

Research Article

Managing the Conflict between Economic and Social Factors in a Lean Context

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The Lean approach has been a huge success in various public and private entities throughout the world over the last few decades. However, there are still expected needs regarding the social climate to improve working conditions of the employees. This paper presents the conflict between economic and social factors, which has a huge effect on staff involvement and motivation. This article is based on a descriptive investigation that involved 130 people. According to survey data, more than 60% of individuals believe that Lean degrades social factors, particularly in impoverished nations. A case study was conducted to present a real-life example of Lean's negative effects on working conditions. This example clearly demonstrates the influence of Lean on ergonomics, safety, and environment (ESE). This paper allows for a better understanding of the negative effects of Lean on social factors and business performance.

1. Introduction

To be competitive and maintain market share, product costs and quality must be responsive to customer needs. Companies are looking to implement new procedures to simplify and improve their processes to gain competitive advantages [1, 2]. According to Alok, industrial organizations have recently used the Lean strategy to reduce waste production costs and rates [3]. Similarly, Ramos and Zhou have confirmed the use of Lean by businesses to improve quality and increase customer value [4, 5]. Sivananda Devi et al. claim that Lean has become the most popular workplace strategy in the world [6]. So also, Alkhoraf and Fontanille suggest that Lean plays a strategic role in the evolution of the industry [7, 8].

The impacts of social aspects have been investigated in a multicultural setting using Lean technologies [9], which was confirmed in Zhou's research on the evolution of small- and medium-sized organizations [5]. Thus, social and cultural changes have a significant influence on the success of Lean [10], as do employees' attitudes and behaviors [11]. According to Mahesh Babu and Zhou, employees'

engagement and motivation are critical factors in the success of a Lean project [5, 9]. Like for Lathin, Lean Manufacturing (LM) deployment involves vigilance over the interaction between economic goals and the company's existing social or cultural system [12]; along with employee involvement and engagement [13].

The main goal of this article is to provide an overview of the conflict between economic and social objectives, as well as the consequences of this conflict on social climate and overall business performance. According to Mahesh Babu et al., economic goals "generate stress and inappropriate behaviors that influence social factors" [9]. Benhrimida and Dekkaki believe that human capital is the most important source of wealth, whereas, Tajri and Cherkaoui agree that human behaviors are important factors in organizational success [14, 15]. Indeed, in order to successfully complete the changes and transformations of a Lean project, organizations must manage the interaction of economic and social factors with extreme prudence [1]. The achievement of technical and economic goals is frequently linked to working circumstances and social factors [16, 17]. As a result, Solaimani et al. confirm the link between the two systems of

Technique and Social [13], whereas Lathin and Mitchell insist on their independence [13]. However, other researchers believe that this system suggests that, despite the existence of a “sociotechnology” model, there are still negative effects on working conditions [8, 18].

Despite the efforts of researchers in industrial development and improvements in Supply Chain Management recorded by large industrial systems, according to Conti, there are several claims from labor unionists and doctors on the negative effects of Lean on social factors [16], which have been backed up by Lewis and Garces [19, 20]. Therefore, the Lean concept’s degradation of working conditions or the demoralization of operators has significant social and economic consequences for the company [9, 18]. This has become an obstacle to the evolution of some organizations as well as a cause of economic performance degradation [13, 18].

The data collected in this study allows us to confirm both the influence of Lean on technical and economic performance and the impact of Lean on the social and cultural aspects. This paper is comprised of the following phases: first, a literature review on Lean Manufacturing strategy, how its concepts have been integrated into industry, and the identification of the limitations and consequences of Lean on the social aspect; second, the influence of social factors results obtained via the implementation of LM projects; third, constraints and roadblocks that make implementing a Lean project challenging, particularly in developing nations, such as Morocco; and finally, favorable conditions for the successful implementation of Lean practices.

2. Literature Review

The analysis of the link between the technical and social aspects needs a prior study based on a literature review of the conflict between economic and social systems. This work is initialized, in the first place, on the bibliographical research of publications that show the evolution of Lean and its impact on the social and economic of companies (Figure 1).

The studied papers were chosen from recognized and relevant scientific journals that covered several areas—logistics/production/management of operations, management, and economics/finance—and have been identified in the major databases of management newspapers during the past two decades. We have focused our research on articles in French and English that have “Lean, Lean Management, Cost, Quality, Time, Security, Environment, Social, and Economics” in their titles and keywords. Thus, we tried to ensure that all the publications on this subject were published in the most relevant journals, including Emerald, Inderscience, ScienceDirect, Scopus, Google Scholar, and Web of Science.

2.1. Lean Overview. Following the creation of the Toyota Company in Japan in 1937, Kiichiro and Eiji, his cousin, laid the foundation for Toyota Production System (TPS), and developed the first adjustments towards the “Just in Time.” Taiichi Ohno published his book “Toyota Production

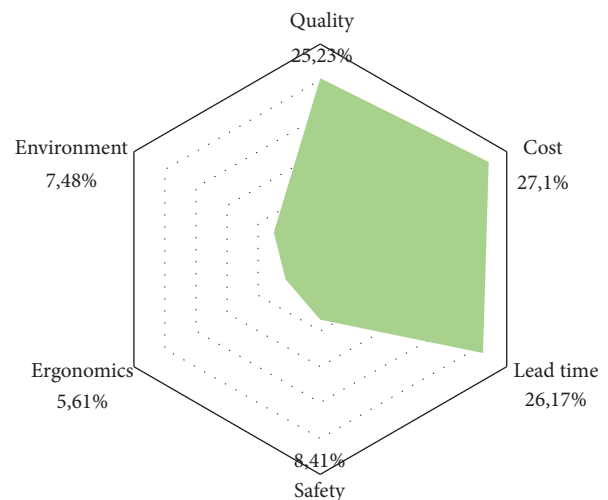


FIGURE 1: Impact of LM on the technical and social factors.

System” historically in 1978. In 1988, Krafcik invented the term “Lean” in his paper and introduced it to describe a production system, which uses less resources than mass production [18].

In 1990, the term “Lean” was born and its principles were formalized in detail by James P. Womack and Daniel T. Jones in “The Machine That Changed the World.” They claim that Lean offers several tools to eliminate waste, reduce non-value-added, advance value-added processes, and improve performance. Furthermore, many researchers have given different understandings for Lean. The recent definitions that can be drawn when studying literature are as follows: Lean is a philosophy that is developing a culture of ongoing improvement and is reminding us of the various resources the company must develop its performance [17, 21–23]; a management approach to value-added creation through waste disposal [5, 24–27]; a set of individual management practices [28]; Büyüközkan et al. considered Lean as a business strategy and an implementation of techniques that improves the competitiveness and the performance of the company [29]. Similarly, Lean’s aim is to “optimize quality, costs and time-frames by integrating principles, practices, tools and procedures designed to eradicate the causes from poor operational performance,” as confirmed by Belfanti [30].

2.2. Lean-Economic Aspect: Overview. Over the past decade, Lean has had a significant interest in the industrial sector and scientific research. To cope with continual market changes, companies privileged the technical part in their Lean processes. Thus, most researchers are focusing on the economic and technical factors of the Lean approach. Indeed, companies seek ways to make the process flexible and adaptive to rapidly satisfy the products’ variety and production volume.

The “Quality-Cost-Delay” triptych is currently the most used performance management device in companies [18]. Confronted with current market requirements, companies are trying to understand and define issues in technical and

economic terms. Since the commercial requirements of the market are becoming too strict, they are managed by a customer who demands products at a better price and very good quality and in better lead time [2]. Besides that, the market offers quite similar products with several ranges, which enhances competition in the market. The latter forces companies to offer products at a better cost, in good quality, and in a reduced lead time with a wide variety of product variants [31, 32].

Within this framework, companies are trying to improve the technical and economic aspects to meet the requirements of the customers (Figure 2). In fact, there are several researches that focused on the technical system to use Lean to meet market needs [10, 30, 33, 34]. Thus, companies are always looking towards increasing production and service volume, improving quality, reducing costs, and managing diversity. Moreover, less investment should be done on resources, manpower, and space as soon as possible [21, 25, 35]. The chart (Figure 2) shows the current economic system that is recognized by most companies. This technical system is based on the monitoring of economic performance, which is valued in three main dimensions: “Quality, Cost, and Time.”

This system is in accordance with the idea proposed by many researchers and is being used by most organizations [17, 22, 25, 27]. Most of directors and pilots of LM projects are currently prioritizing the model illustrated in Figure 2, which focuses on the economic and technical parts in order to achieve their targets [4, 36].

2.3. Lean-Social Aspect: Overview. According to Felix Behling, the Social aspect of employment is the social deal between the employer and the employee. This consists of the following:

The definition by employment contracts of a hierarchical relationship between employer and employee, and the translation of these contracts into human resource policies

The employer’s perceived responsibility for the standard of living of the employees and the promise implied by open-ended, long-term contracts to provide an adequate income and working conditions, even if ideas of what is “adequate” can vary

In this perspective, there are few journals, which address LM, that consider social aspect in companies’ strategy [18]. However, there are new demands of international standards and requests of working associations to improve working conditions. Moreover, social factors make a difference in organizations’ performance [37, 38]. Furthermore, Kull et al. (2014) confirm that LM is a source of the employee’s engagement and motivation [39]. Also, some research journals show that Lean is a continuous improvement approach, based on the human factor and involvement of staff in treating waste [5, 10, 25]. The sustainability and success circumstances of LM require a favorable social aspect in the companies’ strategy (Figure 3). In addition, staff involvement is critical. It gives the employees a motivating environment to ensure LM’s success [7, 21, 40].

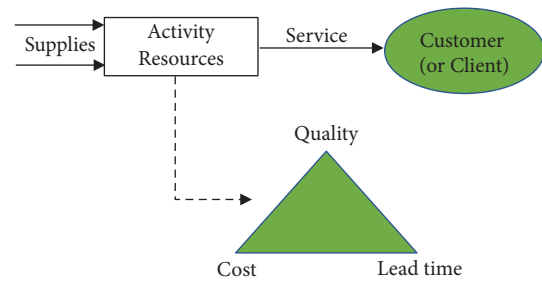


FIGURE 2: Current economic performance system.

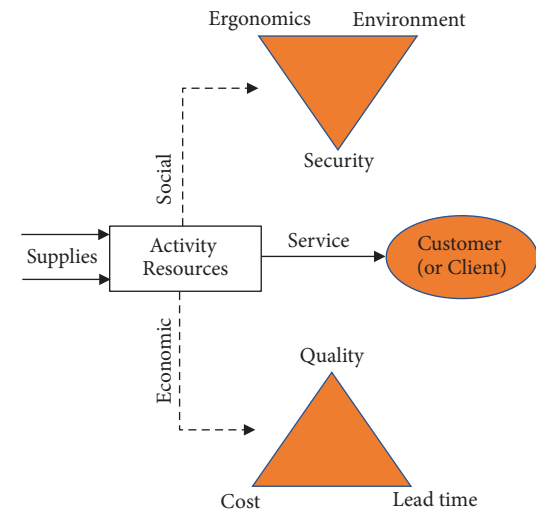


FIGURE 3: New performance concept “Technical-Social system.”

The National Research and Safety Institute in France (INRS) declares that the increase in labor stress, the intensification of work stress, the degradation of the work environment, and certain musculoskeletal disorders are directly linked to the installation of an improvement approach based on Lean management. Similarly, Papadopoulou and Özbayrak confirm that the Lean practices increase stress and degrade motivation and working conditions [18].

Health insurance-occupational risks’ 2019 report states: “The number of work-related accidents is rising in 2019 compared to 2018 (+0.6 percent), reaching a level that had not been reached since 2012. Following the same evolution, the number of days of temporary incapacity continues to rise as in 2019, and also more sharply with an increase of 5.2% over 2018.” Indeed, safety and ergonomic and environmental standards are becoming increasingly stringent and require that for every modification or new transformation there should be less constraints than the previous state. They are hard standards to meet, even for large-scale manufacturing systems. As a result, many organizations are looking for ways or methods to meet these standards. That being said, the social system is not given the same focus as the technical system [18, 41]. Despite the large number of papers published on the topic of Lean, there are few articles that covered the influence of Lean’s approach on ESE factors. This work presents a research study to address this shortcoming.

This means that ergonomics, safety, and environment factors need to be promoted in projects of continuous improvements to achieve operational excellence. Figure 3 shows the technical-social system that takes into consideration several factors, combining the economic and the social systems.

This model introduces our proposal for a technical and social system that promotes both social and cultural aspects, and that makes its view about the “Quality, Cost, Time, Ergonomics, Safety, and Environment” (QCDESE) factors of performance. Our goal is to establish a survey of Lean’s technical and social impact and exploitation.

2.4. Summary of the Literature Review. The literature review is a standard methodology of research and journal bibliographic analysis that allows for the selection of relevant articles over a period in order to deepen studies and forecasts on a research topic. Therefore, the research papers that evolve around the continuous improvement and change of the topic were selected, particularly the articles that contain the words “Lean, Lean Manufacturing, Lean Management, Lean Greene, LSS, social factors, and economic factors” in their titles and keywords. Figure 4 represents the main stages of the research adopted for the literature review. Moreover, the adopted design framework for this review is illustrated in Figure 5.

Notably, this section contains a literature synthesis based on an examination of articles from various Lean models, which illustrates each model’s objectives and outcomes to successfully fulfill the set goals. Moreover, it describes studies on the influence of continuous improvement programs on QCDESE variables over the past 20 years.

Based on the analysis of the selected papers, we found that most authors are only interested in the Lean approach as a technically and economically improving strategy. However, researchers have neglected the effect of the Lean approach on ESE social factors (Figure 1). The analysis of these articles shows that there is still a long way to impose social system on organizations and services during Lean’s integration.

Out of analysis of the various articles studied, it is obvious that the technical system is very favored with respect to the social system:

78.5% of researchers focus on the technical system alone: 25.23% on quality; 27.10% on the cost; and 26.17% on the delay

Only 21.5% of researchers take the social system into account; 8.41% on security; 7.78% on the environment; and 5.61% regarding the ergonomics

According to a number of searchers [25, 36, 37], while the use of Lean tools is necessary to satisfy market demands, the human aspect of such a change must be taken into account for Lean to succeed. The literature suggests that there are various LM practices that have a detrimental impact on the performance of companies’ sustainability, as a result of a failure to consider the role of the social and environmental side in the company’s development.

3. Research Methodology

This paper’s bibliography is based on original English-language papers. Several publications in the literature discuss the effects of continuous improvement approaches on economic and financial aspects, but there are few researchers that study the impact on social factors. Indeed, there are many literature research methodologies available that allow the authors to synthesis and examine in depth the many approaches to a specific topic. The numerous researchers use the systematic literature review (SLR) to choose relevant research articles for Lean (Stone; Danese et al.; and Psomas and Antony) and LSS and GLSS (Albliwi et al.; Garza-Reyes; and Laureani and Antony). This study is based on a review of 117 publications of Lean during the last two decades (Figure 4).

Figure 4 is divided into five parts. It starts with subject identification and establishment of the request, which represents the research context. In the second step, it defines the search terms (Lean, Lean Manufacturing, Lean Management, Lean Green, LSS, and social and economic factors) that appear in the papers’ titles and keywords and select those published between 2001 and 2020. Then, we used the following exclusion criteria for journal articles: “short survey, book chapter, conference report, and editorial remark”. In the third phase, it selects and limits the publications to relevant English-language articles published in “Emerald, Inderscience, Elsevier, Taylor & Francis, and SpringerLink”. In the fourth phase, it explores and chooses magazines that have been evaluated by a pair of editors. To conclude, it synthesizes and reports the results obtained.

To corroborate the results of Figure 1, we conducted an industrial survey of the company’s concern for the technical and social systems (Figure 5). This investigation is a strong point in our research and an essential aspect of conducting this study. On one hand, using the results of our survey analyses will explain the constraints of Lean’s implementation. On the other hand, this survey will identify the challenges of the Lean approach’s integration in underdeveloped countries. According to Figure 5, this work offers the opportunity to link the bibliographical search section and the survey that depicts operational employee feedback as a reality on the ground.

3.1. Sampling Method and Procedure. To assess the impact of continuous improvement and Lean integration, we surveyed the company’s managers, consultants, and different services. The questionnaire provided us with all the elements needed to describe the links between economic interests and improvements in working conditions.

The selection of the sample is regarded as the most critical and generalizing step in the shortlisting. Thus, we have relied on social and professional networks, namely, LinkedIn, to select organizations and individuals as the targeted sample for this survey. The investigation focused on the organizations that apply Lean or other continuous improvement approaches (Lean Six Sigma, Lean Green, and Lean Mining) in various countries. As a matter of fact,

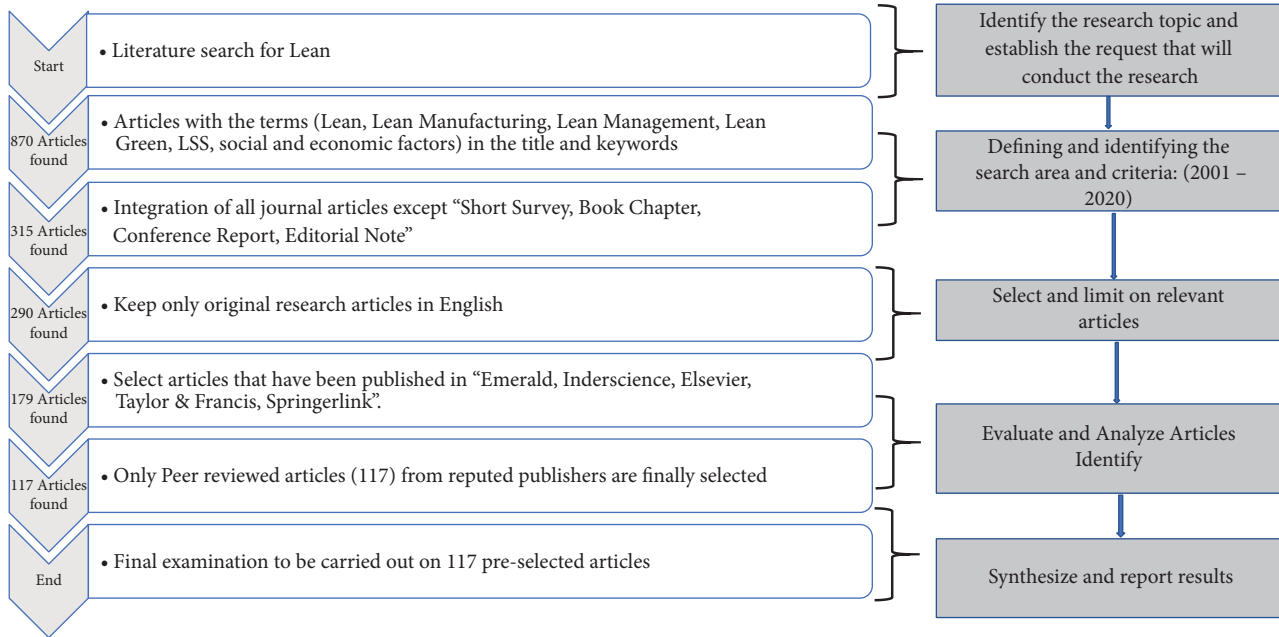


FIGURE 4: Main stages of the adopted research for the literature review.

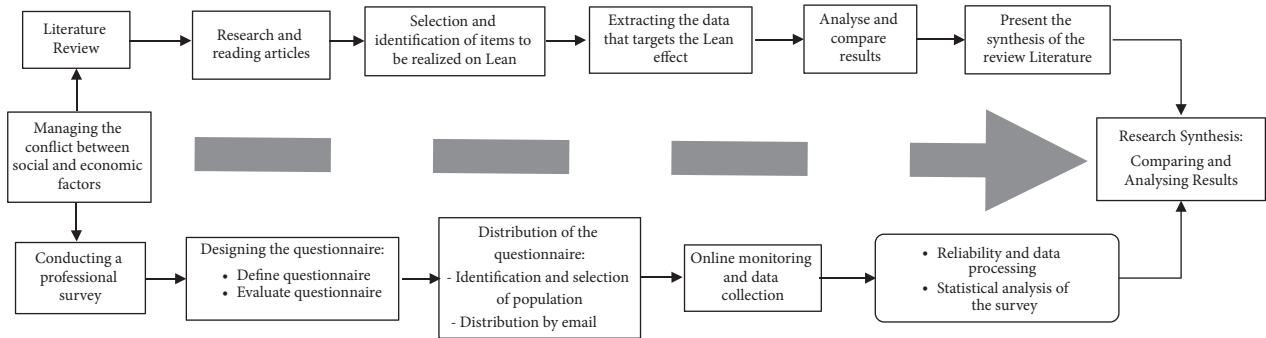


FIGURE 5: The research design framework.

all members of the survey sample have already steered or participated in Lean projects. The purpose is to generate a database to show certain inconsistencies between the theory and practice of the Lean approach. At the same time, it is an opportunity to endorse this conflict and confirm the close link between the technical and social systems. Then, it is an opportunity to improve this conflict and confirm the close link between the technical and social system.

3.2. Survey Design. In the context of a research study on Lean’s integration, a descriptive survey was conducted, therefore providing feedback on Lean’s influence on the technical and social factors. In preparing the study, we targeted senior and middle managers as well as the machines’ supervisors and workers.

A discussion involving Lean professionals, from various consulting firms, initiated the survey’s assessment and led to reliably complete our form. This questionnaire includes a list of questions on Lean’s integration and its impact on

economics, taking into account the technical and social systems. These elements allowed us to understand the conflicts of interest between the QCDESE performance factors and to verify how these organizations take into account the different factors. Furthermore, interviewees were women and men who participated in the implementation of Lean project.

This part explains the many stages of the data gathering procedure, which will provide us with information for the Results and Discussion section. The study was created within a professional context and targeted different sorts of organizations who employ Lean in their continuous improvement process. Indeed, this questionnaire was broken down into three parts, each of which was used as a database for this study. The first stage of the investigation was to collect general information about the participating companies, such as the activity sector, revenues, size of the company, the country, Lean management services, and so on. The second part aims to obtain the profile of the interviewees, such as their type of training, practice of the Lean approach, function, activity service or department, experiences, project

management or other projects practiced in social/economic/management of continuous improvement, and so on. The third part is intended to collect data on continuous improvement methods used by these companies and Lean or Kaizen project for the improvement of technical and social performance, monitoring indicators, and so on.

The goal of these procedures is to create a database that represents the various types of data collected from the organizations that participated in the survey. This will enable us to expand the scope of our research to include various nations with diverse industrial cultures.

3.3. Survey Distribution. The survey is designed to collect data from the various industrial and services sectors. This will allow us to evaluate and measure that information in order to obtain a full and accurate picture of the Lean approach in the industry. The next step is to gather the information needed to explain the social factors disparities depicted in Figure 1 and used in the section “Results and Discussion.”

According to the researchers, LinkedIn is seen as a source of inspiration for research, especially topics in the professional sector. The population selection for this survey was done in a structured way at the foundation of the LinkedIn platform. Among the 252 individuals contacted to evaluate this investigation, 130 responded, which is a 51.59% rate of data returns.

The link to the survey was distributed to the selected participants via email, starting July 2020. The emails were accompanied by an explanatory letter about the primary objective of the investigation and the Internet Link to access the website of the investigation form. After 18 days, we sent call back emails to encourage people who did not fill out the questionnaire and thanked those who provided feedback. During this time period, the data collection results were monitored daily through a dashboard provided by an online “Google Form” platform.

We have chosen to put this investigation online and anonymously so as to facilitate access to various targeted people and to avoid editorial effects that create delays. Google Form surveys aim to collect and organize the greatest amount of data within a short period of time, hence increasing the rate of return [42].

3.4. Survey Results. This section presents an overview of our survey’s various information in terms of data from our questionnaire and the results of our survey analysis. The survey’s design is based on the participating organizations’ fundamental data in terms of activity, effective size, integrated Lean approach and tools, and type of training. The results of this professional study survey on the conflict between economic and social issues will be based on the information gathered in the following phases.

3.5. General Information. We used these elements to differentiate between these organizations with the goal of integrating many types of activity into multiple countries in

order to obtain a global view with various perspectives on the subject. According to the return of the business analysis, most of them are large companies (57%), (27%) are mid-market companies, and (15%) are small companies. Below are further details about the organizations involved in this survey.

3.5.1. Companies’ Sectors of Activity and Countries. The purpose of this section is to present the information gathered about companies and organizations involved in the survey. The following were adopted to distinguish between these organizations: the size of the company, business sector, turnover, and workforce size. The information collected on the sorts of business areas of companies participating in the survey is shown in Figure 6. Automotive sector (40%); transport and logistics (13%), aircraft and wiring (13.85%), consulting and services (10%), energy and BTP (6.15%), pharmaceutical sector (4.65%), plastics (3.08%), mining industry (2.31%), and other sectors of business were introduced.

The countries of the organizations participating in this survey are shown in Figure 7: Morocco with 45%, France with 27%, Tunisia with 5%, Romania with 5%, and Germany with 4%.

3.5.2. Services and Professions Surveyed. Various departments were contacted for this investigation. Quality services (4.62%); maintenance (13.08%), commerce and after sales (2.31%); production (38.46%); logistics (8.46%), continuous improvement and performance (10.77%); engineering (14.62%), administration (4.62%), and others are shown in Figure 8.

3.5.3. The Workforce Size of the Company. We included the factor “workforce size of the businesses” in our questionnaire to classify the businesses that were contacted. For the size of workforce of participating organizations, we have the following status in Figure 9:

- 51.54% of companies employing more than 1000 people
- 25.38% of companies with between 500 and 1000 individuals employed
- 14.62% of companies with a workforce of between 100 and 500 workers
- 8.46% of companies employing less than 100 people

3.6. The Interviewees’ Profile. Following a presentation of data on the organizations that took part in this study, we created a detailed description of the profiles that were questioned. In this survey, we have 23 percent of women and 77% of men of interviewees. Indeed, this section describes four categories of data for the individuals consulted: Training Type, Function, Experience, and Training on Lean and the number of projects driven or involved.

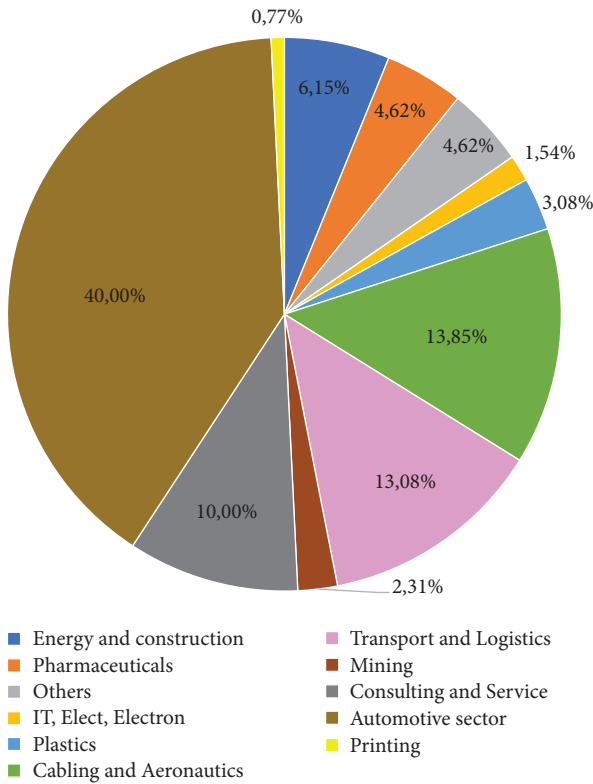


FIGURE 6: Types of business sectors.

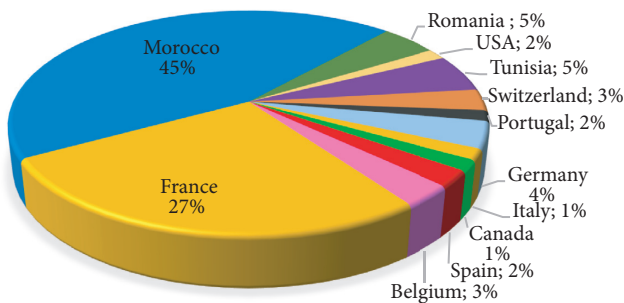


FIGURE 7: Countries of the participating companies.

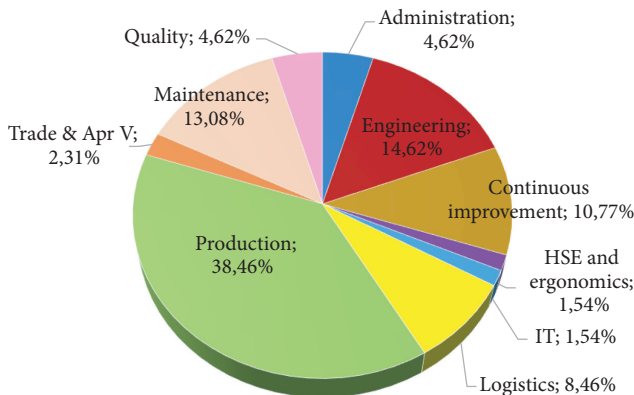


FIGURE 8: The services of the participating organizations.

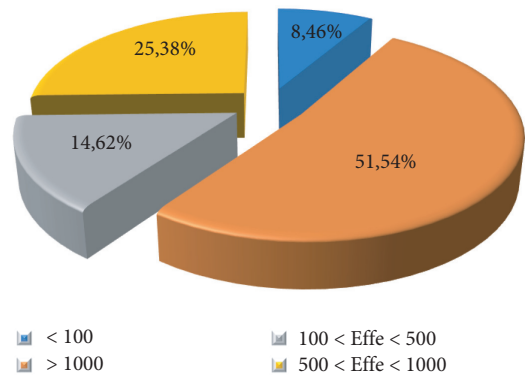


FIGURE 9: Number of participating companies.

3.6.1. *Training Type and Training Level.* The goal of considering the training level in this survey is to assess the impact of this factor on the results of our research. Also, the general type of training allows the identification of the improvement sources and factors to be addressed during our results analysis. The targeted training level categories are shown in Figure 10, that is, Bac (5.38%), Bac +2 (10.77%), Bac +3 (13.08%), Bac +4 (13.85%), Bac +5 (48.46%), and > Bac +5 (8.46%). However, to detail most of 48.46% of BAC +5, there are two parts: Master 40% and Engineer at 60%.

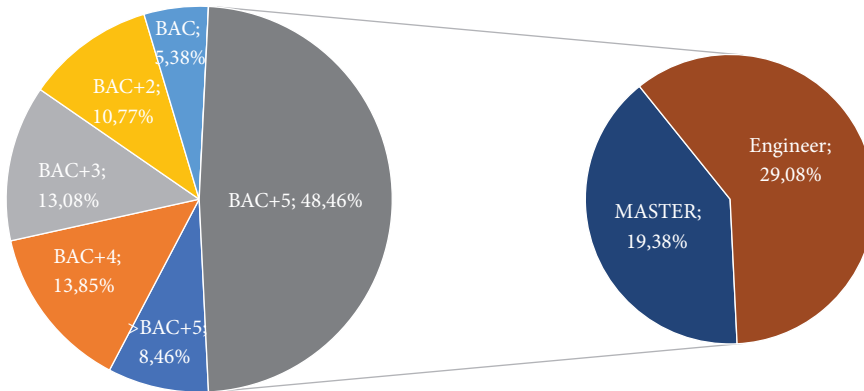
In exchange, there are several forms of training identified in our survey. Figure 11 provides the most presenting types of training in our population.

3.6.2. *Occupation or Position.* This work has been conducted with different sectors and different hierarchies for the interviewees: CEOs, directors, service managers, project leaders, engineers, production managers, quality, safety, environment, and so on. Figure 12 describes the rates of participating functions in our investigation.

Further details on the functions presented in Figure 12 are provided as follows:

- Team Chef: team chef, supervisor, construction pilot
- Manager: manager, logistics manager, CEO, manufacturing manager, quality managers
- Engineering: process engineering, products, systems, program preparers, average
- Coordinator: planning driver, flow coordinator, systems, planning, transportation
- Continuous improvement: consultant, performance pilot, Kaizen pilot, industrial organizer
- Managers: workshop managers, training managers, production, maintenance, quality, logistics, manufacturing, environment, HSE
- Technician: maintenance technician, installation manager, automation manufacturer
- Management: buyer, finance, human resources

3.6.3. *Experiences.* The term “experience” refers to a person’s collection of skills acquired via practice rather than



BAC degree = Highschool degree

FIGURE 10: Level of education of respondents.

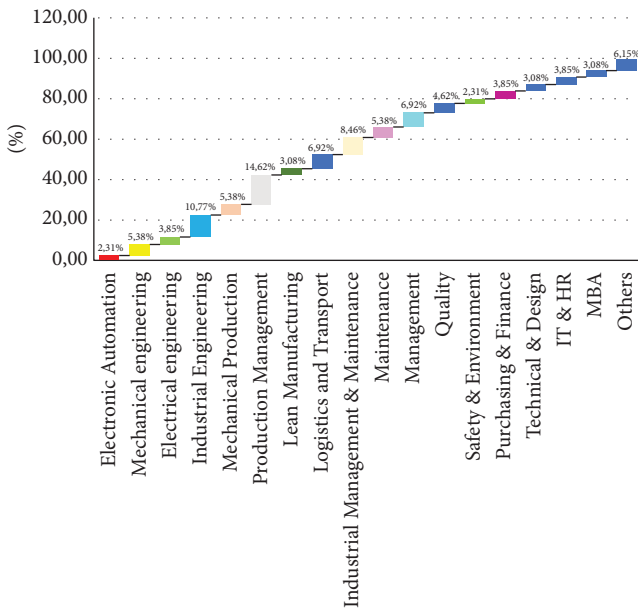


FIGURE 11: Most presentational types of training.

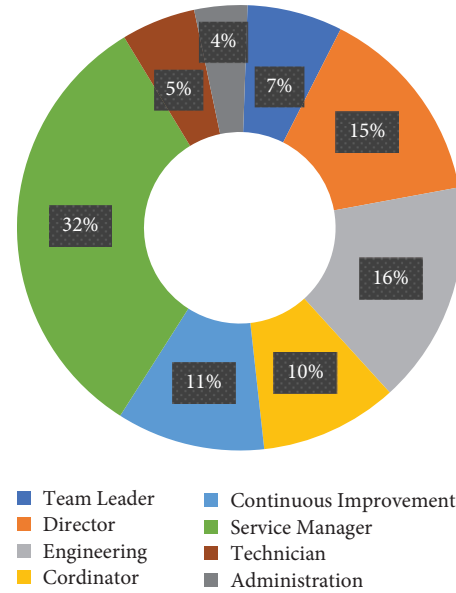


FIGURE 12: Types of participating functions.

formal education. This section provides an overview of the demographic experience period of those who are under the age of 3, 3 to 5, 5 to 10, and those with more than 10 years of experience. Figure 13 shows the period of experience rate for those who participated in the investigation.

3.6.4. *Training Factor for Staff.* Many researchers see training as a success key for all sorts of projects [5, 25]. We have therefore promoted this Lean training factor to the people interviewed and verified that companies offer training for their employees: only 48.46% of people that had Lean training during their academic or professional careers, only 56.92% of those companies that provide basic training on Lean or these tools to their academics and professional careers. Figure 14 shows the state of the Lean/Kaizen formation of our people and the participating organizations.

3.6.5. *Role and Mission of the Interviewees.* For interpreting and analyzing the data, we developed a chart showing the mission or role of those surveyed. Table 1 shows that the majority of interviewees were either piloted, involved, or assisted from 1–10 Lean projects. This allows us to present the feedback of our interviewed population in this survey. Thus, this data was used to present the influence of Lean on economic factors “QCD” and social factors “ESE.”

4. Case Study

According to Bevilacqua et al., the Lean approach may have a positive or negative influence on the company’s performance and growth [33]. Indeed, ineffective use of continuous improvement tools risks degrading the company’s performance and renders the tools’ activities ineffective. This leads to unsatisfactory results in social and organizational terms. The employees’ working conditions and motivation

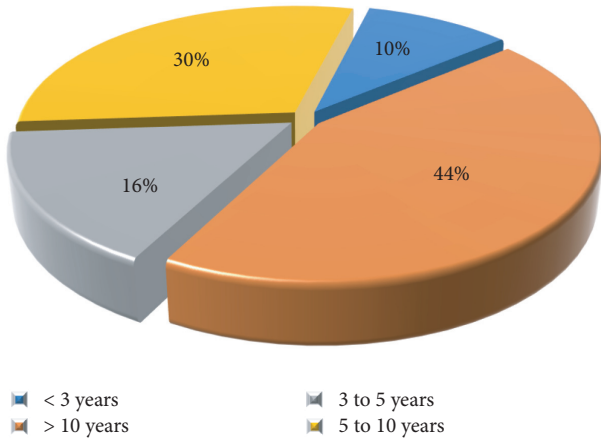


FIGURE 13: The period of experience rate of the population consulted.

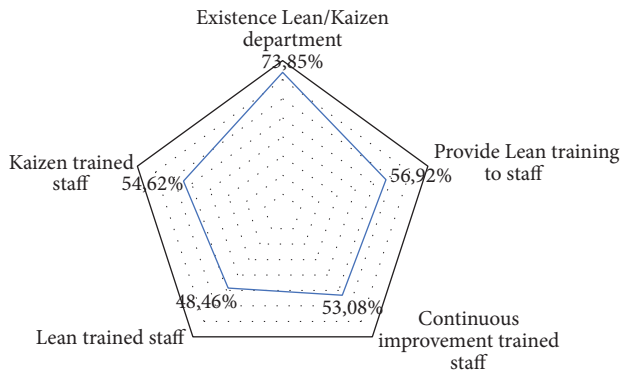


FIGURE 14: Most presenting types of training.

TABLE 1: Role of the interviewees.

Number of sites	Piloted	Participated	Observed
0	16	9	13
From 1 to 10	70	53	55
From 11 to 50	24	40	42
From 50 to 100	15	19	11
>100	5	9	9

are directly affected. In this context, we have revealed this conflict between the “technical and social” performance factors. The following case study illustrates the social gaps and anomalies that emerged following the deployment of a Lean project in a Moroccan automotive company in 2019.

The findings of this case study of a Lean manufacturing project implementation reveal that there are detrimental consequences on safety and ergonomics. The main objectives, set out by the management of this project, focus on economic factors, which are as follows:

To achieve a productivity of 9 operators in this production line

A gain of 40 minutes for each shift is desired

To lower the cost of fixing and storing the line’s production averages

To enhance this manufacturing area’s 5S status

Even though the Lean approach has made significant contributions to business development, the results obtained in this case study on the implementation of a Lean manufacturing project showed that there are negative effects on safety and ergonomics. They highlighted the fact that all the project’s economic objectives were met successfully and on time. On the other hand, there are some social irregularities that have degraded the working circumstances of the four workstations. According to Figure 15, these ergonomic and security issues have a significant influence on the performance of these project improvement activities. These changes have far-reaching negative consequences for the volume and quality of vehicles produced, resulting in production stoppage and product degradation.

Nevertheless, industrial advancements are seen in terms of standards and requirements for workplace health and safety management systems. So, despite improvements in prevention tools and protective measures, we continue to have poor results in terms of workplace accidents and diseases [9]. This is the case with this manufacturing unit, which has struggled with effective management, illness, and volume compliance following the implementation of this Lean project.

In summary, there are some organizations in impoverished nations that ignore social factors, negatively impacting workplace safety, ergonomics, and employees’ engagement. Workplace conditions must be prioritized by including employees in all phases of process diagnostics and studies to improve and change the process or the product.

5. Results and Debate

According to the daily tracking of survey data through an online management dashboard provided by the “Google Form® Investigation” platform, these data have been processed and classified in Table 2 in order to provide a synthesis and descriptive analysis of the results achieved by each ESE factor.

The findings of this study show the restrictions and anomalies that have arisen in the field as a result of the coexistence of economic and social goals during Lean implementation. According to the survey results, many respondents had piloted, participated in, or observed at least one Lean work site. In addition, most organizations have approved the conflicts of interest between ESE and QCD factors. In fact, some Lean workshop pilots reported that the ESE factors had deteriorated throughout the adoption of Lean, despite management’s concentration on increasing the QCD factors (Table 2).

Table 2 shows that the results of the investigation confirm the lack of interest in social factors in the literature review analysis shown in Figure 1. Indeed, there is also a tendency among the researchers and the feedback from operational staff of only favoring the Lean approach as a technically and economically improving strategy. Our survey analysis recognizes this conflict between social and economic objectives. Table 2 shows that most stakeholders

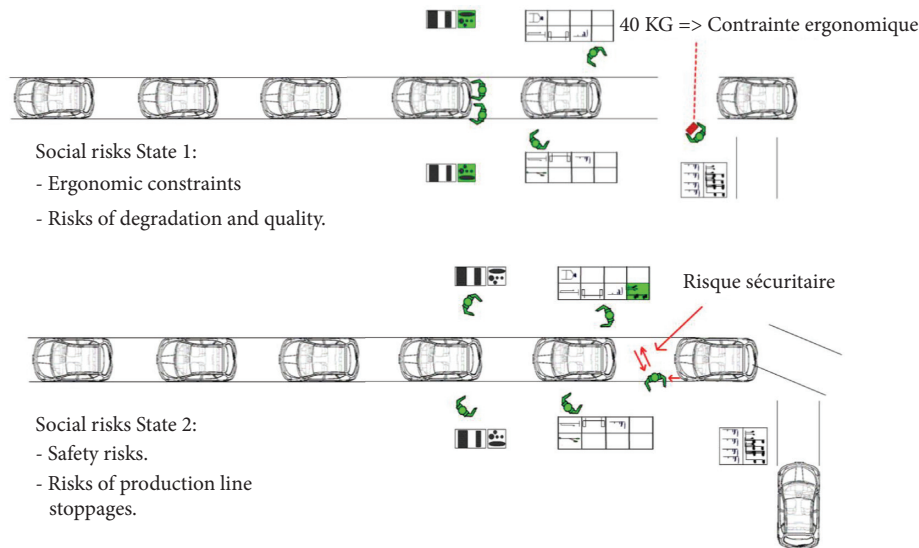


FIGURE 15: Explanatory diagram of the positions affected by a Lean.

TABLE 2: Result of the descriptive analysis of the survey.

	Ergonomics		Safety		Environment	
No degradation	33	25.38%	51	39.23%	49	37.69%
There is degradation	74	53.85%	62	47.69%	53	40.77%
Strong degradation	23	20.77%	17	13.08%	28	21.54%
Total	130	100.00%	130	100.00%	130	100.00%

claim that the Lean approach degrades social ESE factors. There are 74.62% of people who suggest that Lean degrades ergonomics. Similarly, safety accounts for 60.77% and environment accounts for 62.31%. That said, the current strategy of companies vis-à-vis the economic constraints of the market focuses on the QCD factors to succeed in this t-challenge, which often degrades the ESE factors. However, the current strategy of companies vis-à-vis the economic constraints of the market focuses on the QCD factors to succeed in this t-challenge, which often degrades the ESE factors. According to the results obtained from the survey, the implementation of the Lean approach has a negative impact on social factors. This demonstrates that businesses prioritize the financial aspect, which has a detrimental influence on social ESE factors. As a result, the influence of these elements has a considerable impact on the company's total process performance [43]. According to survey responses and personal experience, the evolution of economic factors (QCD) poses a significant danger of deteriorating the social side, which has a direct influence on employee commitment and motivation [44].

To summarize, the results of the survey confirm the literature review data shown in Figure 1. In fact, there is a similar pattern among researchers and the feedback from operational staff that employ the Lean approach as a technically and economically improved approach. Through our survey, we have shown that there is a strong relationship between the social factors studied. As a result, the worsening of one social factor represents a potential risk of degrading others. This necessitates the development of devices that will

assess the impact of Lean on all QCDESE parameters while also satisfying the demands of businesses. Furthermore, it is vital to track the progress of economic and social elements to avoid improving one while degrading the others.

According to the literature review, this paper provided assistance to researchers and business leaders in achieving their goals of improvement or change in a Lean context. The following are the most important impacts and consequences on ESE factors that have been discussed in a Lean context.

This work provided valuable insights into the roots of conflict between economic and social factors. These elements have a negative influence on social factors, which has a direct impact on the company's profitability (Table 3). This paper can assist business leaders with avoiding these sources of nonperformance and organizing their policies for effective Lean implementation. To summarize, below are the main points that we discussed in this document:

- Poor understanding of the Lean approach
- Lack of commitment from the company's management
- Lack of involvement and commitment of employees in the Lean project
- Lack of training on Lean for the Lean project team and workers
- Absence and lack of monitoring of social climate indicators
- Lack of follow-up and treatment of social anomalies linked to changes in a Lean context
- Lack of objectives dedicated to social factors in the Lean

TABLE 3: Review of the most important effects and consequences on ESE factors.

References	Effects and consequences	Factors impacted	Absent elements and sources
Lauver et al. [25]; Khurana et al. [44]	Perceived job security correct mindset: cultural resistance to change	Security, environment	Employee involvement; training; motivation management support
Alok et al. [3]; Aydinoglu et al. [45]	Missing of management support; missing of worker motivation and comfort; resistance to change; lack of personal involvement	Environment	Peaceful working environment; training and involvement of people
Brito et al. [46]; Sahoo [10];	Social and cultural changes; repetitive movement; business performance; successful practices; employee morale and safety; stress	Safety, ergonomics	Senior management and worker engagement; training
Bevilacqua et al. [33]; Antomarioni et al. [47]; Alkhoraif and McLaughlin [7]	Poor understanding of lean; lack of resources; failure to implement lean; lack of rewards and recognition	Cultural factors, environment	Training of all staff members; involvement and commitment of people; cultural dimensions
Omogbai et al. [48]; Pampanelli et al. [21]	Employee fatigue; lack of improvement culture; increases errors	Environment	Wrong dimensioning of objectives; Pressure; involvement and motivation of staff
Mahesh Babu et al. [9]; Dos Santos et al. [49]	Inappropriate behavior; affects health; stress in the system; stressful atmosphere; demotivation of staff	Ergonomics, environment	Training and involvement of staff; training and involvement of managers

Moreover, the return of questionnaires by Moroccan organizations claims that Lean is degrading safety, ergonomics, and environment indicators. As it turns out, the assessment of Moroccan participants is higher than our overall result of the survey, which reached 75.89% for ergonomics, 63.57% for the environment, and 62.34% for safety.

6. Conclusion

Taking advantage of these results from this work allows in the first place to educate managers of businesses on the weaknesses identified among these factors. Secondly, it is a major debate to be put on the table for researchers and experts to analyse the conflict between implementation of Lean practices and the development of social factors.

The principles and tools of the Lean have enabled many manufacturing companies to implement improvement programs and, as such, they have benefited from this management method, especially regarding value creation, waste removal, and user satisfaction. The researchers examined both Lean's impact on technical and economic performance. Despite an increase in research papers on the integration and development of various continuous improvement methodologies (Lean, LSS, LM, and Kaizen), few studies have been conducted to evaluate their impact on safety, environments, and ergonomics concerns. It is worth mentioning that the impacts of these techniques on these ESE factors have been studied in just a handful of the study evaluations.

During the implementation of these initiatives, data analysis revealed that most organizations focus on financial objectives and ignore ESE factors. This result has been confirmed by the analysis of the data from this study, indicating that there is a strong positive correlation between the factor ESE and the outcome.

Lean manufacturing and its tools are very interesting methodologies for organizations and companies in the

management of the supply chain on the technological and economic aspect in several sectors of business (industry, banking, mining, and public). In fact, Morocco has taken a major step in this direction to ensure the inclusion of Lean to have a better introduction of a Lean management system. In this way, Lean approach assists Moroccan companies with improving their performance and increasing their competitiveness locally and internationally.

However, despite all of Morocco's efforts in the field of industrial development and all the advances noted by the big companies located in Morocco, the use of Lean's tools is still fragmented:

- The heaviness of local and parafiscal taxation
- The low integration of the Moroccan industries into international value chains
- Difficulty to penetrate markets and obtain the necessary funding
- Heavy customs procedures for export companies
- The cost of transportation and logistics and the covering of the exchange risk
- The difficulty of adapting products to international standards and the lack of competent workers

This paper is limited to the industrial sector and just three social factors "ESE." Therefore, there are a variety of other industries and social factors that were not included in this study. Furthermore, because the number of participants surveyed was restricted to 130, the survey's conclusions cannot be generalized. One of the limitations of this research was that it was conducted only with industry professionals who have an up-to-date LinkedIn profile. This study was further limited by a lack of real data and a paucity of literature on the impact of the Lean methodology on social factors.

The outlook for this study requires a new continuous improvement approach that considers all the factors of performance. This is a concept that will enhance social and

economic factors and that will have to make a major contribution to improving working conditions.

Data Availability

The primary data used to support the findings of this study is included within the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest regarding the publication of this publication of this paper.

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