Remittances Review
June 2023
Volume: 8, No: 4, pp. 3269-3282
ISSN: 2059-6588 (Print) | ISSN 2059-6596 (Online)

Received: 11 November 2022 Accepted: 02 February, 2023
DOI: https://doi.org/10.33182/rr.v8i4.225

Towards a Proposed Integrated Model of Lean Management and HACCP

Mensouri Samya[1]*, Benlamlih Imad[2], Saile Rachid[3], Kettani Anass [4]

Abstract

This paper presents an integrated model for the implementation of the Lean management approach combined with Hazard Analysis Critical Control Point (HACCP) in the food industry. Through a synthesis of the literature review conducted on waste elimination techniques using Lean management tools and the HACCP risk management method in the food industry, this paper proposes an integrated model for the implementation of the Lean-combined HACCP approach.
The implementation of this conceptual model will provide companies in the food industry with the opportunity to reduce costs and increase productivity while maintaining the required food safety standards in this specific industry domain..

Keywords: *Lean management, Haccp, Lean tools, process optimization.*

Introduction

The manner in which people buy online and the choices they make based on what they see are influenced by a variety of factors, including individual differences in perception, culture, society, and psychology.

Currently, the global technological and economic advancements that companies are experiencing require them to adapt to various changes by modifying their management and operational methods. In order to achieve an accelerated pace in product development across all domains, aspects such as waste minimization, quality improvement, and increased value addition hold significant importance for all enterprises (Idrissi and Benazzouz, 2019a).

In this context, "Lean thinking" is becoming a major concern for business leaders (Idrissi and Benazzouz, 2019b), especially in the food sector which demands not only waste reduction but also effective and structured food safety (Reference to be inserted). Aligned with this context, this paper proposes an integrated model of Lean Management - Hazard Analysis Critical Control Point

[1] Laboratory of Biology and Health, Department of Biology and health, Faculty of Science BenMsik, Hassan II University Casablanca, Casablanca, Morocco mensourisamya@gmail.com
[2] Laboratory of Biology and Health, Department of Biology and health, Faculty of Science BenMsik, Hassan II University Casablanca, Casablanca, Morocco imad.benlamlih@gmail.com
[3] Laboratory of Biology and Health, Department of Biology and health, Faculty of Science BenMsik, Hassan II University Casablanca, Casablanca, Morocco sailerachid@yahoo.fr
[4] Mohammed VI Center for Research & Innovation, Rabat, Morocco & Mohammed VI University of Health Sciences, Casablanca, Morocco. akettani9@yahoo.fr / kettanianass@yahoo.fr

(HACCP) tools for application in the food industry. The aim is to investigate to what extent the implementation of Lean management tools combined with HACCP can improve safety in the food industry while ensuring resource optimization and waste reduction. This model is subsequently tested on a case study of a food industry in Casablanca, Morocco, to generate comparative results followed by their discussion.

To achieve this objective, the first section of this paper provides a synthesis of the state-of-the-art Lean management approach tools. The second section elaborates on the application of HACCP tools in the food industry, and the third section presents the proposed integrated model of Lean - HACCP tools. The paper concludes with the interpretation and discussion of the obtained results.

1 Lean Management in the Agri-Food Industry

Lean Management and Its Application Areas

According to Womack et al. (1990), Lean Management is defined as a set of new organizational practices aimed at reducing waste while maintaining a process of continuous improvement and placing customer-expected value as a central reference (El Kahri and El Amrani, 2017). In 2009, the same authors, along with Daniel Jones, defined Lean management as a new organizational model focused on delivering precisely what the customer demands, without any errors, delays, or last-minute actions (Jones and Womack, 2009).

In 2012, Hohmann proposed a definition of Lean as a systemic approach that aims for process design and improvement, focusing on customer satisfaction. According to the author, this approach relies on the involvement of the entire staff and their alignment with common practices and principles (Hohmann, 2012). In his work, Hohmann (2014) defined Lean management as a system aiming to generate optimal added value to customers using only the necessary resources (El Kahri and Amrani, 2021). The term "Lean management" has its roots in Lean manufacturing founded by industrial engineer Ohno in 1950 through the renowned Toyota Production System (TPS) (Emiliani et al., 2007).

In light of our study, it is observed that there is no common or precise definition of "Lean Management." This is due to the fact that Lean is connected to several other themes and has evolved significantly from its origin in Toyota's production to its application in various processes and sectors.

Figure 1 illustrates the evolution of the term "Lean" leading to the emergence of the term "Lean management."

Remittances Review
June 2023
Volume: 8, No: 4, pp. 3269-3282
ISSN: 2059-6588 (Print) | ISSN 2059-6596 (Online)

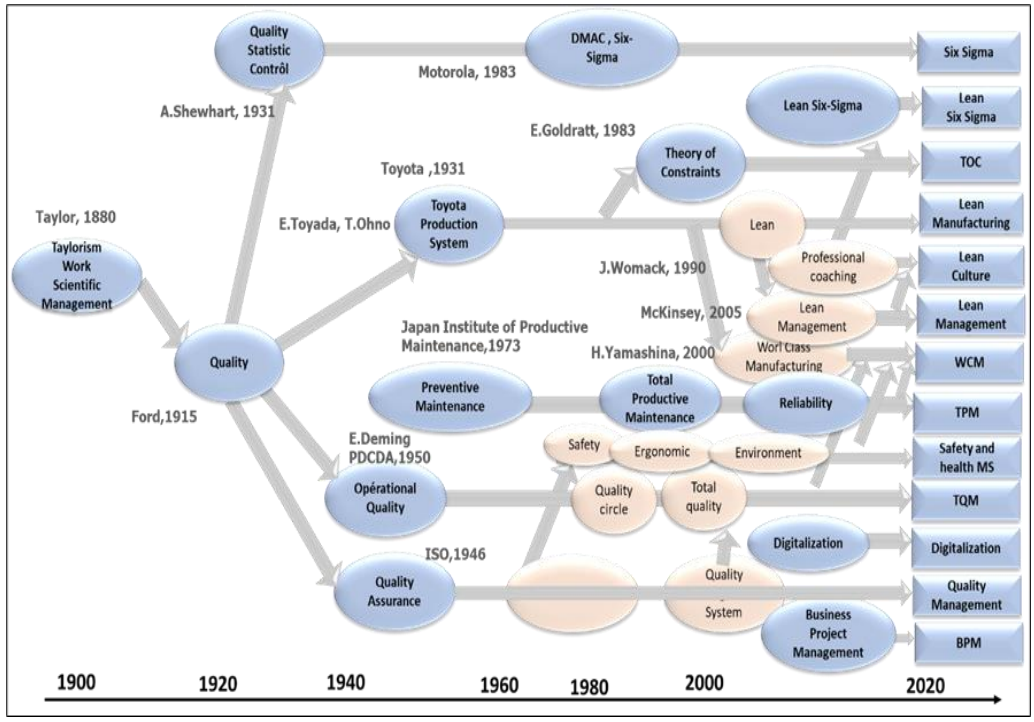

Figure 1 illustrates the different phases of management evolution towards Lean Management, encompassing Lean Six Sigma, Lean Manufacturing, and finally reaching Lean Management.

Application Areas of Lean Management

The success of Lean is so widespread that it has adapted to be applicable across all industrial sectors (Womack and Jones, 2012). The automotive industry was the first to adopt the Lean system, focusing on optimizing process flows, minimizing waste, and eliminating non-value-added activities. This Lean system enables cost control, flexible investments, less bureaucratic management, and very short lead times in this industry (Chris Anstey, 2013a).

Indeed, Lean Manufacturing is associated with internal concerns of industrial enterprises, including creating a continuous stream of activities in the production chain (Rother and Harris, 2001), just-in-time (pull) (Mackelprang and Nair, 2010), reduction of setup time (Cakmakci, 2009), and total production/preventive maintenance (Ahuja and Khamba, 2008). After a twenty-year analysis of the successes and failures of Toyota and numerous other companies following the Lean approach, Michael et al. (2018) conclusively demonstrated that these enterprises are more profitable than their competitors due to their consistent pursuit of more sustainable solutions (Micheal et al., 2018).

In the food sector, a case study conducted by Idrissi and Benazzouz in 2019 on the implementation of Lean in the food industry demonstrates the systematic objective of the Lean approach to waste reduction. This approach aims to provide products and services at lower costs and shorter lead

times without the need for significant investments in training or consulting services (Idrissi and Benazzoue, 2019).

In recent years, research has increasingly focused on implementing this approach in the service sector, healthcare, information technology (IT), and banking industries, showcasing the versatility of this approach.

Lean Management in Industry: Determining Factors

Lean management is based on two key factors: automation and just-in-time (JIT) production. These two factors must work in tandem to achieve sustainable results (Ohno and Mito, 1993).

- Autonomation, also known as "JIDOKA," involves the automatic halt of machines in case of anomalies, allowing operators to stop the production line if they detect a defect. This approach prevents defective units from moving from one station to another and promotes effective communication between operators and machines. Several studies demonstrate that achieving perfect quality from the first production without impacting the customer is more beneficial and profitable than continuing production without addressing losses (Womack et al., 2009); (Camuffo et al., 2017); (Ming Shan and Hall, 2019).

- Just-in-Time (JIT) production entails producing only what is necessary at the moment it is needed, according to customer demand. This factor aims to minimize stocks and work in progress. The JIT philosophy is built on manufacturing small quantities of multiple products to better meet customer needs (Helman, 2012). To implement JIT, transitioning from a push flow structure to a pull flow structure is necessary, involving closely aligned production planning with customer demand to reduce associated stocks and costs (Helman, 2012).

Lean Management Tools and Their Implementation in the Agri-Food Industry:

The implementation of the Lean Management approach across industries, including the food industry, is based on deploying tools that offer significant benefits to companies, such as improved profits and increased efficiency and productivity of human and material resources (Oliveira and Fernandes, 2017).

Table 1 summarizes the different Lean Management tools used in industries in general and specifically in the food industry**.**

Table 1: Lean Tools Used in the Industry

Lean Management Tool	**Definition**	**Advantages**	**Sources**
The 5S (Seiri- Seiton- Seiso- Seiketsu-	A cleaning and organizing method based on:	-Reducing costs generated by unnecessary tools	- El Ghamoussi, 2016

Shitsuke)	- Elimination of the unnecessary; - Arrangement and organization; - Cleaning; - Standardization; - Monitoring.	-Standardization of practices and simplification of work -Reduction of search times -Prevention of breakdowns -Use of appropriate flooring in the agri-food sector -Operational efficiency -Prevention of incidents	
PDCA Wheel (Plan-Do-Check-Act)	Regarded as the central element of improvement in Lean, the PDCA involves: -Planning actions by defining objectives; -Implementing actions; -Controlling the execution of actions and achievement of objectives; - Taking action by implementing corrective or improvement actions.	-A guide for improvement initiatives -Promotion of efficiency and continuous process improvement	Lasnier,2007 - Demetrescoux,2015
Poka-Yoke (Mistake-Proofing)	It refers to the control to detect errors and achieve zero defects.	-Reduction of control operations; -Decrease in defective parts and initiation of immediate actions.	- El moutchou et al., 2019
Single Minute Exchange of Die (SMED)	It is the maximization of tool changeover time reduction in production by converting internal activities into external activities to decrease	-Minimize production interruptions and maximize uptime. - Effective planning of activities and tasks that do not require complete	- El Kahri et al.,2021

	setup times.	production stoppage. -Elimination of downtime and optimization of workflow flows.		
Standard Work (Standardized Work)	Standardization is a key concept of Lean Management, aiming to establish clear, precise, and standardized work methods with the goal of optimizing processes and eliminating waste.	-Reduction of variations and errors. -Identification and elimination of unnecessary or redundant steps. -Reduction of unnecessary movements, delays, defects, and overproduction.	-	Beauvallet, et Houy, 2009
Takt time	This German word means rhythm. Takt time is a Lean tool used to measure the production pace necessary to meet market demand.	-Balancing production stages to ensure smooth and synchronized production. -Promoting continuous improvement and waste reduction.	-	Beauvallet, et Houy, 2009
Zero waste	- Waste in the food industry is represented by overproduction, delays, transportation, movements, unnecessary processes, inventory, and established defects.	- Adoption of a pull-based approach. - Implementation of just-in-time production. -Effective management of stocks to avoid product perishability. -Minimization of costs. -Maintenance of the cold chain.	-	Buffe,2021

Table 1 summarizes the Seven tools for implementing the Lean Management approach in the food industry. Indeed, the implementation of these tools enables waste reduction, improvement in production quality, cost reduction, as well as employee engagement and motivation (Idrissi et al., 2015). These conclusions also align with the findings of the case study conducted by Alessandro Laureani of Hertz Corporation in 2010 (Antony, 2011).

2. HACCP: An indispensable analysis of risks detected in the food industry

Definitions and application interests

The ISO 22000:2018 standard is an international norm that specifies requirements for a food safety management system. This standard incorporates the principles of Hazard Analysis Critical Control Point (HACCP) and provides a comprehensive framework for identifying, evaluating, and controlling food safety hazards throughout the food supply chain (ISO, 2018). HACCP has become an essential component of food safety management by offering a systematic approach to identifying and controlling food hazards.

According to the ISO 22000:2018 standard, the benefits of applying HACCP are as follows:

- Enhancement of food safety and compliance with regulations: HACCP identifies and controls food safety hazards, reducing the risks of contamination or intoxication while conforming to national and international food safety regulations.

- Protection of the company's reputation, bolstering consumer confidence, and access to new markets: HACCP ensures the quality and safety of food products, allowing organizations to safeguard their reputation, build consumer trust, promote brand loyalty, and facilitate entry into new markets.

- Prevention of product recalls: By identifying critical control points and implementing adequate control measures, HACCP helps prevent costly incidents and product recalls.

- Improvement of operational efficiency and reduction of costs related to food safety issues: HACCP facilitates the establishment of more efficient production processes, reducing waste and losses, and thereby cutting costs associated with food safety problems.

- Enhancement of traceability: HACCP enables the implementation of effective traceability systems, which facilitate rapid product localization in case of issues and targeted recalls if needed.

- Continuous improvement: HACCP encourages continuous improvement of processes and practices, enabling organizations to consistently progress in food safety matters.

In summary, the application of HACCP according to the ISO 22000:2018 standard offers benefits including improved food safety, regulatory compliance, consumer trust, prevention of product recalls, operational efficiency, and access to new markets.

Basic principles of implementing the HACCP approach

The fundamental principles of Hazard Analysis Critical Control Points (HACCP) according to the ISO 22000 standard are synthesized in Table 2:

Table 2: Basic HACCP Principles

Basic Principles of HACCP	Definition of the Principle	Benefits and Contributions	Sources
Hazard Identification	A thorough analysis of process steps is conducted to identify hazards that could impact food safety, including physical, chemical, or biological contaminants.	-Ensuring food safety and security. -Preventing incidents and product recalls.	**Mouffok, et al.. (2013)**
Identification of Critical Control Points (CCPs)	Critical Control Points (CCPs) are the process steps where control measures are essential to prevent, eliminate, or reduce hazards to acceptable levels. These points must be clearly defined.	Elimination of hazards throughout the food chain.	**Rachidi et al., 2019**
Establishment of Critical Limits	Critical limits are defined for each critical control point in the process tasks to determine what is acceptable from a food safety perspective.	-Assistance in decision-making -Implementation of corrective measures in case of exceeding critical limits.	**Federighi, 2021**
Monitoring of critical control points	Critical control points are regularly monitored to ensure they are under control and that critical limits are being adhered to. Appropriate measures and records are used for this monitoring.	Product traceability and process monitoring.	**Federighi, 2021**
Establishment of corrective actions.	Corrective actions are predetermined for each critical control point in the event of exceeding critical limits or non-compliance. These actions aim to restore food safety and prevent the recurrence of incidents.	Prevention of recurrent incidents	**Federighi, 2021**
Implementation	A verification system is	Continuous	**Federighi,**

of a verification system	established to ensure that the HACCP plan is properly implemented and functioning effectively.	monitoring of processes	**2021**
Adequate documentation	All stages of the HACCP process, including hazard analysis, critical control points, critical limits, monitoring measures, and corrective actions, must be adequately documented.	Transparency and traceability of the system	**Federighi, 2021**
Training and awareness of the staff	The personnel involved in the implementation of HACCP must be trained and aware of the principles, procedures, and responsibilities related to food safety.	Promotion of food safety culture	**Federighi, 2021**
Evaluation and continuous improvement	The HACCP system must be regularly evaluated for its effectiveness and adequacy. Measures for continuous improvement are taken to optimize the system and address changes in hazards and regulatory requirements.	The robustness and effectiveness of the HACCP system throughout the supply chain.	**Federighi, 2021**

3. Le Lean Management and HACCP in the Agri-Food Industry: Proposal of an Integrated Model

Comparative Study of Lean Management and HACCP Approaches in the Food Industry

Following the successful implementation of Lean in the automotive sector, work conducted by Lean specialists in the agri-food domain substantiates the effectiveness of this approach, as exemplified by a case study of Lean Manufacturing implementation in a canned food production company in Morocco (Idrissi and Benazzouz, 2019).

The Lean methodology is particularly well-suited to addressing readily identifiable issues in the food industry, thereby facilitating the initiation of an initial set of improvements. In this regard, we present in Table 3 a comparative study between the Lean Management approach and HACCP in the food industry:

Table 3: Comparison between the Lean Management Approach and HACCP in the Food Industry

	Lean Management approach	**HACCP**	**Source**

Orientation towards quality and customer satisfaction	Yes	Yes	Scott et al., 2009
Based on a proactive approach	Yes	Yes	Kabeche et al., 2013
Focused on continuous improvement	Yes	Yes	GaridI et al., 2022
Employee involvement	Yes	Yes	Domínguez et al., 2021
Focus on food safety risk management	No	Yes	Bentenfif Et Al. 2015
Emphasis on quality risk management	Yes	No	Cabrera,2020
Focus on customer satisfaction risk management	Yes	No	Domínguez et al.,2021
Cost reduction	Yes	No	Mekideche, (2021).
Waste reduction	Yes	No	Lorino,2014
Elimination of unnecessary tasks	Yes	Yes	Lorino,2014
Continuous improvement	Yes	Yes	Lorino,2014
Promotion of organizational efficiency	Yes	No	Assaleh et Ag abdoulaye ,2002

According to Table 3 comparing the Lean management approach and HACCP, the following results emerge:

In terms of orientation towards quality and customer satisfaction, proactive approach, continuous improvement, and employee involvement, both approaches, namely Lean management and HACCP, focus on these objectives and goals in the food industry by implementing preventive measures, ongoing controls, and best practices to engage employees in continuous process improvement.

Regarding the emphasis on risk management: HACCP specifically focuses on managing risks related to food safety, while Lean Management identifies and manages risks related to quality, operational efficiency, cost reduction, and customer satisfaction.

We conclude through this comparative study that HACCP is specifically focused on food safety, while Lean Management is a broader approach to quality and operational efficiency management. However, both approaches can be complementary and used together to enhance overall

organizational performance.

Proposed Integrated Lean Management - HACCP Model in the Food Industry

After presenting the comparative table of benefits from the Lean management approach and HACCP, we observe that these approaches complement each other and can be essential in the food industry.

In this context, Idrissi and Benazzouz (2019) recommend combining risk analysis according to the HACCP approach with the introduction of Lean. The authors affirm that the Lean 5S practice, which aims to optimize working conditions and effectively organize processes, is a relevant initiative in this context (Idrissi and Benazzouz, 2019).

Based on these conclusions, we propose an integrated Lean management - HACCP model illustrated in Table 4.

Tableau 4 : Integrated Lean Management - HACCP Model

Lean Management Tool	**HACCP Tools**	**Principles and Benefits**
The 5S (Seiri- Seiton-Seiso-Seiketsu- Shitsuke	Identification of Hazards and Determination of Critical Control Points (CCPs)	Reducing time and costs while ensuring safety by considering it in risk management.
The PDCA cycle (Plan-Do-Check-Act)	Establishment of corrective actions Monitoring of critical control points	These two elements allow for the implementation of the PDCA cycle by considering the establishment of corrections and the implementation of a monitoring system in each cycle of this PDCA.
Poka-Yoke (Mistake-Proofing)	Implementation of an Integrated Quality-Safety Verification System	Enables simultaneous quality-safety dual control
Single Minute Exchange of Die (SMED) Standardization (Standardized Work) Takt time Zero waste	Adequate documentation Training and employee awareness Evaluation and continuous improvement	The tools of standardization and the calculation of production and series change times, as well as the implementation of Zero Waste, need to be documented and provided to employees through training with continuous assessment to ensure system improvements.

From Table 4, we propose integrated tools for the implementation of Lean Management - HACCP.

This proposed integrated model of tools will ensure quality and food safety while optimizing and reducing costs related to disruptions, stocks, and changes.

Conclusion and Perspectives:

This work presents an integrated model of combining Lean Management with HACCP in the agri-food industry. This combination will enable food industry companies to improve the quality, compliance, and safety of their products while reducing contamination risks and associated costs.

The overall goal of simultaneously involving Lean Management and HACCP in the agri-food industry is to ensure customer satisfaction, reduce health risks for consumers, enhance operational efficiency, and minimize costs. This enables companies to provide high-quality, safe products that meet consumer expectations while strengthening their competitiveness in the market.

In order to test this model, we propose applying it to a future case study in the food industry to quantify the benefits and the effectiveness of its implementation.

References

Antony, J. (2011). Six Sigma vs Lean: Some perspectives from leading academics and practitioners. International Journal of Productivity and Performance Management, 60(2), 185-190.

ASSALEH, Tahiya Walet et AG ABDOULAYE, Sadam. l‟ impact du Lean management sur la performance des organisations. Cas de l‟ entreprise GISB ELECTRIC. 2022. Thèse de doctorat. Université Mouloud Mammeri.

Ballé, M., Jones, D., Chaize, J., & Fiume, O. (2018). La stratégie Lean: Créer un avantage compétitif, libérer l'innovation, assurer une croissance durable en développant les personnes. Editions Eyrolles, P36

Beauvallet, G., & Houy, T. (2009). L'adoption des pratiques de gestion lean: Cas des entreprises industrielles françaises 1. Revue française de gestion, (7), 83-106.

BEAUVALLET, Godefroy et HOUY, Thomas. L'adoption des pratiques de gestion lean: Cas des entreprises industrielles françaises 1. Revue française de gestion, 2009, no 7, p. 83-106.

BENTENFIF, Djamila, CHAABA, Kheira, et ACHEK, Rachid. CONTRIBUTION A LA MISE EN PLACE DU SYSTEME HACCP AU SEIN D'UNE INDUSTRIE AGRO-ALIMENTAIRE: CAS D'UNE LAITERIE. 2015.

BUFFE, Youri. Lean Six Sigma x. 0-Résolution de problèmes statistiques: 1. Problèmes de flux et Lean Management (3ème édition). Lean Six Sigma Belgium Editions, 2020.

CABRERA, J. L., CORPUS, O. A., MARADIEGUE, Fernando, et al. Improving quality by implementing lean manufacturing, SPC, and HACCP in the food industry: a case study. South African Journal of Industrial Engineering, 2020, vol. 31, no 4, p. 194-207.

Camuffo, A., De Stefano, F., & Paolino, C. (2017). Safety reloaded: lean operations and high involvement work practices for sustainable workplaces. Journal of Business Ethics, 143, 245-259.

DEMETRESCOUX, Radu. La boîte à outils du Lean. Dunod, 2015.

Domínguez, R. A., Espinosa, M. D. M., Domínguez, M., & Romero, L. (2021). Lean 6S in Food Production: HACCP as a Benchmark for the Sixth S "Safety". Sustainability, 13(22), 12577.

DOMÍNGUEZ, Rut Azucena, ESPINOSA, María del Mar, DOMÍNGUEZ, Manuel, et al. Lean 6S in Food Production: HACCP as a Benchmark for the Sixth S "Safety". Sustainability, 2021, vol. 13, no 22, p. 12577.

EL GAMOUSSI, Sarah. Proposition d'une méthodologie d'amélioration du Processus de Développement de Produits basée sur une approche Lean. 2016. Thèse de doctorat. Université Paris Saclay (COmUE).

EL KAHRI, L., & EL AMRANI, M. (2021). Le management de la qualité et le Lean management: Deux démarches complémentaires pour une entreprise performante: Essai d'analyse sur le cas des entreprises agroalimentaires dans le Grand Agadir. Revue Internationale du Chercheur, 2(2).

EL KAHRI, Lamia et EL AMRANI, Mohammed. Le management de la qualité et le Lean management: Deux démarches complémentaires pour une entreprise performante: Essai d'analyse sur le cas des entreprises agroalimentaires dans le Grand Agadir. Revue Internationale du Chercheur, 2021, vol. 2, no 2.

EL KAHRI, Lamia et EL AMRANI, Mohammed. Le management de la qualité et le Lean management: Deux démarches complémentaires pour une entreprise performante: Essai d'analyse sur le cas des entreprises agroalimentaires dans le Grand Agadir. Revue Internationale du Chercheur, 2021, vol. 2, no 2.

EL MOUTCHOU, Abdessamad, BOUMANE, Abderrazak, et ROUIJAA, Hicham. La transformation opérationnelle des entreprises marocaines et le Lean Management. International Journal of Innovation and Applied Studies, 2019, vol. 25, no 4, p. 1357-1364.

Emiliani, B., Stec, D. J., Grasso, L., & Stodder, J. (2007). Better thinking, better results: Case study and analysis of an enterprise-wide lean transformation. Center for Lean Business Management. P44

FEDERIGHI, Michel. Méthode HACCP–Approche pragmatique. 2015.

GARIDI, Sarah, RAKOTONDRANAIVO, Auguste, et HUSSON, Julien. Optimisation de la Supply Chain alimentaire: application du Lean six sigma dans un établissement de santé. Management & Avenir Santé, 2022, no 1, p. 105-128.

Hohmann, C. (2012). Lean Management: Outils, méthodes, retours d'expériences, questions/réponses. Editions Eyrolles.

Idrissi, I., & Benazzouz, B. (2019). Lean or Six Sigma for food industry? Perspectives from previous researches and case studies in industry. International Journal of Civil Engineering and Technology, 10(4), 1732-1739.

Idrissi, I., Mesfioui, A., Aftais, İ., & Benazzouz, B. (2015). Implementation of lean manufacturing in fish canning company: A case study of a canned sardines production company in Morocco. International Journal of Lean Thinking, 6(2), 17-28.

Jones, D. T., & Womack, D. T. (2009). What is Lean?. Lean Enterprise Institute.

KABECHE, Doudja Saïdi et VERGOTE, Marie-Hélène. Comment faire de l'audit interne un outil de progrès? Le cas de la gestion du risque sanitaire dans l'industrie agroalimentaire. Revue Française de Gestion Industrielle, 2013, vol. 32, no 1, p. 47-70.

Lasnier, G. (2007). Le lean-manufacturing: (Système de production à haute performance) dans les industries travaillant en juste-à-temps avec flux régulés par takt-time (rythme de la consommation du client). La Revue des sciences de gestion, (1), 99-107.

LORINO, Philippe. La fuite managériale devant la complexité: l'exemple historique du" lean

management". 2014.

Mekideche, I. (2021). Contribution à l'amélioration des processus de production et de contrôle qualité au sein de l'entreprise TOTAL Lubrifiants Algérie (Doctoral dissertation).

MLA

Mouffok, N., Benhadja, L., & Bousbia, N. (2013, March). Identification et analyse des dangers d'un process de fromage fondu selon l'ISO 22 000. In QUALITA2013

NG, Ming Shan et HALL, Daniel Mark. Toward lean management for digital fabrication: A review of the shared practices of lean, DfMA and dfab. In : Proceedings of the 27th Annual Conference of the International Group for Lean Construction (IGLC), Dublin, Ireland. 2019. p. 3-5.

Oliveira, J., Sá, J. C., & Fernandes, A. (2017). Continuous improvement through" Lean Tools": An application in a mechanical company. Procedia Manufacturing, 13, 1082-1089.

RACHIDI, Hafida, OUIZAT, Saadia, EL MAHMOUHI, Nezha, et al. Benchmarking sur les difficultés d'application du système HACCP (Analyse des dangers-points critiques pour leur maÎtrise) dans les petites et les moyennes entreprises agroalimentaires [Benchmarking on the difficulties of implementation of HACCP (Hazard Analysis-Critical Control Points) in small and medium-sized agribusinesses]. International Journal of Innovation and Applied Studies, 2016, vol. 15, no 1, p. 93.

SCOTT, Bradley S., WILCOCK, Anne E., et KANETKAR, Vinay. A survey of structured continuous improvement programs in the Canadian food sector. Food control, 2009, vol. 20, no 3, p. 209-217.

SOUZA, Thiago A., DAS CHAGAS MARQUES, Maximiliano, TARRAGO, Frederico Correa, et al. Lean demand management: application in a national health department. In : Industrial Engineering and Operations Management: XXVI IJCIEOM, Rio de Janeiro, Brazil, July 8–11, 2020 26. Springer International Publishing, 2020. p. 301-310.

Womack, J., Jones, D. and Roos, D. (1990), The Machine that Changed the World, RawsonAssociates, New York, NY

Womack, J., & Jones, D. (2012). Système Lean: Penser l'entreprise au plus juste. Pearson.

Womack, S. K., Armstrong, T. J., & Liker, J. K. (2009). Lean job design and musculoskeletal disorder risk: A two plant comparison. Human factors and ergonomics in manufacturing & service industries, 19(4), 279-293.