver of performance. It influences employee engagement, satisfaction, and productivity.

In conclusion, motivation is a key component of operational excellence. It requires a multidimensional approach that takes into account individual needs, cultural values, and organizational specificities. By combining effective management practices and a deep understanding of motivating factors, organizations can create a stimulating work environment and improve their overall performance.

To further our understanding of motivational dynamics, we present a Venn diagram (Figure 2) that categorizes the different aspects of motivation. This diagram highlights the interactions between intrinsic, extrinsic, and social motivations, while integrating the spiritual aspect as a distinct dimension. The objective is to examine the significant influence of this spiritual dimension and how it interacts with the other identified motivational factors.

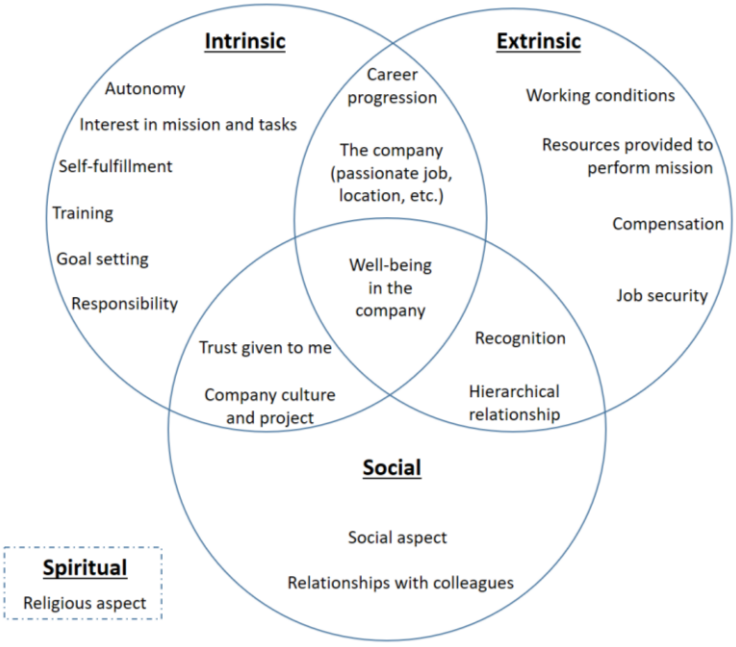

Figure 2.
Categorization of Motivational Aspects.

Hypothesis H2: Motivation has a positive and significant impact on operational excellence.

2.4. Leadership and Motivation

Transformational leadership, according to Swain et al. [34], Alnadi and McLaughlin [35], and Forker [36], is a powerful driver of intrinsic motivation. By inspiring and providing meaning to work, these leaders create a stimulating environment that fosters engagement and performance. However, the organizational context, particularly the social climate [37], plays a crucial role.

Intrinsic motivation, as a mediator between leadership and performance [34, 35], is complemented by reward systems [38], although their impact is complex and contextual. Adapting leadership styles to culture and individuals [36, 39] is also essential.

In conclusion, to maximize performance, organizations should focus on transformational leadership, a positive social climate, and adaptation to specific contexts. The cited studies offer insights into developing effective leadership and motivating teams.

Hypothesis H3: Leadership has a positive and significant impact on employee motivation.

2.5. Experimental Study

2.5.1. Research Framework and Data Analysis

The empirical study, conducted in 2024, focused on the impact of leadership and motivation on Operational Excellence in the Moroccan automotive sector. A questionnaire, developed based on best practices in Operational Excellence, was sent to 265 identified companies. This questionnaire, supplemented by interviews with managers and HR professionals, allowed us to collect data from 93% of the companies in the sector, providing an in-depth view of the situation. Analyses focused on the influence of national leadership, the relationship between leadership and motivation, and the factors specific to the Moroccan sociocultural environment that impact the implementation of Operational Excellence. The results of this study allowed us to identify the levers of leadership and motivation in a Moroccan context, as well as the factors that facilitate or hinder the implementation of Operational Excellence.

2.6. Reliability Testing of the Instrument

Reliability analyses, using Cronbach's alpha (Table 3), revealed high internal consistency of the scales measuring leadership and motivation. The coefficients obtained, greater than 0.84, attest to the quality of the items constituting these scales and their ability to reliably measure the concepts studied. This robust reliability guarantees the validity of the results obtained and allows us to confidently consider further analyses aimed at studying the relationships between leadership, motivation, and performance.

Table 3.
Reliability Analysis Results.

Variables	Measurement instruments and coding	Cronbach's alpha if item deleted	Cronbach's Alpha
Leadership	L01_Strong management commitment to continuous improvement	0.840	0.849
	L02_Allocation of dedicated resources to improvement projects	0.840	
	L03_Strong leadership from managers and supervisors	0.842	
	L04_Continuous training for all employees. including operators	0.842	
	L05_Independence of the quality function	0.839	
	L06_Link between individual compensation and overall performance	0.834	
	L07_Rigorous audit system with management involvement	0.843	
	L08_Active participation of managers in improvement initiatives	0.829	
	L09_Shift from top-down management to a bottom-up approach	0.826	
	L10_Creation of a dedicated function for continuous improvement (Kaizen)	0.839	
	L11_Prioritization of permanent contracts	0.843	
	L12_ Promote internal mobility	0.831	
Motivation	M01_Autonomy	0.832	0.847
	M02_Social aspect	0.829	
	M03_Interest in your mission and tasks	0.837	
	M04_Working conditions	0.840	
	M05_Self-fulfillment	0.839	
	M06_Resources provided to perform your mission	0.845	
	M07_Compensation	0.847	
	M08_Training (internal skills development)	0.848	
	M09_Goal setting	0.842	
	M10_Religious aspect	0.847	
	M11_Company culture and project	0.849	
	M12_Hierarchical relationship/Communication with your manager	0.842	
	M13_The company (passionate job, location, etc.)	0.843	
	M14_Job security	0.843	
	M15_Trust given to me	0.842	
	M16_Responsibility	0.847	
	M17_Well-being in the company	0.843	
	M18_Recognition	0.844	
	M19_Relationships with your colleagues	0.842	
	M20_Career progression	0.843	

2.7. Ranking of Transformational Leadership and Motivation Variables

The Relative Importance Index (RII) is a statistical technique used to rank the importance of various groups. This method orders the groups based on participant responses, measured using a Likert scale. The RII is calculated using a formula (1) that takes into account the following variables:

- "w": the weight assigned by a respondent to a specific attribute on the Likert scale.
- "n1" to "n5": the number of respondents who assigned scores 1 to 5, respectively, to that attribute.
- "A": the maximum score on the Likert scale (for example, 5).
- "N": the total number of respondents.

The necessary data are processed using a spreadsheet to determine the RII for each group.

$$RII = \frac{\sum w}{AN} = \frac{5_{n5} + 4_{n4} + 3_{n3} + 2_{n2} + 1_{n1}}{5N} \quad (1)$$

The results of this analysis are presented in Tables 4 and 5.

Table 4.
Ranking of Transformational Leadership Variables Based on the Relative Importance Index.

Transformational Leadership	Number of Responses	RII	Total Score	Ranking
L02_Allocation of dedicated resources to improvement projects	587	80.31%	2357	1
L10_Creation of a function dedicated to continuous improvement (Kaizen)	587	78.36%	2300	2
L12_Promoting internal advancement	587	74.82%	2196	3
L05_Independence of the quality function	587	73.90%	2169	4
L06_Link between individual compensation and overall performance	587	72.16%	2118	5
L04_Continuous training for all employees. including operators	587	68.69%	2016	6
L01_Strong management commitment to continuous improvement	587	68.42%	2008	7
L11_Prioritizing permanent contracts	587	68.11%	1999	8
L03_Solid leadership from managers and supervisors	587	66.41%	1949	9
L08_Active participation of managers in improvement initiatives	587	65.83%	1932	10
L09_Shift from top-down management to a bottom-up approach	587	60.72%	1782	11
L07_Rigorous audit system with management involvement	587	51.45%	1510	12

The analysis results (See Table 4) reveal a clear hierarchy of leadership practices perceived as most effective in driving operational excellence. The allocation of dedicated resources to improvement projects leads the way with a relative importance index (RII) of 80.31%, highlighting the crucial importance of substantial financial investment in continuous improvement initiatives. In second position, the creation of a function dedicated to Kaizen (RII of 78.36%) demonstrates the need to structure this approach within the organization.

Internal promotion (RII of 74.82%) and the independence of the quality function (RII of 73.90%) occupy the following ranks, emphasizing the importance of developing internal skills and ensuring rigorous quality management. These results suggest that organizations wishing to excel must invest in their employees and put in place robust quality control mechanisms.

It is interesting to note that strong management commitment only ranks seventh (RII of 68.42%). Although this commitment is essential, it is not sufficient on its own. The results suggest that this commitment must translate into concrete actions, such as the allocation of resources and the creation of dedicated structures.

In summary, this analysis highlights the importance of a combination of factors in fostering effective leadership and driving operational excellence. Organizations must not only invest in their employees and in continuous improvement processes, but also put in place an organizational structure that promotes innovation and quality.

Table 5.
Ranking of Motivation Variables Based on the Relative Importance Index.

Motivation	Number of Responses	RII	Total Score	Ranking
M07_Remuneration	587	74.65%	2191	1
M04_Working conditions	587	73.46%	2156	2
M14_Job security	587	72.40%	2125	3
M20_Career progression	587	72.30%	2122	4
M12_Hierarchical relationship/Communication with your manager	587	71.58%	2101	5
M17_Well-being in the company	587	71.41%	2096	6
M06_Moyens mis en place pour effectuer votre mission	587	71.24%	2091	7
M19_Relationships with your colleagues	587	70.36%	2065	8
M18_Recognition	587	69.30%	2034	9
M16_Responsibility	587	68.42%	2008	10
M15_Trust placed in me	587	68.35%	2006	11
M10_Religious aspect	587	67.56%	1983	12
M01_Autonomy	587	65.86%	1933	13

The study results (See Table 5) highlight a clear hierarchy of employee motivation factors. Compensation ranks highest, with a relative importance index (RII) of 74.65%, thus confirming its primary role in job satisfaction. This element underscores the importance of fair and competitive salary policies to attract and retain talent. In second position, working conditions (RII of 73.46%) and job security (RII of 72.40%) emphasize the importance of a healthy and stable physical and psychological work environment. A pleasant, secure work environment offering future prospects is a determining factor for employee well-being and motivation.

Furthermore, the results highlight the important role of professional development. Career advancement (RII of 72.30%) and relationships with supervisors (RII of 71.58%) rank among the top five motivating factors. These elements suggest that employees seek not only fair compensation but also opportunities for growth within the company and quality supervision. In addition, well-being in the company (RII of 71.41%), the resources provided to carry out assignments (RII of 71.24%), and relationships with colleagues (RII of 70.36%) also rank in the top 10, highlighting the importance of a collaborative and supportive work environment.

Finally, it is interesting to note that factors such as self-fulfillment (RII of 43.51%) are found at the bottom of the ranking. Although this aspect may be important to some individuals, it seems to be less of a priority for the majority of employees in the context of this study. This suggests that the needs for security, belonging, and esteem are generally more pressing than the need for personal fulfillment.

In conclusion, this analysis highlights the complexity of motivating factors in business. While compensation remains an essential element, it is essential to also consider aspects related to the work environment, professional development, and social relationships in order to foster a positive work climate and stimulate employee performance.

2.8. Sample Profile

Table 6 provides an overview of the sociodemographic and professional characteristics of the study participants. It allows us to better understand the respondent profile and assess the representativeness of the sample in relation to the target population.

Job Functions: The sample is primarily composed of individuals holding technical and middle management positions (engineering, production, quality, maintenance). Support functions (human resources, finance, purchasing) are less represented, suggesting that the study focused on key players in operational processes.

Hierarchical Level: The majority of respondents are managers and technicians. Executives and members of the executive committee are less numerous, which may limit the analysis of perceptions at the strategic level.

Age and Experience: The sample is relatively young, with a majority of respondents aged 20 to 40. This age group generally corresponds to an active and dynamic population, likely to be more open to change and new practices. Professional experience is also varied, with a good representation of individuals with more than five years of experience.

In summary, the table presents a relatively diverse sample in terms of job functions and professional experience, while being centered on key players in operations. This composition allows for obtaining relevant information on the perceptions and expectations of these populations regarding the issues studied. However, it would be interesting to expand the sample to other hierarchical levels to obtain a more complete view of the organization.

Table 6.
Demographic and Professional Characteristics of the Study Sample.

Characteristics	Result	Percentage
Function	Engineering	26 %
	Production	24 %
	Quality	20 %
	Maintenance	12 %
	Human Resources	6 %
	Method	6 %
	Finance	3 %
	Purchasing	3 %
Hierarchical Level	Executive, Member of the Executive Committee	8 %
	Supervisor	12%
	Manager	39 %
	Technician	21 %
	Team Leader	16 %
	Operator	4 %
Age	20-30	62 %
	30-40	31 %
	40-50	6 %
	+50	2 %
Professional Experience	Less than 2 years	28 %
	2 to 4 years	30 %
	More than 5 years	43%

2.9. National Leadership and Its Impact on Employees and Operators

We conducted an in-depth survey of managers from 93% of Moroccan automotive companies to assess the influence of their management practices on the behavior of production operators. The results, detailed in Table 7, reveal the perceived level of difficulty operators face in implementing operational excellence requirements on their production lines.

Table 7.
The impact of national leadership on employee's engagement.

	Average difficulty	Difficulty level		
Expectations of the Executive Operations team regarding production line employees	**(%)**	**Not at all + Not particularly difficult**	**Moderately difficult**	**Extremely + Substantially difficult**
Operators actively promote stopping production lines when quality issues arise	70.58	12.12	45.73	42.08
Operators maintain workplace standards and promptly report any production line discrepancies	68.19	17.41	44.37	38.16
Operators are proactive in enhancing standards and performance indicators	67.54	13.99	50.34	35.60
Operators proactively contribute to problem-solving	59.04	11.95	72.87	15.16
Operators rigorously follow quality checklists and standard operating procedures	53.93	22.70	68.60	9.37

It is undeniable that managers' leadership significantly influences the behavior of shop floor operators. The findings from the average difficulty scores reveal that operators pay less attention to continuous improvement (67.54%) and problem-solving (59.04%). Moreover, the results indicate that operators face difficulties in implementing the "stop at the first defect" procedure in case of quality issues on production lines (70.58%). These observations can be interpreted as a direct consequence of the difficulty experienced by managers in encouraging and involving employees in process improvement projects and performance indicator improvement (71.67%), as well as in prioritizing quality over productivity and efficiency (63.14%), as already illustrated in Table 4.

The findings are fully in line with operations management research, highlighting the impact of leadership on employees' adherence to operational excellence requirements. They also confirm more general studies on the link between managerial behavior and improved company performance, clearly establishing that leadership influences employee behavior in all organizations. Positive leadership undoubtedly facilitates the achievement of company objectives and customer satisfaction. Consequently, it is the integration of operational excellence practices among employees at all levels of the company, thanks

to exemplary leadership for operational excellence, that will enable the achievement of the company's multiple objectives in terms of productivity, efficiency, and superior quality performance.

2.10. Model Development

Drawing on the expertise of domain specialists, a research model was developed. This model posits that 12 leadership variables and 20 motivational factors are direct determinants of the benefits derived from implementing Operational Excellence (OpEx). Figure 3 offers a visual representation of this model.

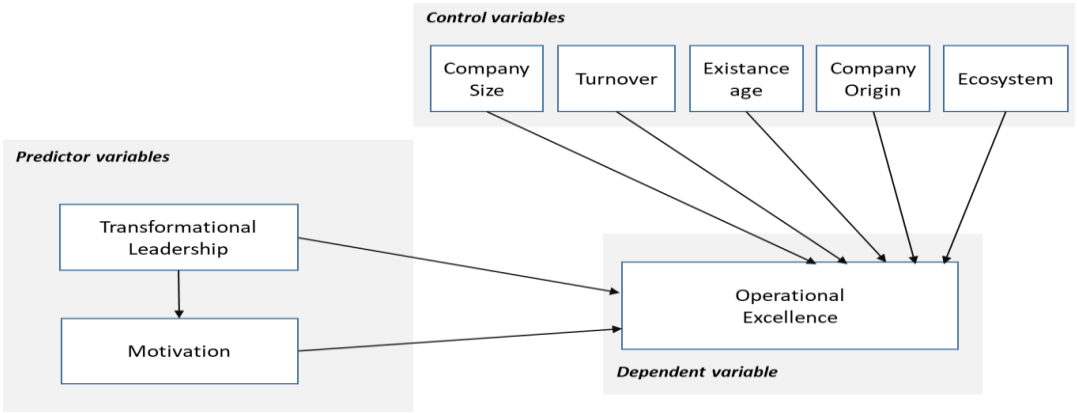

Figure 3.
Proposed research model.

2.11. Control Variables

Tables 8, 9, and 10 provide a detailed description of the sample, focusing on three key control variables: company size, turnover, age, origin, and ecosystem.

Company size: Table 8 reveals a clear dominance of large companies in the sample, representing 73.1% of the total. Medium-sized and small companies make up a smaller proportion, at 10.6% and 14% respectively. Micro-enterprises are very underrepresented, with only 2.4% of the sample.

Turnover: In line with size, the majority of companies in the sample generate a turnover of more than 50 million (39.9%). A significant proportion is also in the 10-50 million range (23.9%). Companies with a turnover of less than 2 million are very few.

Company age: The sample is predominantly composed of mature companies, with a high proportion of companies having more than 10 years of existence (58.2%). Young companies (less than 5 years old) are underrepresented, suggesting a potential bias in favor of more established companies.

Table 8.
Control variables (n = 587).

		Number	%
Company size	Micro-enterprise	14	2.4%
	Small enterprise	82	14.0%
	Medium-sized enterprise	62	10.6%
	Large enterprise	429	73.1%
Turnover	≤ 2M	25	4.3%
	≤ 10M	188	32.0%
	≤ 50M	140	23.9%
	> 50M	234	39.9%
Company age	0-2 years	15	2.6%
	3-5 years	39	6.6%
	6-10 years	191	32.5%
	11-20 years	178	30.3%
	21 years and up	164	27.9%

Table 9 presents the geographical distribution of the origins of the 587 companies that participated in the research survey conducted in Morocco. A predominance of companies of French (32.5%) and Moroccan (25.2%) origin is observed, together representing more than half of the companies surveyed. They are followed by companies originating from the United States (8.2%), Spain (7.3%), and Japan (6.3%). Other countries are represented in smaller proportions.

This table reveals a strong presence of French companies in Morocco, as well as a significant presence of companies from other European countries and North America. Companies originating from Asia (China, South Korea, India, Japan) represent a smaller, but not insignificant, share of the sample.

Table 9.
Control Variable "Company Origin" (n = 587).

		Number	%
Company origin	Germany	18	3.1%
	Austria	3	0.5%
	Belgium	5	0.9%
	Canada	5	0.9%
	China	12	2.0%
	South Korea	7	1.2%
	Spain	43	7.3%
	France	191	32.5%
	India	12	2.0%
	Italy	27	4.6%
	Japan	37	6.3%
	Luxembourg	1	0.2%
	Morocco	148	25.2%
	Portugal	5	0.9%
	United Kingdom	3	0.5%
	Sweden	2	0.3%
	Tunisia	11	1.9%
	Turkey	9	1.5%
	USA	48	8.2%

Table 10 presents the distribution of the 587 surveyed companies according to their business ecosystem. The "Vehicle Interior and Seating" ecosystem concentrates the largest number of companies (34.6%), closely followed by the "Wiring" (20.3%) and "Metal & Stamping" (10.1%) ecosystems. Other ecosystems, such as "Engine & Transmission", "Engineering", and "Spare Parts", each represent a significant share of the sample, while the "Batteries", "Automobile Manufacturer", and "Exterior Systems" ecosystems group a smaller number of companies.

Table 10.
Control Variable "Ecosystem" (n = 587).

		Number	%
Ecosystem	Batteries	24	4.1%
	Wiring	119	20.3%
	Car Manufacturer	13	2.2%
	Engineering	50	8.5%
	Vehicle Interior and Seating	203	34.6%
	Metal & Stamping	59	10.1%
	Engine & Transmission	55	9.4%
	Spare Parts	42	7.2%
	Exterior Systems	22	3.7%

Table 11 presents the results of statistical tests assessing the influence of different company characteristics on Operational Excellence. Company size, revenue, and age emerge as significant determinants, having a statistically significant impact on the dependent variable. In contrast, the company's geographic origin and sector (ecosystem) do not appear to have a significant influence on the model. These results suggest that the company's intrinsic characteristics, such as its size and age, are more relevant in explaining the observed variations in the studied variable, compared to external factors like origin or sector. However, it is important to nuance these conclusions by considering the limitations of the analysis and to envisage complementary analyses to refine these results.

Table 11.
Results of tests assessing the impact of control variables.

Control Variables	Std. co-eff. β	p-value
Company size	3.588	0.000
Turnover	2.977	0.003
Age	4.312	0.000
Company origin	0.727	0.467
Ecosystem	0.009	0.993

2.12. Hypothesis Formulation

Based on the developed model, the following hypotheses were proposed:

H1: The factor "Leadership" has a positive and significant impact on "Operational Excellence".
H2: The factor "Motivation" has a positive and significant impact on "Operational Excellence".
H3: The factor "Leadership" has a positive and significant impact on employee motivation.

2.13. Hypothesis Test

The formulated hypotheses were empirically tested using IBM SPSS Statistics 28. The results of these tests are presented in Table 12, which verifies the validity of the three research hypotheses regarding the relationships between leadership, motivation, and operational excellence (OpEx).

Table 12.
Hypothesis Testing for Independent Variables.

Hypothesis	Hypothesis Test	Test Statistic T/F	P-Value	Result
H1	Leadership ➔ ExOp	5.31	0.000	Supported
H2	Motivation ➔ ExOp	2.75	0.006	Supported
H3	Leadership ➔ Motivation	15.31	0.000	Supported

The results demonstrate that all three hypotheses are supported by the data:

- H1: Leadership and Operational Excellence: The t-score of 5.31 with a p-value of 0.000 indicates a statistically significant and positive relationship between leadership and operational excellence. In other words, effective leadership significantly contributes to improved operational excellence.
- H2: Motivation and Operational Excellence: The t-score of 2.75 and a p-value of 0.006 also suggest a positive and significant relationship between employee motivation and operational excellence. This means that motivated employees are more likely to contribute to achieving operational excellence.
- H3: Leadership and Motivation: The very high t-score of 15.31 and a p-value of 0.000 indicate a very strong positive correlation between leadership and employee motivation. Effective leadership thus seems to foster greater motivation among employees.

In summary, the results of these tests confirm the importance of leadership and employee motivation in achieving operational excellence. These three variables are closely linked and contribute significantly to improving the overall performance of the organization.

2.14. Analysis of the Evolution of Employee Motivations Throughout Their Professional Careers

Figure 4 gives us a bird's-eye view of how employee motivations tend to shift as their careers progress. It highlights an interesting trend: what people prioritize at work changes with age and experience.

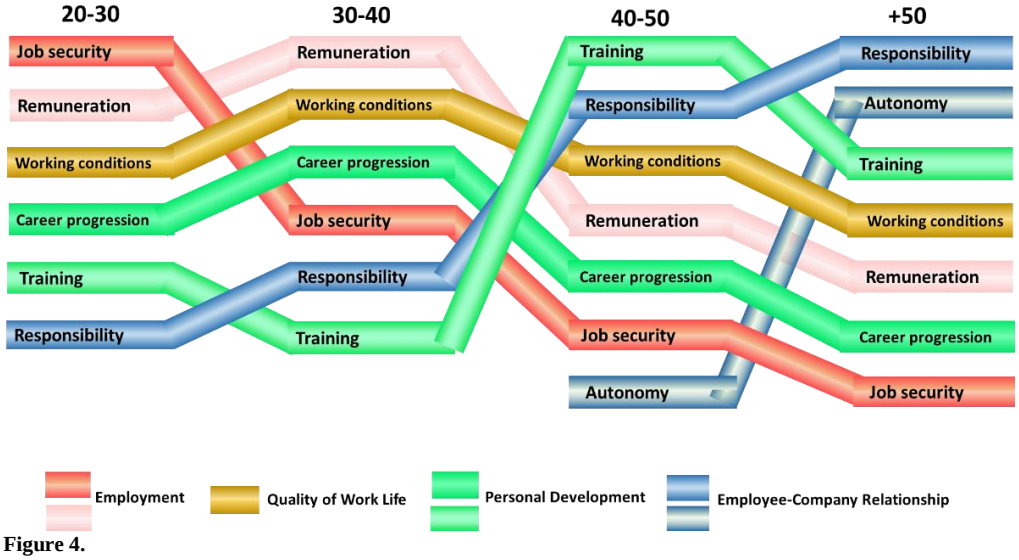

Figure 4.
Evolution of Employee Motivations Throughout Their Professional Careers.

The main trends observed are as follows:

- Young Employees (20-30 years old):
- Job security and pay are key drivers. Recent graduates primarily aim to establish their professional footing and ensure a decent standard of living.
- Working conditions start to gain importance, reflecting a desire for a pleasant and stimulating work environment.
- Experienced Employees (30-40 years old):

- Pay remains an important factor, but employees in this age group also place significant value on career progression and training. They seek to develop their skills and advance professionally.
- Working conditions continue to be a key element, as does the level of responsibility entrusted to them.
- Senior Employees (40-50 years old and over):
- Autonomy and responsibility become increasingly important. Experienced employees look for roles offering greater freedom of action and decision-making.
- Training remains essential, but it shifts more towards developing specific skills and specialization.
- Job security remains a concern, but it is less central than it is for younger employees.
- In short, employee motivations evolve throughout their careers, mirroring the different stages of their professional lives. Young employees primarily seek stability and financial recognition, while more experienced employees prioritize personal development, autonomy, and responsibility.

2.15. Discussion and Interpretation of Results

The findings of this investigation underscore the notable influence of employee motivation and leadership on the attainment of Operational Excellence within the Moroccan automotive sector. The statistically significant positive correlation observed between employee motivation and Operational Excellence ($r=0.555$, $p<0.001$), alongside the correlation between leadership and Operational Excellence ($r=0.364$, $p<0.001$), suggests that these dual elements constitute pivotal levers for the enhancement of overall organizational performance. Expressed differently, entities that effectively cultivate employee motivation and foster efficacious leadership are more inclined to achieve Operational Excellence.

These conclusions align with the trajectory of prior scholarly work that emphasizes the significance of transformational leadership in inspiring personnel and cultivating an environment conducive to innovation and continuous improvement [1-3]. Similarly, the recognition of employee motivation as a primary driver of performance, substantiated by various theoretical frameworks [40-42], is affirmed within the specific context of the Moroccan automotive industry. The study further elucidates the impact of leadership on employee motivation, corroborating the notion that effective leadership engenders a stimulating milieu that promotes engagement and performance [34-36].

The outcomes derived from the survey administered to managerial personnel reveal a potential lower propensity among operational staff to actively engage in continuous improvement initiatives and problem-solving endeavors. Furthermore, challenges were noted in the application of the "stop at first defect" protocol in instances of quality deviations. These observations may be interpreted as a consequence of the difficulties encountered by managers in fostering employee encouragement and involvement in improvement projects, the valorization of performance indicators, and the prioritization of quality over productivity metrics. These findings exhibit coherence with operational management research that highlights the impact of leadership on employee adherence to the requisites of Operational Excellence.

While this study furnishes valuable insights, certain limitations warrant acknowledgment. The predominance of large-scale enterprises within the sample composition may introduce a bias, thereby constraining the generalizability of the findings to small and medium-sized enterprises. Moreover, the underrepresentation of executive-level management could restrict the analysis of perceptions at the strategic echelon. Future research endeavors could strive to incorporate a more balanced sample concerning enterprise size and hierarchical levels to procure a more comprehensive perspective. It would also be pertinent to explore in greater depth the influence of specific Moroccan cultural nuances on motivation mechanisms and the efficacy of disparate leadership styles.

By way of recommendations for subsequent research, the adoption of longitudinal methodologies to examine the temporal evolution of the interrelationships between leadership, motivation, and operational excellence would be advantageous. Complementary qualitative investigations could also enrich the understanding of the experiences and perceptions of both employees and managers concerning these constructs. Finally, the exploration of the impact of supplementary contextual variables, such as organizational structure and reward systems, could afford an even more nuanced understanding of the factors that facilitate operational excellence.

3. Conclusion

This study, conducted among a representative sample of 93% of Moroccan automotive companies, delved into the deep-rooted connections between leadership, employee motivation, and operational excellence. Through a rigorous methodology, including a validated questionnaire and in-depth statistical analyses, we were able to uncover significant findings.

Our results confirm the critical importance of leadership and employee motivation in achieving operational excellence. Effective leadership, characterized by a clear vision, transparent communication, and support for employee initiatives, fosters high levels of both intrinsic and extrinsic motivation. This positive dynamic translates into improved overall organizational performance, particularly in terms of quality, productivity, and customer satisfaction.

The developed theoretical model, which integrates the dimensions of leadership, motivation, and operational excellence, proved to be robust and allowed for the rigorous testing of research hypotheses. The empirical results validated these hypotheses, demonstrating the existence of causal relationships between the studied variables.

An important conclusion of this research is that employee motivations evolve throughout their careers. Younger employees are primarily motivated by job security and pay, while more experienced employees place greater emphasis on career advancement, training, autonomy, and responsibilities.

In conclusion, this study makes a significant contribution to the literature on human resource management and operational excellence. The findings underscore the importance of investing in leadership development and employee motivation to improve organizational performance. These conclusions have important implications for Moroccan companies, as well as for organizations operating in other cultural contexts.

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