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affiliée à l'Université de Montréal

**Étude du lien entre les pratiques de GRH et le Lean Manufacturing : le cas du
secteur de l'aéronautique**

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Thèse présentée en vue de l'obtention du diplôme de *Philosophiæ Doctor*

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Cette thèse intitulée :

Étude du lien entre les pratiques de GRH et le Lean Manufacturing : le cas du secteur de l'aéronautique

présentée par **Amal BENKARIM**

en vue de l'obtention du diplôme de *Philosophiæ Doctor*

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DÉDICACE

À ma chère maman

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RÉSUMÉ

Dans leur quête d'amélioration de la productivité et des performances, les organisations s'efforcent constamment d'intégrer des méthodes d'organisation du travail plus efficaces. L'une des entreprises qui se distingue par sa performance organisationnelle et sa productivité élevée est Toyota. Le secret de sa réussite réside dans sa mise en œuvre de la méthode Lean. Cette méthode vise, entre autres, à réduire le gaspillage, à optimiser les processus, à améliorer l'engagement des employés et à accroître la satisfaction du client.

Le succès de Toyota a rendu le Lean populaire, ce qui a suscité l'intérêt de plusieurs organisations de divers secteurs à adopter cette approche. Le Lean est un système sociotechnique qui englobe deux dimensions importantes : 1) la dimension technique qui fait référence aux outils, aux techniques et aux processus utilisés pour atteindre les objectifs susmentionnés, et 2) la dimension humaine qui fait référence aux employés de l'entreprise, à leur implication et à leur engagement, ainsi qu'aux pratiques liées à leur gestion. Bien qu'il existe une vaste littérature sur le Lean, la plupart des études se focalisent sur l'évaluation des outils et des principes nécessaires à sa mise en œuvre, tandis que le rôle de sa dimension humaine demeure sous-évalué et largement négligé par la communauté scientifique.

Le présent travail de recherche a pour objectif d'examiner l'importance de la dimension humaine du Lean et de proposer des pratiques de GRH que les gestionnaires pourraient mettre en place dans le secteur aéronautique afin d'accroître le niveau d'engagement des employés dans la démarche Lean. De cet objectif découle deux sous objectifs: 1) explorer les pratiques de GRH qui favorisent l'engagement des employés dans le processus d'amélioration continue et 2) identifier les pratiques de GRH mises en œuvre par une entreprise du secteur aéronautique et la manière dont elles sont implantées en comparaison avec les pratiques de Toyota. Pour ce faire, nous avons d'abord effectué une revue approfondie de la littérature traitant du Lean, de l'engagement organisationnel et des pratiques de GRH, et ce, afin de mieux saisir les liens existants entre ces différents concepts. Ensuite, nous avons effectué des entrevues individuelles semi-dirigées auprès de trente employés travaillant dans une entreprise aéronautique canadienne. Ces entrevues ont été analysées avec le logiciel qualitatif Nvivo.

Nos résultats ont montré que les employés accordent une grande importance aux pratiques de GRH qui favorisent leur engagement dans le Lean. Ils ont également montré que plusieurs pratiques de

GRH de Toyota ont été adoptées par l'entreprise aéronautique à l'étude même si certaines de ces pratiques ont été implantées différemment. Ces résultats soulignent le rôle crucial du facteur humain et des pratiques de GRH dans une transformation Lean réussie et durable, et suggèrent que le choix des pratiques de GRH et leur mise en œuvre sont étroitement liés au contexte et au secteur de l'entreprise.

En somme, cette étude nous a permis d'acquérir une meilleure compréhension de la dimension humaine du Lean, et plus particulièrement des pratiques de GRH liées à la réussite de sa mise en œuvre dans l'industrie aéronautique. Les résultats obtenus peuvent être utilisés par les chercheurs pour examiner la pertinence de ces pratiques dans d'autres entreprises aéronautiques et/ou dans d'autres secteurs d'activité et peuvent aider les gestionnaires à comprendre l'importance du facteur humain et des pratiques de GRH dans le bon fonctionnement du Lean.

ABSTRACT

In their quest to improve productivity and performance, organizations are constantly striving to incorporate more efficient work organization methods. One of the companies that stands out because of its high productivity and organizational performance is Toyota. The secret of its success lies in its implementation of the Lean method. This method aims, among other things, to reduce waste, optimize processes, improve employee commitment, and increase customer satisfaction.

The success of Toyota popularized Lean, with many organizations in various sectors showing interest to adopt this approach. Lean is a sociotechnical system that encompasses two important dimensions: 1) the technical dimension, which refers to the tools, techniques and processes used to achieve the aforementioned objectives, and 2) the human dimension, which refers to the company's employees, their involvement and commitment, as well as the practices related to their management. Although there is a vast literature on Lean, most studies focus on the evaluation of the tools and principles necessary for its implementation, while the role of its human dimension remains underevaluated and largely overlooked by the scientific community.

The purpose of this work is to examine the importance of the human dimension of Lean and to propose HRM practices that managers could put in place in the aerospace sector to increase the level of employee commitment to the Lean approach. Our research objective is twofold: 1) explore HRM practices that promote employee commitment in the continuous improvement process and 2) identify those HRM practices adopted by a company in the aerospace sector and the way they are implemented in comparison to Toyota's practices. To do so, we first carried out an in-depth review of the literature on Lean, organizational commitment and HRM practices in order to better understand the relationships between these different concepts. We then conducted individual semi-structured interviews with thirty employees working in a Canadian aeronautics company. These interviews were analyzed with the qualitative software Nvivo.

Our results showed that employees place a high value on HRM practices that promote their commitment to Lean. They further showed that several of Toyota's HRM practices were adopted by the aerospace company under study even if some of these practices were implemented differently. These findings highlight the crucial role of the human factor and HRM practices in a successful and sustainable Lean transformation, and suggest that the choice of HRM practices and their implementation are closely linked to the context and sector of the company.

In sum, this study allowed us to gain a better understanding of the human dimension of Lean, and more particularly of the HRM practices related to its successful implementation in the aerospace industry. The results obtained can be used by other researchers to examine the relevance of these practices in other aerospace companies and/or in other industries, and can help managers understand the importance of the human factor and HRM practices in the proper functioning of Lean.

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LISTE DES SIGLES ET ABRÉVIATIONS

DMM	Daily morning meetings
GRH	Gestion des ressources humaines
HR	Human resources
HRM	Human resource management
LP	Lean production
MIT	Massachusetts Institut of Technology
NIOSH	National Institute for Occupational Safety and Health
OHS	Occupational health and safety
PMP	Performance management process
RH	Ressources humaines
SST	Santé et sécurité au travail
TPS	Toyota production system

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CHAPITRE 1 INTRODUCTION

1.1 Mise en contexte

Pour faire face à la conjoncture actuelle du marché et à la concurrence qui devient de plus en plus accrue, les entreprises doivent demeurer créatives et performantes et en même temps répondre aux exigences du client tout en lui offrant des produits et/ou des services de qualité. C'est dans ce contexte que de nombreuses entreprises ont eu recours aux nouvelles méthodes d'organisation du travail en s'inspirant du système de production de Toyota (*Toyota Production System* ou TPS).

Le TPS impose aux employés de contribuer activement à l'élimination des activités sans valeur ajoutée et ne produire que le strict nécessaire. Il repose sur l'élimination absolue de toutes formes de gaspillage (Ohno, 1988) et de superflu d'où vient le terme « Lean ». Ce terme qui se traduit souvent en français par « production allégée » ou « production au plus juste » a été introduit à la fin des années 1980 par un groupe de chercheurs du *Massachusetts Institut of Technology* (MIT) pour faire référence au système de production de Toyota (Ferreira et al., 2018). Le TPS et le Lean sont donc deux termes synonymes (Emiliani et al., 2007, p. 20).

Étant à l'origine du succès de Toyota et d'autres entreprises automobiles l'ayant imité, le Lean a suscité un grand intérêt chez plusieurs autres industries à travers le monde (p. ex., aéronautique, construction, textile) puisqu'il est considéré désormais comme une approche incontournable pour assurer leur compétitivité (Liker et Morgan, 2006).

La réussite de la démarche Lean de Toyota repose en grande partie sur la conviction profonde que ses employés constituent la ressource la plus précieuse de l'entreprise (Liker et Convis, 2012). Toyota reconnaît qu'aucune amélioration ne sera possible sans eux. C'est dans cette perspective qu'elle les a placés au cœur de sa stratégie et investit dans leur développement et leur engagement (Liker, 2004). Dans cet ordre d'idées, des recherches ont montré que l'engagement des employés et la réussite du Lean vont de pair (Hines, 2010; Sisson et Elshennawy, 2015). Autrement dit, les employés engagés contribuent de manière significative au succès et à la durabilité du Lean (Angelis et al., 2011; Hines, 2010), car ces employés s'identifient aux valeurs et aux objectifs de l'entreprise, adhèrent à sa culture, défendent le changement et fournissent des efforts pour atteindre les objectifs organisationnels (Cohen, 2007; Morin et al., 2010). En outre, les employés engagés s'impliquent davantage dans les démarches d'amélioration continue en étant proactifs, loyaux et plus productifs.

Ils sont donc indispensables pour les organisations et leur système d'amélioration continue (Danish et al., 2015). C'est ainsi que nous nous intéressons à la dimension humaine du Lean, et plus particulièrement, aux pratiques de gestion des ressources humaines (GRH) qui peuvent stimuler l'engagement des employés dans le processus d'amélioration continue.

Selon *Corporate Leadership Council*¹, les employés très engagés développent 57% plus d'efforts pour performer comparativement aux employés moins engagés. En outre, les entreprises ayant des employés engagés augmentent leurs revenus de 37% et génèrent un profit de 33% supérieur à celui des concurrents². Compte tenu de ces résultats, il n'est donc pas surprenant que les gestionnaires s'intéressent aux pratiques de GRH pour augmenter le niveau d'engagement de leurs employés. Toutefois, cette tâche demeure très difficile à réaliser (Jurburg et al., 2016). Cette difficulté est illustrée dans une étude effectuée par Gallup³ en 2018 qui montre qu'environ 85% des employés dans le monde ne sont pas engagés. En outre, certaines études soulignent que le désengagement des employés au travail est un phénomène considérablement répandu et affirment que ce désengagement est, entre autres, à l'origine de l'échec du déploiement du Lean (Ingaldi et al., 2018; Rose et al., 2016). Il est donc important, d'une part, de comprendre le concept d'engagement organisationnel sous ses différentes facettes afin de mieux le cerner, et d'autre part, de comprendre la méthode Lean et sa philosophie d'engagement des employés.

1.2 Problématique

Bien que plusieurs entreprises manifestent un intérêt élevé envers la démarche Lean, son implantation demeure difficile à réaliser. À cet effet, Emiliani et ses collègues (2007) soulignent que la plupart des entreprises qui désirent se transformer en Lean échouent ou n'aboutissent pas aux mêmes résultats que Toyota. Ils expliquent cet échec par le fait que ces entreprises réduisent le Lean à une méthode de production alors qu'en réalité le Lean est une approche de gestion beaucoup plus large qui s'applique à tous les niveaux et à toutes les fonctions de l'entreprise afin d'améliorer le système dans sa globalité (Emiliani et al., 2007).

¹ Pour plus d'informations, visitez le site web : <https://www.gartner.com>

² Pour les détails, consultez <https://www.facteurh.com>

³ Consultez <https://www.gallup.com>

Les entreprises qui veulent réussir l'implantation du Lean doivent avant tout comprendre que ce dernier s'applique à l'ensemble de l'organisation et prendre surtout en considération l'importance du facteur humain puisqu'il fait partie intégrante de la démarche Lean (Liker, 2009). À cet égard, Wincel et Kull (2016) notent que ce sont les employés qui font fonctionner le système de gestion Lean et que sa réussite dépend grandement de leur contribution. L'implication et l'engagement des ressources humaines (RH) constituent donc un défi auquel les entreprises doivent penser avant même d'initier une telle démarche.

Par ailleurs, le Lean est un système composé de deux principales dimensions, soit la dimension technique connue sous le nom de pilier d'amélioration continue et la dimension humaine connue sous le nom de pilier respect des gens (Emiliani et al., 2007; Liker et Hoseus, 2008). La dimension technique englobe, entre autres, des outils et des méthodes visant à aider les employés à apporter des petites améliorations au quotidien alors que la dimension humaine s'intéresse aux employés et aux relations sociales au sein de l'entreprise (Gao and Low, 2015; Hadid et al., 2016; Magnani et al., 2019). Bien que ces deux dimensions soient complémentaires puisque ce sont les employés qui utilisent ces outils et méthodes Lean pour apporter des améliorations continues et aboutir à une performance organisationnelle (Shang et Pheng, 2012) et bien que Toyota stipule clairement que la réussite du Lean nécessite la prise en compte de ces deux dimensions (Emiliani et al., 2007; Liker et Hoseus, 2008), la majorité des études se focalisent uniquement sur la dimension technique. Autrement dit, la dimension humaine est rarement abordée dans la littérature. Devant ce constat et compte tenu du faible taux d'engagement des employés dans le Lean (Ingaldi et al., 2018; Rose et al., 2016) découle le choix de notre sujet de recherche.

De plus, il est à noter que nous avons choisi d'effectuer cette recherche dans une entreprise qui opère dans le secteur aéronautique pour plusieurs raisons. D'abord, les études sur le Lean dans le secteur aéronautique sont rares et encore plus rares lorsque l'accent est mis sur les pratiques de GRH favorisant l'engagement des employés. À notre connaissance, la seule étude ayant abordé le rôle des pratiques de GRH dans ce secteur est celle de Martínez-Jurado et al. (2013). Leur étude a identifié un certain nombre de pratiques nécessaires à adopter lors de la mise en œuvre du Lean, notamment la formation et la communication. En outre, des recherches ont révélé que les entreprises aéronautiques, en particulier les entreprises canadiennes adoptent de plus en plus l'approche Lean (Amrani et Ducq, 2020). Cet intérêt pour le Lean provient du fait que ces entreprises cherchent à maintenir leur capacité concurrentielle et à réduire constamment leurs coûts

de production. Néanmoins, la plupart d'entre elles n'obtiennent pas les résultats attendus par l'implantation du Lean (Martínez-Jurado et Moyano-Fuentes, 2014; Secchi et Camuffo, 2021). Il est donc intéressant d'explorer la dimension humaine du Lean, et plus particulièrement les pratiques de GRH dans ce secteur d'activité peu considéré.

1.3 Objectifs de la recherche

L'objectif principal de cette recherche est d'explorer les pratiques de GRH et d'examiner leur contribution à la réussite du Lean dans une entreprise aéronautique.

Les objectifs spécifiques de la présente recherche sont les suivants :

- Explorer les pratiques de GRH favorisant l'engagement des employés dans le processus d'amélioration continue de l'entreprise
- Identifier les pratiques de GRH mises en œuvre par cette entreprise et la manière dont elles sont implantées en comparaison avec Toyota

1.4 Structure de la thèse

Le présent travail est divisé en sept chapitres. Le premier chapitre est une introduction dans laquelle nous exposons la problématique et les objectifs de ce projet de thèse. Le deuxième chapitre portera sur la méthodologie globale de la thèse, à savoir la méthode de recherche adoptée, l'échantillon considéré, l'outil de collecte de données utilisé, les considérations éthiques, ainsi que le plan d'analyse suivi. Le troisième chapitre présentera l'article 1 qui est une revue de littérature examinant le lien entre les principaux concepts de cette thèse, soit le Lean, l'engagement organisationnel et les pratiques de GRH. Dans cet article, nous présenterons l'approche Lean de Toyota pour comprendre ses fondements et le concept d'engagement organisationnel pour identifier le type d'engagement associé au Lean, pour ensuite discuter du rôle des pratiques de GRH. L'objectif de ce premier article de revue de littérature est de comprendre le lien existant entre les différents concepts de notre étude et servir de base pour cerner la problématique et formuler nos objectifs de recherche qui seront abordés dans les chapitres suivants. Le quatrième chapitre présentera l'article 2 qui a pour visée de répondre au premier objectif spécifique de cette recherche, soit d'explorer les pratiques de GRH favorisant l'engagement des employés dans le processus d'amélioration continue d'une entreprise aéronautique. Le cinquième chapitre sera consacré à la présentation de l'article 3 qui a pour but de répondre au deuxième objectif, soit d'identifier les

pratiques de GRH mises en œuvre par cette entreprise et la manière dont elles sont implantées en comparaison avec Toyota. Le sixième chapitre présentera une discussion générale de la thèse. Enfin, le septième chapitre sera consacré aux conclusions et recommandations.

CHAPITRE 2 MÉTHODOLOGIE GLOBALE DE LA THÈSE

Ce chapitre expose les aspects méthodologiques de la recherche. Nous présenterons la nature de notre étude et nous expliquerons son déroulement. La population ciblée, la méthode de collecte de données, les considérations éthiques, ainsi que le plan d'analyse seront décrits et expliqués.

2.1 Méthode de recherche

La méthodologie privilégiée pour cette recherche est la méthode qualitative qui, selon Creswell et Plano Clark (2016), consiste à explorer, enrichir et approfondir la compréhension d'un phénomène ou d'une question de recherche ou encore à découvrir une nouvelle perspective et mettre en lumière de nouveaux résultats probablement inattendus. Ce sont d'ailleurs ces motifs qui nous incitent à suivre cette méthode puisque nous visons à comprendre et à explorer le lien entre les pratiques de GRH et le Lean.

2.2 Échantillon de l'étude

L'échantillonnage en recherche qualitative est généralement intentionnel (ou raisonné) plutôt qu'aléatoire (Gaudet et Robert, 2018). Autrement dit, le choix des personnes à interroger ne doit pas être fait au hasard, mais il doit s'inscrire en cohérence avec le projet de recherche dans le sens où les caractéristiques des répondants doivent concorder avec les objectifs de l'étude (Gaudet et Robert, 2018; Mukamurera et al., 2006). Nous avons donc ciblé et recruté des participants qui s'intègrent bien dans le cadre de notre recherche afin qu'ils puissent comprendre nos questions et nous fournir de l'information riche et pertinente.

La taille de l'échantillon qualitatif est variable (Corbière et Larivière, 2014), c'est-à-dire que le nombre des participants n'est pas précis, mais il peut varier d'une étude à l'autre. Le manque de précision quant au nombre de répondants est lié au fait qu'en recherche qualitative la taille de l'échantillon n'est pas plus importante que la variabilité des réponses générées (Dépelteau, 2010). Toutefois, certains auteurs tels que Deslauriers (1991) et Thomson (2011) soutiennent que trente participants est un nombre raisonnable pour constituer un échantillon qualitatif.

Dans le cadre de notre étude, la saturation des données a été atteinte après avoir effectué 14 entrevues. La saturation des données signifie que la réalisation d'une entrevue supplémentaire

n'apporte pas de nouvelles informations (Corbière et Larivière, 2014). Toutefois, nous avons jugé utile de poursuivre les entrevues, et ce, afin de : 1) suivre les recommandations de Deslauriers (1991) et Thomson (2011) qui stipulent que trente entrevues représentent le seuil de saturation de l'information et 2) collecter des réponses variées et diversifiées pour décrire le plus fidèlement possible et avec plus de précision la manière dont ces pratiques sont mises en œuvre.

Notre échantillon est donc constitué de 30 employés (15 employés de bureau et 15 employés de production) travaillant dans une entreprise aéronautique canadienne. Notre choix d'entreprise se justifie par le fait que cette dernière mise sur la culture d'amélioration continue pour demeurer compétitive, reconnaît que ses employés constituent la partie prenante la plus importante pour le succès et la durabilité du Lean et s'intéresse davantage à améliorer leur niveau d'engagement dans la démarche Lean qu'elle a implantée il y a quelques années.

Sur les 30 participants, sept sont des femmes et vingt-trois sont des hommes. Leur âge varie de 26 à 58 ans et leur expérience professionnelle varie de 2 à 30 ans.

2.3 Collecte de données

L'entrevue constitue l'outil privilégié en recherche qualitative (Baribeau et Royer, 2012). Elle est particulièrement considérée comme étant pertinente pour la compréhension d'un phénomène (Savoie-Zajc, 2009). De ce fait, l'entrevue s'avère la méthode de collecte de données la plus appropriée pour réaliser notre recherche. Nous avons opté plus précisément pour l'entrevue individuelle semi-dirigée car, d'une part, les entrevues de type individuel permettent de produire un grand nombre d'informations comparativement aux entrevues de groupe où les participants génèrent moins d'idées (Baribeau et Germain, 2010) à cause de différents obstacles tels que la difficulté d'expression ou la peur du jugement (Gotteland et Haon, 2005) et, d'autre part, la technique d'entrevue semi-dirigée, qui se déroule généralement sous forme d'une conversation, permet aux participants de s'exprimer librement sur les thèmes évoqués (Guerrero, 2008), ce qui offre la possibilité de dégager une compréhension riche du phénomène à l'étude (Savoie-Zajc, 2009). De ce qui précède, la technique d'entrevue individuelle semi-dirigée nous apparaissait tout à fait appropriée pour recueillir le maximum d'informations sur notre sujet de recherche.

2.4 Guide d’entrevue

Pour élaborer un guide d’entrevue, Oppenheim (1992) recommande d’examiner la littérature pertinente au sujet de recherche. Nous avons donc effectué une revue de littérature traitant des principaux concepts de notre étude, soit le Lean, l’engagement organisationnel et la GRH. Cette revue de littérature nous a permis de ressortir les questions qui ont constitué notre guide d’entrevue. En fait, le guide d’entrevue peut être construit de questions ouvertes et/ou de questions fermées. Dans notre cas, nous avons opté pour ces deux types de questions en nous référant à la technique de l’entonnoir tel que définie par Oppenheim (1992). Cette technique consiste à poser une série de questions en commençant par des questions générales et ouvertes pour aboutir progressivement à des questions plus spécifiques ou plus fermées (Oppenheim, 1992, p. 110). Notre guide d’entrevue (Annexe A) est donc structuré en deux parties : la première partie est consacrée aux questions générales et ouvertes incluant le profil du répondant (âge, genre, statut, nombre d’années travaillées dans l’entreprise, etc.), ses expériences en lien avec notre sujet de recherche (sa participation au projet Lean de l’entreprise, son niveau d’engagement envers ce projet, les pratiques de GRH implantées, etc.) ainsi que son opinion quant à l’amélioration de l’engagement des employés dans le Lean. La deuxième partie porte sur des questions précises et plus fermées. Les questions fermées sont généralement des questions spécifiques qui permettent de comparer facilement les réponses de plusieurs participants (Oppenheim, 1992). Ainsi, nous avons posé des questions spécifiques sur les pratiques de GRH, y compris les pratiques adoptées par Toyota dans le but de savoir si ces pratiques pourraient être les mêmes dans un environnement différent, soit celui de l’industrie aéronautique. La provenance des questions pour chacune de ces pratiques est présentée dans la Table 4.1. Il est à noter que pour des raisons de concision, nous avons sélectionné trois items pour chaque pratique et nous les avons reformulés pour mieux les adapter au contexte de notre recherche.

2.5 Éthique

Ce projet de recherche a été approuvé par le comité d’éthique de la recherche (CÉR) de Polytechnique Montréal (référence: CER-1920-40). Avant de commencer les entrevues, un formulaire d’information et de consentement approuvé par le CÉR a été signé par les participants.

2.6 Plan d'analyse

L'analyse du contenu est une méthode largement utilisée pour analyser les données textuelles provenant, entre autres, des entrevues, des observations et de groupes de discussion (Hsieh et Shannon, 2005). Son objectif est de « fournir des connaissances et une compréhension du phénomène étudié » (Downe-Wamboldt, 1992, p. 314). Ainsi, dans le cadre de la présente étude, nous avons choisi l'analyse de contenu thématique comme méthode d'analyse qualitative.

La première étape de l'analyse consistait à transcrire chaque entrevue en écoutant à répétition les enregistrements effectués. Pour assurer une transcription fidèle, nous avons produit intégralement et littéralement (mot à mot) les propos de chaque participant en indiquant les répétitions, les hésitations, les rires, les termes familiers, les fautes de syntaxe, etc., tout en utilisant la ponctuation appropriée. En ce sens, Rioufreyt (2016) souligne que pour respecter le principe de fidélité, il faut éviter de reformuler les phrases, de modifier la syntaxe ou de corriger les fautes de conjugaison. La transcription fidèle nous a permis ainsi de comprendre le sens de l'information fournie et de cibler les données importantes, ce qui nous a aidé à effectuer une analyse aussi précise que possible. Les transcriptions ont été désignées par des codes alphanumériques que nous avons attribués aux participants pour préserver l'anonymat. La deuxième étape consistait à effectuer les opérations de codage. Nous avons utilisé le logiciel Nvivo (version 11) qui est considéré comme étant un des logiciels les plus performants pour l'analyse de données qualitatives (Bournois et al., 2002). Nvivo nous a permis de regrouper et d'organiser les données ressorties des entrevues, ce qui a facilité le codage.

Le codage a pour objectif particulier de « découper le contenu d'un discours ou d'un texte en unités d'analyse (mots, lignes, phrases, paragraphes) et à les intégrer au sein de catégories sélectionnées en fonction de l'objet de recherche » (Thiétart, 2014, p. 555). Le choix de l'unité d'analyse dépend du type d'analyse de contenu (p. ex., analyse de contenu thématique ou lexicale) (Thiétart, 2014). Étant donné que dans la présente étude nous avons opté pour l'analyse de contenu thématique, nous avons donc défini comme unité d'analyse les phrases. Il s'agit soit d'une partie de phrase, d'une phrase entière ou d'un groupe de phrases qui fait référence à une même idée (Thiétart, 2014). Ainsi, nous avons analysé les phrases et leur sens pour pouvoir créer des codes.

Les codes sont « des étiquettes qui attribuent une signification aux informations descriptives ou inférentielles compilées au cours d'une étude » (Miles, Huberman et Saldaña, 2018, p. 62). Ces

codes peuvent prendre la forme d'une étiquette simple et descriptive ou d'une étiquette plus évocatrice et complexe tels que les concepts, les valeurs ou les métaphores (Miles, Huberman et Saldaña, 2018). Dans notre cas, les codes sont plutôt des thèmes liés aux pratiques de GRH.

Selon Miles et Huberman (2003), les codes peuvent être préétablis ou élaborés durant l'étude. Cependant, ces auteurs soutiennent que la définition des codes avant le travail sur le terrain est pertinente dans la mesure où elle permet à l'interviewer de lier directement les réponses des participants aux thèmes déjà élaborés. Or, ils soulignent que l'interviewer ne doit pas appliquer ces codes lorsqu'ils s'avèrent inapplicables ou mal adaptés. Dans une telle situation, il est recommandé de les changer afin de mieux refléter la réalité. Dans le cadre de notre recherche, nous avons préparé ces codes avant de commencer les entrevues dans le sens où nous avons établi au préalable une liste des thèmes liés aux pratiques de GRH. Cette liste initiale renferme notamment les pratiques de GRH mises en œuvre par l'entreprise Toyota puisque nous cherchions à savoir si ces pratiques pourraient être les mêmes dans l'entreprise où nous avons effectué notre recherche. Toutefois, cette liste initiale des codes a été modifiée au fur et à mesure que nous effectuions des entrevues et récoltions de nouvelles informations.

Il est à noter que nous avons effectué un triple codage. Autrement dit, le codage de chaque entrevue a été refait à trois reprises, à des moments différents et suffisamment éloignés dans le temps pour atteindre une bonne stabilité et une meilleure précision des résultats. En ce sens, Miles et Huberman (2003) soulignent que le codage multiple est un processus qui assure un bon contrôle de fiabilité dans les études exploratoires. D'autant plus, chaque entrevue a été codifiée en nous basant sur trois niveaux de codage (ouvert, axial et sélectif) tel que défini par Strauss et Corbin (1998).

Le codage ouvert est un processus analytique par lequel les concepts sont identifiés et leurs propriétés et dimensions sont découvertes dans les données (Strauss et Corbin, 1998). Le codage ouvert « permet de créer un nouveau code chaque fois que le chercheur perçoit une catégorie nouvelle dans un texte et qu'il pense devoir en tenir compte dans son analyse » (Bandeira De Mello et Garreau, 2011, p. 185-186). À cet égard, à l'aide du logiciel Nvivo, nous avons identifié et attribué des codes à chaque segment de texte renfermant de l'information utile à notre étude. Ensuite, nous avons effectué un codage axial qui consiste à établir des liens entre les codes ressortis

(Strauss et Corbin, 1998). Enfin, nous avons procédé à un codage sélectif qui vise à déterminer les codes finaux liés au thème de l'étude.

En somme, la méthodologie déployée dans le cadre de cette étude nous a permis d'atteindre les objectifs de recherche. Les pratiques ressorties des entrevues sont présentées dans les articles 2 et 3.

CHAPITRE 3 ARTICLE 1: ORGANIZATIONAL COMMITMENT AND LEAN SUSTAINABILITY: LITERATURE REVIEW AND DIRECTIONS FOR FUTURE RESEARCH

Référence : Amal Benkarim et Daniel Imbeau, publié dans la revue *Sustainability* le 18 mars 2021.

Abstract

The vast majority of works published on Lean focus on the evaluation of tools and/or the strategies needed for its implementation. Although many authors highlight the degree of employee commitment as one of the key aspects of Lean, what has gone largely unnoticed in the literature, is that few studies have examined in-depth the concept of organizational commitment in connection with Lean. With this narrative literature review article, our main objective is (1) to identify and analyze an extensive body of literature that addresses the Lean Manufacturing approach and how it relates to employee commitment, emphasizing affective commitment as the main type of organizational commitment positively associated with Lean, and (2) to highlight the management practices required to encourage this kind of commitment and promote the success and sustainability of Lean. This paper aims to provide a comprehensive overview that can help researchers and practitioners interested in Lean better understand the importance of employee commitment in this type of approach, and as well, to identify related research questions.

Keywords: lean manufacturing; sustainability; continuous improvement; organizational commitment; human resource management practices

3.1 Introduction

Presently, with a globalized world and highly competitive markets, organizations willing to operate under such conditions ought to be continuously creative, innovative, and efficient. It is in this context that several companies around the world have already resorted to new methods of work organization inspired by the Toyota Production System (TPS) to improve production efficiency and guarantee effective management and sustainable development (Florescu and Barabaş, 2018; Foris et al., 2020). This system, which was developed by Toyota Motor Corporation under the leadership of its former Executive Vice President Taiichi Ohno (Emiliani

et al., 2007), has lifted Toyota to become one of the most successful and competitive companies worldwide (Liker, 2004). The basis of TPS is the absolute elimination of waste (Ohno, 1988), aiming to produce better products while using the minimum necessary. This is the idea behind the word Lean in Lean Manufacturing (Womack et al., 1990). The concepts of TPS and Lean are, thus, synonyms (Emiliani et al., 2007). Nevertheless, Liker (2004) highlighted that outside of Toyota, Lean is often the term used since it has been popularized in 1990 by Womack and his colleagues in their renowned book “The Machine That Changed the World.” Lean is now seen as an essential approach to ensure the competitiveness of organizations (Liker and Morgan, 2006). Being at the origin of the success of Toyota, Lean has attracted considerable interest from several other companies around the globe.

Even though many organizations show high interest in the Lean approach, its implementation remains difficult to achieve. In fact, the failure rate in Lean transformation among organizations amounts to 90% (Hines, 2018). This is mainly due to the lack of employees’ commitment (Ingaldi et al., 2018; Rose et al., 2016). A recent study carried out by Gallup (see <https://www.gallup.com/>, accessed on 27 February 2020) showed that around 85% of employees worldwide are not committed. Therefore, organizations that want to succeed in the implementation and sustainability of Lean ought to especially consider the importance of human resources, since it is an integral part of the Lean approach (Liker, 2009). In this regard, Wincel and Kull (2016) noted that it is the people who make Lean work and that no success is possible without their contribution. Employee commitment is, therefore, a challenge that organizations need to carefully consider before even initiating the adoption of Lean.

In fact, the concept of Lean has become increasingly associated with the term sustainability (Madsen et al., 2019). Referring to Jørgensen et al. (2007), this paper approaches Lean in the context of sustainability from two perspectives: (1) from an ecological and environmental perspective in the sense that Lean can support ecological preservation by reducing waste and conserving resources, thus minimizing the enterprise’s negative impact on the environment, and (2) from a perspective that focuses on the concept of Lean itself. The question is how to sustain Lean over the long term so that companies can remain competitive. More specifically, it is a question of identifying how the members of the organization can actually develop the capabilities to implement and adapt to the Lean culture.

Methodological Note

This paper employs the narrative literature review as a research method. This method was selected because it aims to evaluate and summarize existing research related to a specific topic (i.e., employee commitment in Lean in our case) in order to provide an overview and identify gaps or inconsistencies in existing research, or simply to discuss a particular subject (Madsen et al., 2019; Jørgensen et al., 2007). These aims are consistent with the purpose of this article.

The research procedure used for this review was conducted in three steps per Ramdhani et al. (2014):

Choosing a review topic: This first step is the most difficult because the topic must be of interest to both the author and the reader (Ramdhani et al., 2014; Snyder, 2019). To focus on the topic of interest, it was necessary in our case to initially identify broad topics in our discipline, scan the area to account for other literature reviews that already exist, estimate the number of research studies to be evaluated, and then clearly formulate and define the purpose and scope of the research (Ramdhani et al., 2014; Snyder, 2019).

Searching and selecting appropriate articles: Once the topic is selected, the next step consists of identifying appropriate and relevant literature (Ramdhani et al., 2014). Literature searches are most often conducted using electronic databases that provide access to vast amounts of information related to a research topic (Ramdhani et al., 2014). To ensure that the majority of relevant studies on our topic have been identified, references were searched in numerous popular databases including Scopus, Web of Science, Springer Link, JSTOR, and Science Direct. Although the primary focus has been on published sources, such as peer-reviewed journal articles and book chapters, we have also integrated some websites and conference papers on Lean sustainability, found mainly through Google, Google Scholar, and Research Gate.

Authors stipulate that keyword search is the appropriate method for identifying literature and they emphasize that these keywords must be directly related to the subject of research in order to generate the data sought (Cronin et al., 2008; Ramdhani et al., 2014). In this sense, the string of keywords used in this study includes (“Lean production” OR “Lean manufacturing” OR “Lean management”) AND (sustainability OR sustainable*) AND (“organizational commitment” OR “employee engagement”).

Analyzing and synthesizing the literature: After identifying and gathering the appropriate literature, the next step is to analyze, synthesize, and discuss the results and conclusions of the selected sources (Ramdhani et al., 2014). To do so, a first reading of the articles was undertaken by referring mainly to the summary, and then a classification was made by the type of source, as recommended by Ramdhani et al. (2014). After the initial overview, it was essential to return to the articles to conduct a more systematic and critical examination of the content. Researchers recommend adopting a structure during this process such as that proposed by Cohen (1990). Cohen's PQRS (Preview, Question, Read, Summarize) method was used to keep focused and consistent with the purpose of the article, and it facilitated the identification and analysis of relevant material.

Although there have been plenty of reviews of the literature on Lean, this article focuses particularly on its human side as one of the necessary sides for the success and sustainability of Lean. This paper aims to provide a comprehensive review of the literature and attempts to identify the important contributions in this field. The remainder of the paper is organized as follows. Section 3.2 describes the Lean Manufacturing approach thereafter called Lean or Lean approach, along with its main pillars. In Section 3.3, we introduce the concept of organizational commitment and discuss which forms of commitment are the most adequate for the successful implementation and sustainability of Lean. Section 3.4 explains the link between Lean sustainability and organizational commitment. In Section 3.5, we discuss current challenges and open questions, and we envision future research directions. Finally, Section 3.6 summarizes the paper and provides some concluding remarks.

3.2 Lean approach

The Lean approach is known for its positive effects on organizational performance. Its objective is to reduce costs while improving quality, safety, and morale (Liker and Morgan, 2006). Therefore, a Lean organization is an organization that can better respond to market trends and provides products and services faster and cheaper than its non-Lean counterparts (Kilpatrick, 2003). Nonetheless, Lean is not solely restricted to a production method, but rather is a management approach that encompasses the entire organization; it applies to all levels and functions of the company to improve the system as a whole (Emiliani et al., 2007). Lean can be adopted by any organization regardless of size, culture, and geographical location (Emiliani et al.,

2007; Womack et al., 1990). However, it must be taken into account that organizations should not copy Lean practices to the letter, but rather adapt them to their work environment and their sector of activity (Foris et al., 2020; Liker and Convis, 2012). According to Toyota, organizations that copy its processes exactly are generally doomed to failure. It stipulates that they can borrow its ideas and adopt its principles in a way that corresponds to their context (Liker, 2004).

3.2.1 Lean origin

The Lean approach was born in Japan, at Toyota, just after the Second World War (Liker, 2004). The post-war economic difficulties led to an increase in inventories of unsold cars, which resulted in financial difficulties for Toyota (Holweg, 2006). To cope with this critical situation and the American competition from the Ford production system, it was necessary to find an optimal management and production system. That is how the two engineers, Eiji Toyoda and Taiichi Ohno, launched the Lean concept (Womack et al., 1990). Table 3.1 summarizes the important phases of Lean evolution.

Table 3.1 Origin and evolution of Lean (adapted from Shah and Ward, 2007, p. 787)

Date	Lean Evolution
Before 1945	- Henry Ford outlined his philosophy and the main principles of Ford's production system (FPS) in "Today and tomorrow" (1927). - Toyoda (later named Toyota) Motor Company was established in the city of Koromo, Japan (1937).
Birth and evolution of the TPS in Japan 1945–1978	- Toyota began the innovation of TPS (1945). - Taiichi Ohno published a book entitled "Toyota Production System" in Japanese (1978).
The arrival of TPS in North America 1973–1988	- TPS attracted considerable attention after the oil crisis in North America (1973). - Sugimori et al. published the first academic article on TPS (1977). - NUMMI was created in California as a joint venture between Toyota Motor Company and General Motors (1984) to test TPS in America. - Interesting books describing Toyota's production system were published in English (the mid-1980s).
Academic progress 1988–2000	- Kracik coined the term "lean" to describe Toyota's manufacturing system (1988). - Womack, Jones, and Roos published the book "The machine that changed the world" (1990). - Womack and Jones published "Lean Thinking." This book extends the philosophy and the guiding principles of lean at the company level (1994).
2000-present	- Several books and articles highlighting the global nature of lean production were published (the 2000s). - Major companies adopted Lean: Rolls Royce (2000), Nike (2002), Parker Hannifin (2003), Intel (2004). - Toyota Motor Company was projected to become the number one automobile manufacturer in North America (2006). - Lean principles were translated into other domains: Lean healthcare (2002), Lean Software Development (2003), Lean education (2003), Lean Startup (2008).

The development of the TPS had largely gone unnoticed and only attracted attention during the first oil crisis in 1973 (Holweg, 2006). Later, Lean spread around the world and gained immense popularity.

3.2.2 Lean definition

Although Lean was initially introduced as an approach to eliminate waste in the production process (Ohno, 1988), this concept has been expanded throughout the organization to include different management tools and methods. Several authors argued that Lean has evolved over time and will constantly evolve according to the circumstances of the global market and the customers' needs (Hines et al., 2004; Lodgaard et al., 2016). Because of its dynamic nature, it is often difficult to formulate a clear and precise definition of Lean. For example, Emiliani (1998) defined Lean as a manufacturing philosophy “whose objective is to minimize the consumption of resources that add no value to a product” (p. 615). Liker and Wu (2000), on their part, defined it as “a philosophy of manufacturing that focuses on delivering the highest quality product at the lowest cost and on time” (p. 82). For Toussaint and Berry (2013), Lean is rather “a cultural transformation that changes how an organization works” (p. 74).

Overall, the definitions of Lean vary enormously in the literature, by considering Lean as a philosophy, a toolbox, a strategic goal, or a change process (Brännmark et al., 2012). Moreover, we find different viewpoints about the most important characteristics of this concept (Lodgaard et al., 2016). There is, therefore, no consensus among researchers about the definition of Lean (Brännmark et al., 2012; Kaltenbrunner et al., 2017; Shah and Ward, 2007). Indeed, Hohmann (2012) emphasized that the Lean concept is so rich that it is difficult to summarize it in a precise and relevant way.

The lack of a universal definition may be a source of confusion among practitioners and negatively impact the implementation of Lean (Pettersen, 2009). Consequently, training is often required for managers interested in adopting Lean to have a clear understanding of its principles, and thus be able to choose among its tools and practices, those that meet the needs of their organization (Marodin and Saurin, 2015). With this purpose, instead of being limited to a single Lean variable, it is more advantageous to consider it as a multidimensional concept in order to understand its different aspects and benefit from them (Brännmark et al., 2012).

3.2.3 The main pillars of Lean

Several studies about Lean often refer to continuous improvement without considering the importance of human resources. In this direction, Emiliani et al. (2007) argued that continuous improvement can and will only be possible through the involvement of personnel. Since the inception of Lean, Toyota has developed a principle known as “respect for people” (Liker and Hoseus, 2008) to show the important role granted to its employees and the practices put in place to engage them. However, this principle is seldom considered in practice, which partly explains the failures in the implementation of Lean (Pearce and Pons, 2013).

Authors including Bicheno and Holweg (2016), Emiliani et al. (2007), and Liker (2009) recognized the importance of this principle and stated that the Toyota model may be succinctly summarized through two pillars: (1) continuous improvement and (2) respect for people. These two pillars were reported in an internal document of Toyota Motor Corporation entitled “The Toyota Way 2001” (Emiliani et al., 2007). The Toyota Way (“Toyotawei” in Japanese) describes Toyota’s management system in terms of management values, work methods, and standards of behavior. This is Toyota’s first initiative to document “the company’s fundamental DNA” and to report its global vision of Lean (Emiliani et al., 2007). Figure 3. 1 illustrates “The Toyota Way” according to Liker and Hoseus (2008).

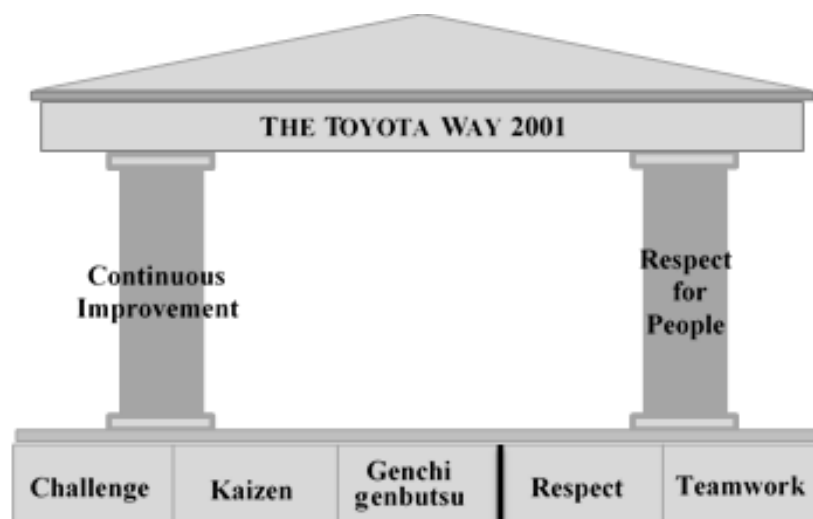


Figure 3.1 Main pillars of “The Toyota Way” (adapted from Liker and Hoseus, 2008, p. 14)

Emiliani et al. (2007) reported that the managers of Toyota Motor Corporation had realized the importance of these two pillars through the many challenges they have faced since the late thirties.

Pillar 1: Continuous improvement

Continuous improvement is a process that aims at the constant and progressive improvement of products, services, or processes (Kariuki and Mburu, 2013). At the core of this concept lies the idea that nothing is perfect and everything can be improved (Liker and Ogden, 2011). Liker and Convis (2012) pointed out that every aspect of the organization can be improved, from product design to sales, including the performance of every employee in the organization. Toyota defines continuous improvement as “we are never satisfied with where we are and always improve our business by putting forth our best ideas and efforts” (Liker and Hoseus, 2008, p. 15).

Continuous improvement is perceived as an extended journey that involves building skills and capabilities within the organization to ensure improvements and problem-solving on a daily basis (Bhamu and Sangwan, 2014). In other words, it is a continual effort to enhance the products’ and services’ quality, customers’ satisfaction, and organization’s efficiency (Khan, 2018). As one of the pillars of Toyota, continuous improvement is based on three principles: Challenge, Genchi Genbutsu, and Kaizen.

- **Challenge:** Basically, it is about forming a long-term vision and meeting challenges with courage and creativity (Liker and Hoseus, 2008, p. 15). More specifically, in its internal document “The Toyota Way,” Toyota expresses it as follows: “We accept challenges with a creative spirit and the courage to realize our own dreams without losing drive or energy. We approach our work vigorously, with optimism and a sincere belief in the value of our contribution” (Liker, 2004, p. 25). Toyota incentivizes the creativity and initiative of its employees by continually challenging them to learn and experiment (Liker, 2004).
- **Genchi Genbutsu:** It is about going to the source to find the facts in order to make correct decisions, build consensus, and achieve goals at the best speed (Liker and Hoseus, 2008, p. 15). Genchi Genbutsu, also known as “go and see,” encourages leaders to go directly to workplaces to thoroughly understand the situation or the problem (Liker, 2004). With this principle, Toyota shows that all leaders must be aware of any issue that is in their charge and make decisions based on facts in order to avoid unproductive situations (Liker and

Convis, 2012). Genchi Genbutsu helps employees acquire more awareness about daily events and a better understanding of the root causes of problems (Chiarini et al., 2018).

- Kaizen: It is the essence of continuous improvement and literally means “change for the better.” Kaizen aims to improve the business continuously while always driving for innovation and evolution (Liker and Hoseus, 2008). In the words of Toyota: “We are relentless in our pursuit of improvement, never easily satisfied, constantly making improvement efforts and steadily encouraging innovation” (Liker and Hoseus, 2008, p. 324). Even though Kaizen is considered by the Toyota Way as one of the aspects of continuous improvement, the two terms, “Kaizen” and “continuous improvement,” are often used interchangeably (Coetzee et al., 2016; Liker, 2009; Liker and Hoseus, 2008).

Continuous improvement is usually formalized by the Plan-Do-Check-Act cycle (PDCA, also known as the Deming cycle) which offers a data-driven approach based on the scientific method of problem solving (Patel and Deshpande, 2015). PDCA consists of four iterative stages: Plan (study the current situation and develop solutions for improvement), Do (deploy the pilot measures on a trial basis), Check (examine the effect of changes to verify if the desired result is achieved), Action (standardize on a permanent basis). With these steps, PDCA aims to permanently solve a problem by identifying and correcting its cause and thus effect permanent improvement (Bond, 1999). To this end, all employees must receive education in the PDCA process to be able to perform continuous improvement initiatives (Lodgaard et al., 2012).

Overall, continuous improvement relies on the creation of a climate based on contributing to daily improvements to ensure organizational performance. This climate can only exist and be strengthened by “respect for people,” the other pillar of the Toyota Way (Liker, 2009).

Pillar 2: Respect for people

The “respect for people” pillar is a cornerstone of continuous improvement (Liker, 2011). In fact, Emiliani (2006) stated that simple logical arguments would reveal that authentic continuous improvement is not possible without “respect for people” (Emiliani, 2006, p. 177). With this pillar, Toyota aims to make a system where employees can actively participate in improving their workplace and be able to fully display their own capabilities. Organizations that only focus on the technical side of Lean (i.e., continuous improvement), without taking into consideration the “respect for people” pillar are practicing “fake Lean” (Emiliani, 2013). “Respect for people” is,

then, not an option; it is rather a sine qua non condition in Lean (Emiliani, 2015). To show its importance, Toyota displays slogans in some of its factories with the message: “Respect for people is the attitude that regards people’s ability to think most” (Grabau, 2016). Although “respect for people” is a concept that seems easy to understand and apply, in reality, it is not (Emiliani et al., 2007). A simple definition cannot capture its whole meaning. The term “people” does not refer only to employees but encompasses all stakeholders, including suppliers, customers, investors, communities, and competitors (Emiliani, 2015). It should be noted that in our case, our focus is on the employees as a key element of the organization.

Toyota has not defined “respect for people” with a few words or a few sentences, because it considers that this concept can be understood only through daily practice at the workplace, and in combination with the pillar of continuous improvement (Emiliani, 2015). Thus, the aspects we will present to explain the “respect for people” will only be a partial definition of this notion.

According to the Toyota Way, the “respect for people” pillar is based on two principles:

- Respect: Toyota describes respect as follows: “We respect others, make every effort to understand each other, take responsibility and do our best to build mutual trust” (Liker and Hoseus, 2008, p. 15). At Toyota, all employees are respected regardless of who they are or what they do, and everyone matters in the contribution to the pursuit and the achievement of goals (Dahl, 2019). In this context, respect goes beyond its conventional definition to also encompass the employees’ ideas, contributions, and personal beliefs (Orzen and Paider, 2015).
- Teamwork: It is defined by Toyota as follows: “We stimulate personal and professional growth, share the opportunities of development, and maximize individual and team performance” (Liker and Hoseus, 2008, p. 15). Toyota considers teamwork as the foundation of the organization and aims to ensure that all systems are there to support teams doing value-added work (Liker, 2004). In this way, it encourages them to be committed to making the organization successful (Liker, 2004). This vision was supported by Marksberry (2011), who stated that to have professional employees work together, each one of them must feel as though he matters to the organization.

In conclusion, to successfully implement Lean and ensure sustainability, both pillars of “continuous improvement” and “respect for people” must not only be taken into consideration but be at the core of every decision-making process and action taken in the organization.

3.3 Organizational commitment

In recent years, the concept of organizational commitment has gained high interest among researchers and practitioners. This interest has led to important theoretical and empirical developments (Meyer et al., 1993).

3.3.1 Definition of organizational commitment

To better understand and grasp its meaning, we present the concept of organizational commitment from its different angles. This concept is not new as it first appeared in 1938 in Barnard’s work, although at that time, there was no clear definition of the concept of organizational commitment. This prompted researchers to take a closer look at this phenomenon, which remains difficult to grasp. The first definitions of this concept became effective only in the 1960s and are reported in Table 3.2.

Table 3.2 Definitions of organizational commitment

Authors	Definitions
Becker (1960)	Employee’s need to pursue working in an organization because of costs associated with leaving it.
Grusky (1966)	The strength of an individual’s attachment to an organization. The factors that influence this strength are the rewards received from the organization and the required experiences to receive them.
Kiesler et Sakumura (1966)	The link that binds an individual to behavioral acts.
Kanter (1968)	Employee’s willingness to invest their energy and loyalty in a given organization.

Blau and Boal (1987) proposed that organizational commitment refers to an employee who identifies with an organization and wishes to maintain membership in that organization in order to facilitate its goals. Mathieu and Zajac (1990) argued that it is “a bond or linking of the individual to the organization” (p. 171). In the same direction, Meyer and Herscovitch (2001) reported that

organizational commitment constitutes “a force that binds an individual to a course of action of relevance for one or more targets” (p. 301). From these aforementioned and several other definitions, we can see that this concept still eludes a unanimous definition (Morin and Audebrand, 2003). The reason behind this is that these definitions come from different disciplines and, also, because of the multidimensional nature of organizational commitment (Mercurio, 2015). Nevertheless, despite this heterogeneity, we can find a common ground among the authors, where organizational commitment is generally considered to be the link that binds an employee to an organization.

3.3.2 Models of organizational commitment

The dimensionality of organizational commitment has been the subject of several studies. As such, various models have been developed to demonstrate the multidimensional nature of this concept.

Angle and Perry’s two-dimensional model

Angle and Perry (1981) proposed two dimensions of organizational commitment, namely, “value commitment” and “commitment to stay.” The first dimension refers to the desire to support organizational goals by making efforts to achieve them. It translates into items, including the willingness to perform for the organization, congruence of personal values with those of the organization, and concern for its fate (Angle and Perry, 1981). The second dimension refers to the intention to remain a member of the organization. It is based on items that pertain to organizational membership.

The two-dimensional conceptualization advocated by Angle and Perry (1981) was later replaced by three-dimensional models. The one proposed by Meyer and Allen (1991) is the most popular and widely discussed in the literature.

The three-dimensional model of Meyer and Allen

Meyer and Allen’s (1991) model has become the dominant model for the study of organizational commitment (Jaros, 2007). This model comprises three dimensions labeled affective, normative, and continuance commitment.

The affective dimension of organizational commitment refers to “the employee’s emotional attachment to, identification with, and involvement in the organization” (Meyer and Allen, 1991, p. 67). This type of commitment reflects the desire to remain within the organization by choice. In

other words, employees are affectively committed to the organization because they want to do so (Meyer and Allen, 1991, p. 67). Besides, Johnson and Chang (2006) stated that employees who are emotionally committed to their company are more committed to its goals and values. This idea was underlined in 1982 by Mowday et al. who considered organizational commitment as a component that is characterized by an acceptance of the organization's goals and values, and a strong desire to remain a member of it.

Affective commitment comes from intrinsic factors of the individual (Johnson and Chang, 2006), which are summed up in the feeling of achievement, professional and personal growth, recognition, and in general, in job satisfaction. In general, affective commitment may be considered an important dimension of organizational commitment, since employees with high affective commitment go above and beyond contractual expectations to keep the organization running smoothly.

The continuance (or calculative) dimension refers to “an awareness of the costs associated with leaving the organization” (Meyer and Allen, 1991, p. 67). It relies on the idea that employees' investments (e.g., time, effort, seniority, etc.) would be lost if they leave the organization. Hence, they persist and remain in that organization because they need to do so (Meyer and Allen, 1991, p. 67). This situation can be explained by the side-bet theory developed by Becker in 1960. This theory stipulates that the accumulation of investments (side-bets) valued by a person would be lost if this person changes the current position to engage in another. Employees could also remain in the organization when they recognize that alternative employment opportunities are limited. According to the logic of this dimension, the employee commits to the organization in order to keep the benefits that it provides.

The normative (or moral) dimension “reflects a feeling of obligation to continue employment” (Meyer and Allen, 1991, p. 67). For example, employees who receive rewards in advance from their organization (e.g., job training) feel an obligation to reciprocate by developing their commitment toward the organization to repay this debt. The normative dimension is then explained by Gouldner's principle of reciprocity (Gouldner, 1960), which leads individuals to remain faithful to their moral commitments until their debt has been fully repaid.

Lastly, according to Meyer and Allen's tripartite conceptualization of organizational commitment, employees with a high level of affective commitment are likely to exert greater effort to achieve

organizational goals than those who remain in the organization out of need (continuance commitment) or those who remain there by moral obligation (normative commitment).

Cohen's model

Cohen (2007) also supported the multidimensional perspective of organizational commitment in his work entitled "Commitment before and after: An evaluation and reconceptualization of organizational commitment," bringing a reflection on Meyer and Allen's three-dimensional model.

Despite its widespread use, Meyer and Allen's model has been subject to criticism due to its ambiguity when it comes to the distinction between the normative and affective dimensions, which do considerably overlap (Charles-Pauvers and Peyrat-Guillard, 2012; Cheng and Stockdale, 2003; Solinger et al., 2008). Although Meyer and Allen (1991) already pointed out that "the feeling of what one wants to do (affective commitment) and what one ought to do (normative commitment) are not completely independent" (p. 79), authors believe that the status attributed to normative commitment is still vague. To this end, in 2007, Cohen developed a four-component model making it possible to distinguish between these controversial dimensions. To do so, Cohen included the notion of timing and the bases of commitment (see Figure 3.2).

		BASES OF COMMITMENT	
		<i>Instrumental attachment</i>	<i>Psychological attachment</i>
TIMING	Before joining the organization	Instrumental commitment propensity	Normative commitment Propensity
	After joining the organization	Instrumental commitment	Affective commitment

Figure 3.2 A four-component organizational commitment model (adapted from Cohen, 2007, p. 337)

The notion of timing is used to demonstrate that commitment propensity (instrumental commitment propensity and normative commitment propensity) develops before joining the organization, while organizational commitment (instrumental and affective commitments) develops after joining the organization. As for the bases of commitment, the purpose is to distinguish between commitments based on instrumental or psychological attachment (Cohen, 2007).

Instrumental commitment propensity refers to the employees' expectations regarding the quality of exchanges with the organization. It is about verifying the benefits and rewards they could receive in return for their contribution. Normative commitment propensity, on the other hand, is a moral obligation towards the organization. For the other two forms that develop after joining the organization, there is the instrumental commitment that results from the employees' perception of the quality of exchanges between their contributions and the rewards received. In other words, instrumental commitment reflects how well met are the expectations of employees regarding benefits and rewards. Affective commitment represents an attachment to the organization that is demonstrated by identification, emotional involvement, and a sense of belonging (Cohen, 2007). Note that this definition is the same as the one presented in Meyer and Allen (1991).

Cohen (2007) argued that the overlap between normative and affective commitments is because the former was considered in Meyer and Allen's model (1991) as a dimension that appears after joining the organization, when in fact, it should be examined before entry to the organization since it is a predisposition for affective commitment. The introduction of the timing notion has thus clarified the understanding of these two forms of commitment by establishing a clear dichotomy between the normative and affective dimensions. The approach proposed by Cohen (2007) has attracted the interest of several authors as it has helped to close the recurring debate about the nature of the normative dimension.

Cohen's four-dimensional conceptualization is based on the approach of Mowday et al. (1982), which argued that the development of organizational commitment is a process that begins before joining the organization and continues during the employment period. In conclusion, Cohen's approach helped clarify and better present the concept of organizational commitment. Table 3.3 provides a summary of the different dimensions of organizational commitment.

Table 3.3 Dimensions of organizational commitment

Angle and Perry (1981)	Meyer and Allen (1991)	Cohen (2007)
Value commitment Commitment to stay	Affective commitment Continuance commitment Normative commitment	Instrumental commitment propensity Normative commitment propensity Instrumental commitment Affective commitment

Although the concept of organizational commitment is multidimensional, the vast majority of researchers have been particularly interested in its affective dimension (e.g., Gao-Urhahn et al., 2016; McKay et al., 2013; Odoardi et al., 2019).

3.3.3 The interest in affective commitment

After defining and analyzing the different forms of organizational commitment, it seems that affective commitment is a central component of the continuous improvement process since it drives employees to identify with the organization's culture and values and deploy more effort towards achieving organizational goals. This type of commitment is therefore important for all kinds of businesses as it allows them to build a successful and sustainable organization (Jussila et al., 2012). The interest in affective commitment is also due to the numerous benefits it provides both to organizations and employees. Among these benefits, we can find:

- **Performance:** It refers to the achievement of organizational goals regardless of their nature and variety (Bourguignon, 2019). Several studies stated that there is a significant relationship between affective commitment and performance (e.g., Meyer and Allen, 1991; Meyer et al., 2002). This correlation could be explained by the fact that employees with high affective commitment are motivated by the achievement of organizational objectives.
- **Organizational citizenship behavior:** This concept refers to the innovative and spontaneous behaviors of employees and their willingness to cooperate (Barnard, 1938; Katz, 1964). The literature confirms the existence of a positive association between affective commitment and organizational citizenship behaviors (Allen et al., 2011; Danish et al., 2015; Grego-Planer, 2019). In a recent study, Danish et al. (2015) showed this positive relationship and stated that employees' affective commitment is a factor that improves their organizational citizenship behaviors.
- **Job satisfaction:** Affective commitment is positively associated with job satisfaction (Ampofo, 2020; Donald et al., 2016; Meyer et al., 2002). The notion of job satisfaction is defined by Locke (1976) as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (p. 1300). This satisfaction is partly due to the sense of involvement and belonging to the organization. The higher the employees'

involvement in the organization, the more satisfied they are. That is, as affective commitment increases, the level of job satisfaction increases too (Saha and Kumar, 2018).

- **Turnover:** Several studies found the existence of a negative correlation between affective commitment and turnover (e.g., Allen and Meyer, 1990; Gillet et al., 2015). This negative relationship is explained by the fact that employees who exhibit strong commitment are least likely to leave the organization (Allen and Meyer, 1990). This means that improving the level of affective commitment could help reduce the turnover rate within an organization. In fact, according to its definition, affective commitment reflects the willingness to remain within the organization. It is, therefore, evident that it is negatively related to turnover, which reflects the desire to voluntarily leave the organization.
- **Absenteeism:** Affective commitment is negatively related to absenteeism (Meyer et al., 2002; Kim and Beehr, 2018). This negative correlation could be explained by the fact that employees with a strong affective commitment do not tend to be absent from work (Drucker, 2005). In other words, less committed employees would be absent more.
- **Presenteeism:** Affective commitment is also negatively linked to presenteeism (Taifor et al., 2011; Yang et al., 2017). The concept of presenteeism refers to the situation where an employee is at work but is not fully functional and productive because of illness, injury, or other health conditions (Hemp, 2004). Multiple reasons may explain the negative association between affective commitment and presenteeism. First, according to their definitions, the concept of presenteeism is the opposite of affective commitment. The former hinders the achievement of organizational goals (De Beer, 2014), whereas the latter prioritizes them. According to Yang et al. (2017), employees who exhibit strong affective commitment tend to adopt behaviors that are beneficial to the organization (e.g., increasing performance and decreasing presenteeism). Finally, affectively committed employees have a low presenteeism rate.
- **Job stress:** It is defined by the National Institute for Occupational Safety and Health (NIOSH) as “the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker” (Caruso et al., 2004). It has been shown that affective commitment is negatively associated with job stress (Meyer et al., 2002). This negative correlation was discussed by several

authors. For example, Schmidt and Diestel (2011) argued that affective commitment creates a sense of emotional stability and belonging in employees, which strengthens their ability to resist work stressors such as workload and lack of social support. For Setti et al. (2016), affective commitment is an important resource for protecting against stressful situations.

It is true that affectively committed employees are more resistant to job stress, but it is important to keep in mind that excessive stress can have the opposite effect.

To sum up, the analysis of the benefits of affective commitment shows that the higher the level of commitment, the more positive the outcomes are for workers and organizations. It is, therefore, important to know how to improve the level of employees' affective commitment within the organization in order to ensure not only better outcomes but, more importantly, sustainable continuous improvement.

3.4 Relationship between Lean sustainability and organizational commitment

There is a close relationship between Lean sustainability and employees' commitment within the organization.

3.4.1 The relationship between Lean and employees' affective commitment

Some researchers stated that committed employees contribute significantly to the success and sustainability of Lean (e.g., Hines, 2010; Lucey, 2009). However, this commitment largely depends on the employees' understanding of Lean. If the purpose and principles of Lean are correctly understood by managers and adequately explained to employees, affective commitment is likely to be developed by the latter. In fact, Jaaron and Backhouse (2010) indicated that employees working in Lean organizations are more likely to develop an affective commitment to their company compared to those working in "traditional" organizations. In a similar vein, Angelis et al. (2011) stated that organizations adopting a management philosophy, such as Lean, that is based on mutual trust, support, and receptiveness to employee suggestions can go a long way in improving employee commitment and, particularly, affective commitment.

In their study, Angelis et al. (2011) reported that among the three types of commitment (i.e., affective, normative, and continuance) proposed by Meyer and Allen (1991), only affective commitment is linked to the concept of Lean. This is because affectively committed employees do not limit themselves to what is written on their job descriptions, but participate in additional

activities, including self-inspection of work tasks and improvement projects. These employees are usually attached to the organization and adhere to its management system in such a way that they support change and defend organizational goals. Angelis et al. (2011) therefore suggested that there is a strong correlation between affective commitment and Lean.

Moreover, affective commitment is also linked to the decentralization of decision-making, which gives employees a sense of personal importance and value in the organization (Morin et al., 2010). This is reflected in Lean organizations that support employees' participation in decision-making. For example, in this type of organization employees are authorized to stop production when an issue occurs (e.g., defect detection in a product or a device) so that errors are not propagated to the next stages of production (Emiliani et al., 2007; Liker and Convis, 2012). Having such decision-making latitude allows employees to feel responsible for the equipment they operate and the product they produce. Hence, they find themselves at the heart of the action, which encourages them to have an affective commitment towards their organization.

As mentioned in Section 3.3, affective commitment comes from intrinsic factors of the employee (Johnson and Chang, 2006) such as the feelings of recognition and professional development. This is in line with the Lean philosophy, which relies, among other things, on employee recognition and human development to demonstrate its principle of “respect for people”. This also shows the link between the two concepts of Lean and affective commitment.

Overall, the concept of affective commitment is rooted in the Lean philosophy: Lean organizations significantly strengthen the affective commitment of employees resulting in a dual benefit of improving performance and reducing overall costs.

3.4.2 Human resources according to Lean philosophy

Lean depends on human resources since 67–99% of the Lean effort is about them (Meyer and Waddell, 2007). They are the force that can help organizations grow and succeed in their transformation (Cardon and Bribiescas, 2015). Hence, organizations must understand employees on all levels and, especially, treat them as individuals (Dinero, 2005). According to Veech (2004), when an organization focuses on human resources, results will follow. In contrast, when it focuses on results, the same troubles as in other organizations will occur (e.g., lack of interest, no ownership of improvements, decreased productivity). Thus, Lean is a people-based philosophy (Dibia, 2012).

Human resources behaviors and roles are assumed to be different in Lean organizations where employees need to be proactive in the workplace and continuously looking for ways to improve flow, reduce errors and eliminate non-value-added activities (Beale, 2007; Florescu and Barabaş, 2018). In other words, these actors are expected to make continuous improvements. However, only employees who understand the implementation of Lean can produce these improvements and achieve the expected results (Dibia and Onuh, 2010). The rest of the employees may be passive or even become resistant to change. Employee resistance often stems from the perception and beliefs they have acquired about Lean. They often believe that Lean is accompanied by job losses, increased work, high-stress levels, and longer workdays (Beale, 2007), or that Lean is just another fad that will pass and be replaced by another one. However, Toyota states that its Lean philosophy is primarily based on job stability and a supportive work environment for the long term (Liker, 2004). In this perspective, some authors argued that the obstacles that can prevent the proper functioning of Lean are often related to the role played by human resources rather than to technical aspects (Martínez-Jurado et al., 2013; Vanichchinchai, 2021). It is, therefore, important for organizations to adjust their management practices accordingly to ensure adaptation to the aforementioned change. Involving employees in Lean transformation by encouraging them to participate in making decisions about their job or work conditions may be among the winning policies (Marin-Garcia and Bonavia, 2014). However, in order to enhance and ensure employees' involvement, it is necessary to inform them about the “why” and train them about the “how” of the Lean implementation (Swank, 2003). Employees must understand the objective of Lean transformation and acquire the necessary training to be able to participate (Signoretti and Sacchetti, 2020).

Furthermore, given that employees are the most powerful factor that can help organizations to successfully transition to Lean, Toyota's approach is to focus on the selection and hiring process. Several authors, including Alagaraja and Egan (2013), Liker (2004), and Sisson and Elshennawy (2015) argued that the selection and retention of people with Lean skills is the key criterion to shift towards continuous improvement. These skills are manifested in part through the ability to solve problems and work well in teams.

Overall, it is evident that Lean organization needs effective employees that adhere to its philosophy (Dibia and Onuh, 2010), and it is commonly accepted that Lean success depends heavily on the

active participation of employees (Liker, 2004; Womack et al., 1990). However, the roles of leadership and management should not be overlooked in the process of bringing Lean to fruition.

The role of leadership

Leadership is defined as “the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives” (Margulies and Yukl, 1982, p. 8). Leadership is particularly important in organizations undergoing major changes, such as the introduction of Lean (Mann, 2005). However, in a new context governed by continuous improvement, the transition from traditional leadership to Lean leadership is necessary. Lean Leadership can then be defined in terms of: “Beliefs, behaviors, and competencies that demonstrate respect for people, motivate people, improve business conditions, minimize or eliminate organizational politics, ensure effective utilization of resources, and eliminate confusion and rework” (Emiliani, 2008, p. 34). Above all, Lean leaders must be able to understand the purpose of the change and have a clear idea of their contribution. Then, they must be able to communicate the need for change to their employees, create a common vision and goals, use Lean tools in an expert manner, and put in place all the adequate conditions that would encourage employees to get involved in the new system (Aij and Teunissen, 2017). Emiliani et al. (2007) claimed that the most important aspect of leadership is its physical presence in the factory, in the office, in all the processes in order to be visible at all times and intervene if necessary. In this way, the author encourages the “Genchi Genbutsu” practice and highlights the importance of face-to-face communication.

Lean requires a change of behavior and the acquisition of new skills, not only from the employees but especially from the leaders who should support the long-term change (Dombrowski and Mielke, 2013). Liker and Convis (2012) argued that transitioning to Lean requires competent leaders, capable of hiring and developing collaborators in order to make continuous improvement a daily reality. These authors compare the role of a Lean leader to a sports coach, who does not “play,” but supports the team members and puts them in a position to “win.” In other words, employees are the players, whereas the leader is in charge of creating the strategy, building the team, and developing their skills. Similarly, Dombrowski and Mielke (2013) concluded, in their study on the fundamental principles of Lean Leadership that leaders are not the people who add value to the product, but they have to pave the way for employees to do so in an efficient way. To better

understand the meaning of Lean leadership, Liker and Convis (2012) created a model that captures the Toyota approach to leadership, as shown in Figure 3.3.

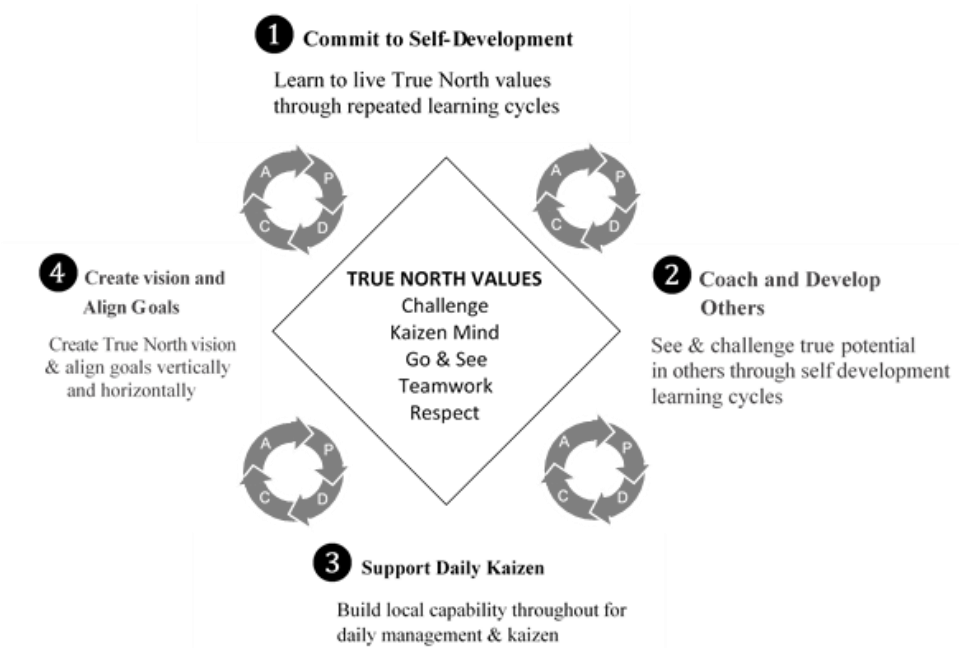


Figure 3.3 Lean Leadership model (adapted from Liker and Convis, 2012, p. 39)

This figure illustrates the values and functions required to be a leader at Toyota and shows how leaders need to continuously grow within that organization. Mastering the four stages of Leadership development is required for a successful lean transformation.

The role of management

Although there are several variables that may influence the success of Lean implementation (e.g., the involvement of leaders and employees), many researchers agreed that management commitment is fundamental in this process (Worley and Doolen, 2006). In this regard, Liker and Hoseus (2008) argued that if Toyota currently has a high-performance culture, it is because this organization has decades of practices that are constantly valued and supported by management. A firm commitment from management in the Lean project is necessary because otherwise, employees will not be engaged either (Emiliani et al., 2007). This commitment should not be just verbal but also factual; it must be demonstrated by providing employees with the necessary resources, such as time and materials, to enable them to actively participate in the continuous improvement process (Worley and Doolen, 2006). In this line, Meyer (2007) argued that “a culture of excellence must

be driven, with actions and not simply slogans and statements, from the top.” When employees perceive that top management supports them and respects their efforts, they will be more encouraged to bring improvement and, thus, the resistance to change will be reduced (Teich and Faddoul, 2013). In reference to Toyota, Emiliani et al. (2007) pointed out that management takes seriously its responsibility to effectively manage human resources and help them get involved in the change.

Furthermore, Emiliani (2006) emphasized that top management must make efforts to understand the two principles of Lean (i.e., continuous improvement and respect for people) to achieve favorable financial and non-financial results. If top management does not understand these principles, it will be impossible to succeed in Lean transformation (Emiliani et al., 2007). This understanding is achieved through direct participation in the continuous improvement process, which enables top management to acquire a better balance between thinking and doing (Emiliani, 2006). In addition to being directly involved in the transformation, it is required from top management to produce consistency, predictability, and order (Abramson and Gardner, 2002).

Leadership, as we have seen, is a process that aims to encourage employees to get involved in the change process, whereas management aims to support this process by creating, primarily, order and consistency (Kotter, 1990).

Altogether, Lean organizations need sustainable continuous improvement, which is only possible through the participation of all stakeholders, including employees and managers (Emiliani et al., 2007).

3.4.3 The practices of human resource management (HRM) in promoting employee commitment in Lean

To succeed in the Lean project, organizations must review their HRM practices and ensure their effectiveness. If these practices are properly implemented, employees will develop a high affective commitment towards their organization, which facilitates the transition to and sustainability of Lean (Lee et al., 2018). It is therefore important at this level to raise the question about the choice of effective practices to implement in order to increase employee commitment in the continuous improvement process.

Liker (2004) suggested that the force behind Lean consists of the fact that the organization invests heavily in the commitment of human resources while basing itself on a participative management approach and by betting on the “respect for people” concept. This notion is not limited to the traditional definition of giving consideration to employees, but it encompasses a multitude of management practices that define it. Several authors emphasized the concept of mutual trust as an integral component of “respect for people”, (e.g., Emiliani et al., 2007; Husar, 1991; Liker, 2009). “Mutual trust means that management and the employees have confidence in one another. It comes from the belief that everyone is, however, striving for the same purpose” (Husar, 1991, p. 10). Liker and Hoseus (2008) argued that when there is a lack of trust between employers and employees, the latter tend to overlook and hide problems. In contrast, when the relationship between the two parties is based on mutual trust, employees are more likely to identify problems and take responsibility to solve them. In this context, Toyota values and ensures the maintenance of mutual trust, not only because it is essential for employees’ commitment and involvement in Lean, but because it is the foundation of the organization and employee growth (Husar, 1991)

“Respect for people” also refers to the concept of occupational health and safety (Hafey, 2009; Liker, 2009). According to Liker (2009), respect is demonstrated when employees are provided with physical and mental safety on a daily basis, and when they are given the means to make their day a success. Several researchers have been interested in studying the effect of Lean on employees’ health and safety. In this regard, some authors reported that the implementation of Lean could be a source of stress for employees who must adapt to change (Askenazy, 2004; Dibia, 2017; Koukoulaki, 2014). Moreover, the reduction in cycle time required by Lean could lead to an increase in musculoskeletal risks since the employee is faced with an increase in work pace and stress, a lack of recovery time, insufficient time to control work, and time pressure (Askenazy, 2004; Imbeau et al., 2012; Koukoulaki, 2014). In contrast, other authors stipulated that these negative effects only occur as a consequence of poor Lean implementations (Imbeau et al., 2012). They even go against what has been said previously to announce that Lean could improve working conditions (Askenazy, 2004), reduce the level of stress among employees (Conti et al., 2006), and produce job rotation, which is considered as a means of reducing the risk of work-related musculoskeletal disorders (Ouellet and Vézina, 2003). Angelis et al. (2011) argued that job rotation is an aspect that greatly facilitates employee commitment. Moreover, the objective of Lean is to use the minimum in all aspects of the organization: less waste, less manufacturing space, less

investments in tools, and, especially, less human effort (Womack et al., 1990). However, Lean will only bring its positive effects on employees' health and safety if managers focus more on occupational safety and health (OSH), ergonomics, and working conditions in general (Askenazy, 2004; Imbeau et al., 2012). In other words, the principle of "respect for people" will only be effective if the organization is interested in the health and safety of its employees because unhealthy employees cannot be productive and efficient (O'Brien, 2003) and, consequently, cannot be committed and involved in the continuous improvement process.

According to Toyota, "respect for people" is also characterized by sincere communication (Emiliani, 2008; Emiliani et al., 2007). This communication promotes information sharing and employee commitment in the continuous improvement process. Sisson and Elshennawy (2015) emphasized that when major changes have to be made within the organization, communication about the reasons for these changes and all their implications is essential to getting all stakeholders on board. This should be the case when implementing Lean. Likewise, a study by Choi and Liker (1995) showed that communication is a key factor in the establishment and deployment of Lean since it encourages employees to participate in the improvement process. Toyota managers believe that employees need to be informed in order to do their jobs effectively. They encourage, therefore, the exchange of information in a quick and transparent way and are open to any suggestions from employees to resolve problems (Gao and Low, 2014).

Furthermore, the dedication of time and resources is essential to successfully implement Lean (Cardon and Bribiescas, 2015). Among these resources is training, which is another aspect of "respect for people." Toyota expresses the importance of human resource development as follows: "Because people make our automobiles, nothing gets started until we train and educate our people" (Bédek, 2016, p. 50). Toyota designs a career path that emphasizes the acquisition of in-depth skills in each discipline (Liker and Morgan, 2006). Its objective is to provide training at all levels to keep these skills up to date. To achieve this, Toyota offers several forms of training: pre-job, on-the-job, and off-the-job training (Gao and Low, 2014). The notions learned during these trainings are applied immediately afterward in the workplace. Toyota stipulates that the best approach is to provide training followed by immediately doing (Liker, 2004).

Empowerment is also part of "respect for people" (McMahon, 2014). As pointed out by Doustar et al. (2014), Lean implementation advocates for new management techniques (e.g., eliminating

waste and improving performance) that can be achieved only through employee empowerment. They stipulate that this aspect must be taken into account before even implementing Lean. It is possible to begin empowering employees by asking them to find ways to improve productivity, safety, efficiency, etc. in their daily tasks (McMahon, 2014). This technique strengthens employee involvement and creates a sense of belonging that allows them to identify with the organization and its objectives. Furthermore, McMahon (2014) argued that in order to empower employees, it is important to create an organizational culture based on rewards. Although rewards for constructive ideas, comments, or opinions may be symbolic and inexpensive, they are necessary to encourage employees to continuously improve operating procedures and the work environment (Liker, 2004).

Toyota also demonstrates respect by seeking to engage team members through active participation in improving their work and, most importantly, by ensuring job security (Liker, 2004; 2009). Overall, Toyota's approach is to create human resource practices that ensure fairness in the workplace, so as to create an environment in which each member is willing not only to identify and report problems but to actively engage in resolving them (Liker and Convis, 2012).

Toyota's HRM practices are a primordial and excellent source of inspiration for organizations that are planning to implement Lean in order to engage their employees to improve their processes. However, the choice of the right practices is highly dependent on the particular singularities (e.g., context, culture) of each organization.

3.5 Discussion and directions for future work

While we can find a plethora of works on Lean in the literature, for example, Bai, et al., 2018; Gaikwad and Sunnapwar, 2020; Iranmanesh et al., 2019; Madsen et al., 2019; Zhang et al., 2020, the vast body of research has mainly focused on one single pillar (i.e., continuous improvement), relegating the "respect for people" pillar to a secondary role. The result of this review should allow the research community to better understand the influence of this aspect in the success of Lean, to become aware of the role of management practices, and to realize the importance of employee commitment towards the organization. In other words, we aim to underline that the successful implementation of Lean requires a greater focus on three components that are often overlooked during the transition to Lean: the "respect for people" pillar, affective commitment, and HRM practices. These components and their associations are summarized in Figure 3.4.

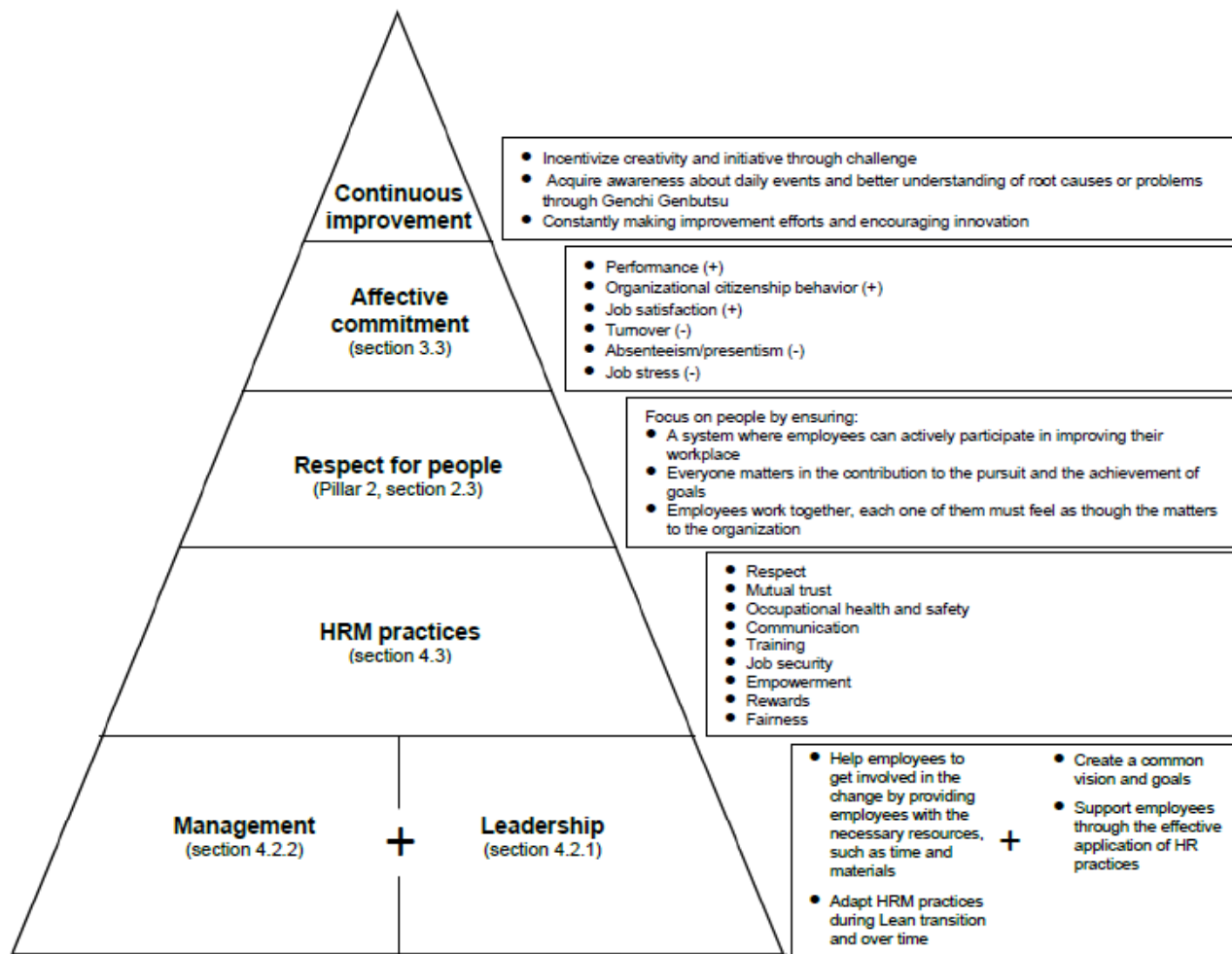


Figure 3.4 Components influencing the successful implementation of Lean

Respect for people: Through “respect for people” Toyota emphasizes the importance granted to its employees since it considers them to play a key role in the success of Lean (Dibia and Onuh, 2010). They are the ones who do the actual work. Their participation, involvement, and cooperation are important factors in ensuring the Lean transition. However, until now, research has largely neglected the human side of Lean. A study carried out by Hines (2020) addressed the gaps in the Lean literature and showed that there is a lack of focus on people. It concluded that sustainable continuous improvement requires giving greater focus to the role of systems, culture, and, especially, people. In this regard, there are some questions remaining unanswered or requiring further clarification in the literature: Why is the “respect for people” pillar often ignored by management even though Toyota insists that both pillars must be taken into account in order to successfully implement Lean? And when not ignored, how do companies incorporate this pillar

during their transition? Most importantly, how can these companies measure or ascertain that they are actually integrating the “respect for people” pillar when adopting Lean? Furthermore, we cannot find an entire definition of this concept in the literature (Emiliani, 2015). This may lead to confusion and hinder the correct implementation of Lean. In this sense, some authors (e.g., Angelis et al., 2011; Pettersen, 2009) argued that the lack of a consensual lean definition may cause difficulties for academics and practitioners. Developing a concise and overarching definition of “respect for people” is therefore essential to help companies understand its full meaning in order to facilitate its implementation. Moreover, although researchers stress the crucial role of employees, there is a lack of studies that provide an in-depth explanation of the changes that occur in the roles during the Lean transformation. So, what exactly is the role that employees should play during and after the implementation of Lean? How do they contribute to the Lean transformation? Does their role undergo changes over the years? Further work is still needed to clarify these questions and shed more light on the “respect for people” aspect of Lean.

Affective commitment: Employee commitment is of paramount importance and a crucial component of the success of Lean because committed employees are productive (Shamila, 2017), accept job responsibilities (Bess and Bess, 1995), seek to overcome organizational problems, adhere to organizational goals (Scott-Ladd et al., 2006), and care about the fate of the organization (Angle and Perry, 1981). For all these reasons, it is important to increase and maintain the level of employee commitment throughout the Lean implementation process. To do so, the organization must answer questions such as: What is driving employees to be affectively committed? What are the factors that increase/decrease affective commitment? How can this commitment be maintained during the transition to Lean? In other words, employers must target the factors that lie behind the motivation of employees (e.g., Toyota Way’s reward system) and, more importantly, must know how to reliably measure affective commitment. Although outcomes of affective commitment (e.g., higher job satisfaction and performance, lower presenteeism and absenteeism) are reported by several authors such as Ampofo (2020), Donald et al. (2016), Kim and Beehr (2018), Meyer et al. (2002), and Taifor et al. (2011), the set of factors that influence employee commitment in Lean has received less attention from the academic literature, especially when it comes to non-committed employees and the elements that negatively impact commitment. In this context, what are the factors that impact employee commitment? Considering that affectively committed employees put themselves at the service of the organization and exert above-normal efforts to ensure its success,

a promising line of future work is, therefore, to investigate and provide an in-depth explanation of not only the factors that stimulate their feelings of attachment and organizational belonging but likewise the factors that undermine these feelings. In other words, studies that focus more on studying the relationship between affective commitment and Lean are needed. To the best of our knowledge, the only study that has discussed these factors in the Lean context and that has examined the direct relationship between affective engagement and Lean is that presented by Angelis et al. (2011). The results of this study demonstrated that there are some necessary factors for workers' commitment, including allowing workers to participate in improvement projects, helping in meeting production standards when needed, and increasing cycle times through parallel workflows. In addition, the study confirmed the existence of a positive association between the two concepts (affective commitment and Lean) and stressed that employees who are affectively committed identify with the organization's goals, which facilitates the transition to Lean. It would also be interesting to expand the discussion about the other types of organizational commitment (e.g., continuance commitment, normative commitment) to explore how they may or may not hinder the implementation and durability of the continuous improvement process. This could help managers know which employees are committed in Lean, elucidate how committed they are, and take the necessary actions to raise the commitment level among those who show little to no commitment at all. Furthermore, some authors including Emiliani et al. (2007), Liker (2004), and Liker and Convis (2012) argued that employee commitment can be influenced by leadership and management in the sense that employees can be committed in Lean only if leaders and managers are also committed. How do leaders and managers influence employee commitment specifically in Lean? We believe it is important to explore in more detail the relationship between Lean leadership/management and employee commitment.

HRM practices: Although the spectrum of management practices is ample and diverse, for example, Chew and Chan, 2008; Lamba and Choudhary, 2013; Trudel et al., 2005, we can find few works in the literature reporting on HRM practices that can develop employee commitment in Lean. This finding is complementary to the rare studies that have discussed the importance of management practices in the success and sustainability of Lean. For example, the study by Bonavia and Marin-Garcia (2011) concluded that, to date, the debate about which HRM practices should be considered in Lean firms remains inconclusive. It also confirmed that the association between HRM practices and Lean is still practically unexplored. It is therefore interesting to explore this

association to answer questions such as: Among the various HRM practices, which ones ought to be incorporated to facilitate the Lean transition? On what basis should the organizations choose these practices? Is there a time frame in which HRM practices must be modified to be adapted to the evolution of Lean? Moreover, the context in which these practices are studied is largely specific to Toyota. This precludes the availability of an accurate and reliable assessment of the suitability and projection of these practices to other domains or sectors. Toyota itself advises organizations willing to successfully implement and maintain Lean to not simply copy its management practices but rather adapt them to fit their organizational context; otherwise, the implementation of Lean will likely be prone to failure. The choice of HRM practices is highly dependent on the organizational culture and differs across work environments, sectors, etc. In this sense, the investigation conducted by Gao and Low (2014) revealed that construction firms implement some of the Toyota Way people management practices, such as selectivity in recruitment, training, teamwork. In the same direction, Martínez-Jurado et al. (2013) as a result of case study research stated that management practices are important during the transformation process. The results of their study showed five main practices to be adopted when implementing Lean in the aeronautics industry: training, rewards, communication, job design, and work organization. Moreover, the study carried out by Bonavia and Marin-Garcia (2011) in the ceramic tile industry showed that some management practices (training and job security particularly) are significantly linked with the implementation of lean. However, the literature that approaches these practices considering sector-specific idiosyncrasies remains limited. To fill this gap, it is important for future research to identify the adequate management practices and/or the adjustments required to adapt them to these different domains. The literature does however insist on training as a necessary practice in the Lean transition (e.g., Cardon and Bribiescas, 2015; Gao and Low, 2014; Liker and Ogden, 2011). Should this practice then be taken into account by all organizations regardless of their sector of activity and context? If yes, what forms of training are needed to ensure a lean transformation? Besides, as shown in Figure 3.4, HRM practices have an impact on employee affective commitment. Most studies addressing the link between these two concepts (e.g., Lamba and Choudhary, 2013; Lee et al., 2018) only report the HRM practices that are likely to affect employee commitment but do not examine how is this influence materialized. Investigating the nature of this influence requires further attention from research (Florescu and Barabaş, 2018).

Finally, to achieve excellence and reach its goals, an organization must not limit itself to the implementation of Lean but must make efforts to maintain it and ensure its sustainability. Organizations must therefore answer additional questions: How can Lean be maintained in the long term? How can affective commitment be preserved or increased over the years? To this end, follow-up strategies must be established to guarantee that: (1) implemented actions are still effective, (2) ineffective practices are improved or even removed, and (3) better and modern practices are regularly incorporated. Lean is a continuous and dynamic process that requires close and constant supervision. In this context, there is a considerable lack of literature on the evolution and supervision of management practices within Lean organizations.

Research limitations

This narrative review provides an overview of the relevant literature on employee commitment in Lean. However, some limitations should be mentioned.

The first limitation of this study is due to the subjective nature of the method used (the subjectivity of the researcher in determining the studies to be included in the paper). This is a common limitation of narrative literature reviews (Ferrari, 2015). The second limitation is due to a large number of articles on Lean. It was almost impossible to access and analyze all of them. Therefore, some relevant articles may not have been included in this study.

3.6 Conclusions

In this paper, we have presented a thorough review of the literature on the pillar concepts of Lean and organizational commitment. We have provided a comprehensive summary of the advantages offered by Lean to an organization and highlighted the complementarity of its pillars in order to achieve a successful implementation. We especially emphasized the role of the “respect for people” pillar as a necessary condition that must be considered, in conjunction with continuous improvement, during the adoption of Lean.

With the “respect for people” pillar, we have reviewed the role of human resources and their high relevance in the implementation and sustainability of Lean within an organization. Understanding their roles and the management practices needed for their involvement is key to the success of Lean. This is the responsibility of managers and leaders, who have to support employees to get involved in the change process and take the right actions to make Lean implementation a smooth

and durable process. In this context, we have accentuated the role of organizational commitment, presented its different dimensions, discussed their characteristics, and pointed out the specific form of commitment that can help in concretizing a successful Lean implementation. Particularly, we have shown the consolidated position of affective commitment and its advantages within Lean. For this reason, numerous organizations are invested in improving the level of affective commitment of their employees and consequently help them adopt the organization's culture and become more involved in the continuous improvement process. Putting the focus on the human factor appears as a strong starting point to avoid resistance to change and circumvent failure in Lean implementation. Furthermore, we have presented the background on the relationship between Lean and affective commitment and outlined the positive correlation that exists between them. Nevertheless, there is still room for improvement. Better knowledge about this relationship is needed, and more work on the generalizability and effectiveness of management practices and their effect on employee commitment is required. To summarize the “what to do” and “how to it” that will help an organization improve the level of affective commitment from its employees so as to succeed in a durable Lean implementation needs more attention from the research community.

CHAPITRE 4 ARTICLE 2: EXPLORING LEAN HRM PRACTICES IN THE AEROSPACE INDUSTRY

Référence : Amal Benkarim et Daniel Imbeau, publié dans la revue *Sustainability* le **26 avril 2022**.

Abstract

Lean places people at its core, acknowledging their contribution to the company's growth and the fundamental role human resources management (HRM) practices play in the success and sustainability of Lean transformations. However, the relationship between HRM practices and Lean remains largely unexplored in the literature. The purpose of this work is therefore to investigate the challenges and contributions of HRM practices in a Lean company, and identify those practices that are required for successful and sustainable Lean implementations. Based on a sample of thirty employees (15 production and 15 office workers) of a Canadian aerospace company who participated in our interviews, we performed a qualitative analysis to identify prominent HRM practices. We found seven HRM practices that are of major importance in the context of Lean (i.e., job security, communication, fairness, supervisor/manager support, training, occupational health and safety, and respect). Our findings show that these practices are equally relevant to both production and office workers, and suggest that managers play a decisive role in implementing these practices, and in providing the right environment to effectively promote workforce commitment.

Keywords: lean management; sustainability; human resource management practices; continuous improvement; employee commitment; aerospace industry

4.1 Introduction

Lean management is an approach that allows companies to reduce costs and improve quality to achieve significant growth (Liker and Morgan, 2006; Sisson and Elshennawy, 2015). As such, myriad organizations across many different sectors are deploying resources and effort to implement Lean management principles. However, the adoption of Lean within a company is not straightforward (Madsen et al., 2019) because it is not just a set of tools to be used, but rather a process that requires the active participation and commitment of all the members of the

organization, with special emphasis on the employees, as they are the ones doing the actual implementation work.

Although the interest in Lean is ever-increasing across all industries, and the academic and practitioner literature on its implementation is widely available, it is well known that a considerable number of organizations face serious struggles in their quests to successfully incorporate Lean principles. Scholars reported a very poor success rate of Lean implementation (at most 10%), with most companies eventually failing in their attempts and subsequently reverting to more traditional management approaches (Jadhav et al., 2014; Zhang et al., 2017). Studies investigating this low rate of success indicated that the common root cause of failure is, among other factors, related to the lack of employee commitment (Ingaldi et al., 2018; Rose et al., 2016; Salonitis and Tsinopoulos, 2016), which is considered a determinant factor and one of the most challenging to address. It is, therefore, crucial to focus on human resources (HR) and dedicate even more attention to human resource management (HRM) practices that can boost employees' motivation, and thus their commitment to the continuous improvement process, by which an organization can sustainably and progressively improve their products, services, or processes (Kariuki and Mburu, 2013).

Employee commitment is critically important in the context of Lean because committed employees support organizational change, identify with the organization's culture and values, and defend organizational goals (Scott-Ladd et al., 2006; Johnson and Chang, 2006). More importantly, research has shown that committed employees contribute significantly to the success and sustainability of Lean (e.g., Angelis et al., 2011; Hines, 2010), and consequently HRM practices can play a fundamental role in achieving and maintaining employee commitment. In fact, establishing HRM practices that are strategically focused on employee commitment is likely to increase the level of involvement of employees in the Lean project (Lamba and Choudhary, 2013; Lee et al., 2018).

Implementing a new management approach such as Lean requires changes within the company, including modifications in the production system, organizational structure, and HRM practices in order to align with the new business philosophy. Although it is conceded that change and adaptation of HRM practices are necessary requirements to organizational change, they have rarely been explicitly addressed in Lean studies. The few works that investigated the putative associations

between HRM practices and Lean identified several practices that may pave the way towards a successful Lean transformation (Bonavia and Marin-Garcia, 2011; Forza, 1996; Martínez-Jurado et al., 2013). Although promising, these practices vary from one study to another, yielding no consensus on the practices that should be considered to facilitate the Lean transition. Additionally, some works on Lean do highlight the importance of HRM practices but then move to immediately focus solely on the technical aspects. The aim of the present study is therefore to explore the HRM practices that promote HR commitment for a successful and sustainable Lean transformation in the aerospace industry. The remainder of the paper is organized as follows. Section 4.2 provides a succinct literature review of Lean, HR, and HRM practices. Section 4.3 describes the data collection process and methodology used in our study. Section 4.4 presents our results, highlighting a set of HRM practices to be considered in the context of Lean, followed by a thorough discussion of our findings in section 4.5. Finally, section 4.6 provides conclusions.

4.2 Literature review

4.2.1 Lean culture

Lean management is Toyota Motor Corporation's managerial system, which many companies have been trying to replicate for more than three decades (Zarbo, 2012), as it provides several effective tools and practices for achieving business excellence (Albliwi et al., 2015). Its main objective is to eliminate all non-value-added activities without compromising quality or delivery times (El-Khalil, 2020; Liker and Hoseus, 2008).

Lean culture is an organizational culture referring to a set of shared beliefs, values, and assumptions based on eliminating waste and fostering continuous improvement (Osman et al., 2021). The introduction of Lean culture implies a new way of thinking and doing things so that all personnel must focus on making constant improvement efforts to enhance organizational performance. All members of the company, including employees, managers, and leaders, must be involved and support each other to achieve this objective. There should be no rivalry since all members work for a common goal (Oláh et al., 2017). Managers and employees should work as a team by exploiting each other's strengths. Moreover, Oláh et al. (2017) argued that it is imperative in a Lean context to guide and develop employees to make them more productive and engaged.

Through using Lean principles and tools on a day-to-day basis, companies can gradually change the mindset of their workers to focus on daily improvements. Among the widely used Lean tools, we find the 5S tool (sort, stabilize, shine, standardize, sustain), which is a series of activities for eliminating wastes that contribute to errors, defects, and injuries in the workplace, while enabling employees to continually improve the workplace (Coetzee et al., 2016; Dombrowski and Mielke, 2013; Liker, 2009). Plan-Do-Check-Act (PDCA) is another tool used to operationalize continuous improvement. It is a four-step cyclical process that can be synthesized as follows: Plan (study the current situation and develop solutions for improvement), Do (deploy the pilot measures on a trial basis), Check (examine the effect of changes to verify if the desired result is achieved), and Action (standardize on a permanent basis) (Dombrowski and Mielke, 2013; Liker, 2009; Lodgaard et al., 2016). With regard to Lean principles and to the respect for people particularly, all employees are respected, irrespective of their role and position within the organization, and are encouraged to contribute ideas to improve productivity, efficiency, and safety in their daily tasks (McMahon, 2014; Salah and Sayed, 2015). Therefore, with the integration of these tools and principles, a Lean culture can progressively emerge within the company and become a sustained habit. Nevertheless, in addition to the continuous improvement process, a successful Lean culture also requires an emphasis on respect for people, HRM, a long-term vision, a certain level of patience, a shared vision of organizational goals, and a well-thought-out upfront planning (Ahmad, 2013; Benkarim and Imbeau, 2021; Grove et al., 2010). These elements must be taken into consideration before and during the environment's transformation to anticipate any possible issues that may arise in the Lean implementation.

Overall, a successful Lean culture refers to a work environment that is attentive and responsive to both technical and social components (Salentijn et al., 2021). The technical dimension comprises tools, equipment, and processes, whereas the social dimension encompasses people and their interrelationships (Hadid et al., 2016). In this work environment: (1) all workers are encouraged to participate in improvement projects and undergo training to understand Lean methods, and (2) leaders adopt a participative style to promote open and proactive attitudes from all staff (Alkhoraif and McLaughlin, 2016).

4.2.2 The human aspect of Lean

A Lean company is an organization that recognizes people as its most valuable resource because of their unique and irreplaceable contribution in creating value (Dibia and Onuh, 2010; Karekatti, 2021). In fact, the aspect that distinguishes Toyota from other organizations is its unique production system, which integrates people with its technical system (Jayamaha et al., 2014). However, the academic literature has devoted most of its attention to the adoption of Lean tools while largely overlooking the social dimension (Hines, 2020; Taylor et al., 2013; Varela et al., 2019). Only recently have some researchers started to recognize the important contribution of the human aspect, including the role of employees and the way they influence the adoption of Lean (Magnani et al., 2019). This has led to perceiving Lean as a sociotechnical system, that is, not only a process-oriented strategy but also a people-based system (Magnani et al., 2019).

An appropriate environment that can support the Lean journey requires the commitment and active participation of employees (Al-Najem et al., 2012). In this study, employee commitment refers to the affective dimension of organizational commitment, and is defined as the employee's emotional attachment to, identification with, and involvement in the organization (Meyer and Allen, 1991). Angelis et al. (2011) found that among the different forms of commitment (i.e., affective, continuous, and normative), affective commitment is the only one related to Lean. This is because affectively committed employees are willing to be part of the organization in such a way that they adhere to its management system and support change and organizational goals (Cohen, 2007; Meyer and Allen, 1991; Morin et al., 2010).

Several authors argued that genuine continuous improvement can only be achieved through employee commitment since employees are the ones responsible for this improvement, its establishment, and sustainability (Alkhoraif and McLaughlin, 2016; de Menezes et al., 2010; Dibia and Onuh, 2010). To achieve such commitment, employees must understand the company's goals and the objective of Lean improvements, have been trained in the requisite tools and techniques, and have some decision-making latitude to be motivated to continually pursue improvement efforts (Ahmad et al., 2017). Leaders need to accompany workers in the transformation by providing them with the necessary resources and fostering their sense of belonging to the company. If employees feel unsupported, they will revert to their old work habits, leading to an eventual failure of the improvement process (Ahmad et al., 2017). Leaders who create supportive structures, provide

constructive feedback, allocate time, and treat workers fairly might catalyze the change and achieve better implementation (Aij and Teunissen, 2017).

4.2.3 HRM practices in the Lean context

Given that HR are a source of competitive advantage, HRM practices play a key part in a company's transformation. When changes in business function are not accompanied by changes in HRM practices, transition to Lean is likely to fail (Wickramasinghe and Wickramasinghe, 2020). There is a wide spectrum of HRM practices that can get employees to support organizational goals. However, not all HRM practices are related to Lean. Bonavia and Marin-Garcia (2011) highlighted the practices of training and job security. Forza (1996) reported training, recruitment, compensation, and promotion. Olivella et al. (2008) synthesized a set of common work organization practices in Lean companies, namely: continuous training and learning, teamwork, participation and empowerment, and compensation and rewards. Martínez-Jurado et al. (2013) also proposed some key management factors for the adoption of Lean: training, communication, rewards, job design, and work organization.

Although there is no consensus on which HRM practices should be adopted in the context of Lean, training and employee participation appear to be important components of the Lean system (Gao and Low, 2015).

Due to the absence of a definite and precise list regarding which HRM practices to consider in the Lean context, researchers advise managers not to rely solely on the literature to select the HRM practices to implement in their organization (Boselie et al., 2005; Heinzen and Höflinger, 2017), but also consider their appropriateness to the organizational context (Heinzen and Höflinger, 2017), since the effectiveness of HRM practices largely depends on their alignment with the values and the context in which the organization is operating (Aumann and Ostroff, 2006; Paauwe and Boon, 2018). Several studies conducted in different countries demonstrated that the proper choice of HRM practices allows for effective people management, which in turn allows for better organizational performance. HRM practices foster collaborative employee behaviors (Magnani et al., 2019), remove barriers to organizational improvement (Alkhaldi and Abdallah, 2019), and improve employee buy-in to Lean (Zirar, 2018).

4.3 Research method

Given that the aim of this work was to explore the HRM practices that promote employee commitment in Lean settings, a qualitative approach was deemed appropriate. This approach has been widely used to study HRM practices in Lean across several sectors (Gao and Low, 2015; Zirar, 2018).

4.3.1 Sample

The sample used for this research comprised 30 employees working in a Canadian aerospace company. According to Deslauriers (1991) and Thomson (2011), a sample size of thirty is recommended and considered sufficient when using a qualitative approach. The rationale for interviewing employees was two-fold: (1) they are the most important component for the success and sustainability of Lean, and (2) the organization under study is increasingly interested in improving its employees' commitment to its recently implemented company-wide Lean program.

Of the thirty employees, fifteen were office workers and the remaining fifteen were production workers. Seven of them were females, and twenty-three were males. The age of the participants ranged from 26 to 58 years, and the range of working experience was between 2 and 30 years.

4.3.2 Data collection

Data were collected using individual semi-structured interviews to allow participants to express themselves freely, and thus allow researchers to gather a large number of ideas about the phenomenon under study (Van Campenhoudt et al., 2017). The interviews were conducted face-to-face in the company offices in January 2020. Each interview lasted approximately 60 min and was audio-recorded with the participant's permission. Although participants were free to withdraw at any time, no interview was interrupted nor terminated prematurely.

4.3.3 Interviews

The interview guide was developed using the funnel approach (Oppenheim, 1992), which involves asking a series of questions, starting with general and open-ended questions, and then progressively using more specific and closed questions. The purpose of the first questions was, among other things, to find out the participants' opinions on employee commitment in Lean and to make sure that the interviewees referred to Lean culture in the same way as the researchers: Do you know

what Lean means? Would you describe the Lean project that you are experiencing in the organization? How do you participate in the Lean project (your involvement, role)? Do you think it is possible to improve the level of employee commitment in a Lean program? If so, how do you think this is possible? If not, why not? These open-ended questions allowed for maximum data collection since they were designed to generate narrative responses, which entails development from the respondent (Van Campenhoudt et al., 2017). General questions were asked at the beginning to grant participants the freedom to express their opinions and help them become acclimated to the atmosphere of the discussion (Oppenheim, 1992). These first questions were followed immediately by more specific questions centered on the HRM practices that can promote employee commitment in Lean. For each HRM practice, we asked participants to provide explanations and examples of real-life situations within the organization.

Table 4.1 compiles the practices considered in this work, along with the corresponding sources from which the questions were extracted. For brevity, only three questions were selected for each practice, and they were reformulated to better reflect the context of our study.

Table 4.1 HRM practices and their sources

HRM practice	Source
Respect	Blader and Tyler (2009)
Occupational health and safety	Durand et al. (2004)
Communication	Dennis (1974)
Training	Holgado Tello et al. (2006)
Empowerment	Roller (1999)
Recognition	Siegrist (1996)
Decision-making latitude	Karasek (1985)
Job security	Oldham et al. (1986)
Fairness	Sauley and Bedeian (2000)
Supervisor/manager support	Eisenberger et al. (1986)

We also prepared a list of HRM practices along with their corresponding definitions to ensure that our interviewees had a common understanding of the concepts discussed. A summarized and more concise version of these definitions is presented in the Results section for each HRM practice.

The interview guide was pre-tested with employees of the company where we conducted the interviews, and readjusted accordingly to avoid comprehension issues regarding the terms used, and to ensure that the questions and concepts were clear to our participants.

Throughout the interviews, the interviewer sought to understand and identify which HRM practices the participants believed to be most effective in promoting their commitment to Lean. Participants were encouraged to communicate their insights and opinions openly and freely. In some cases, questions were not asked in the same order set out in the interview guide but were adapted according to the participants' responses to ensure the fluidity of the discussion. However, the interview guide served as a reference to verify and ensure that all themes were covered and that no questions were omitted.

4.3.4 Data analysis

Data analysis followed the three coding stages proposed by Strauss and Corbin (1998). At first, we used open coding by breaking down the data into distinct units and created initial broad codes to label them. As a result, 16 codes were generated including communication, training, personal support, information exchange, occupational safety, and health (OSH), professional support, and recognition. Corbière and Larivière (2014) pointed out that it is evident that many codes typically emerge at this stage. We then used axial coding to establish links between these broad codes, which entailed combining the codes with same meaning to obtain combinations such as communication–information exchange and professional support–personal support. This technique reduced the number of codes to 11. Lastly, we performed selective coding to determine the final codes. Some codes were removed (e.g., recognition and remote working) because they were cited by very few participants. Others were renamed to be more consistent with the information they represented. As an example, “professional support–personal support” was renamed “supervisor/manager support.” Thus, we ended up with seven final codes. Table 4.2 reports the outcomes of these different coding levels.

Table 4.2 Coding levels and identified practices

		Coding						
		Open		Axial		Selective		
Practices	1	Communication		1	Communication- Information exchange- Visibility		1	Communication
	2	Information exchange						
	3	Visibility						
	4	Professional respect		2	Professional respect- Personal respect		2	Respect
	5	Personal respect						
	6	OHS		3	OHS-Psychological health		3	OHS
	7	Psychological health						
	8	Professional support		4	Professional support- Personal support		4	Supervisor/manager support
	9	Personal support						
	10	Job security		5	Job security		5	Job security
	11	Training		6	Training		6	Training
	12	Fairness		7	Fairness		7	Fairness
	13	Recognition		8	Recognition			
	14	Empowerment		9	Empowerment			
	15	Decision-making latitude		10	Decision-making latitude			
	16	Remote working		11	Remote working			

4.4 Results

As a result of the qualitative analysis, we found seven HRM practices that may be of major interest in the context of Lean. These practices ranged from job security and communication to training and respect. In the following paragraphs, we assess the contribution of each of the identified practices to employee commitment and evaluate their relevance for Lean companies.

1. Job security: It is an employee's assurance or confidence that they will keep their current job for as long as they wish (Lucky et al., 2013). All interviewees agreed that job security is paramount to their commitment to the continuous improvement process. One participant explained it as follows: "it is easy to be committed when you are sure that your job will last for many years". Conversely, interviewees reported that the lack of job security may harm their commitment since they may feel unstable and insecure. Job insecurity often results in employees looking for another job, which prevents them from being fully committed to the

company's continuous improvement process. In words of one respondent: "employees who are afraid of losing their job and who feel unstable about their future may be worried and may want to look elsewhere." In this way, respondents recognized job security as necessary to foster their participation in continuous improvement initiatives.

2. **Communication:** It refers to the process of sharing ideas, information, and messages with others in a particular time and place (Mallett-Hamer, 2005). Communication is the second theme reported by our respondents after job security. This HRM practice was deemed by twenty-nine of the respondents to be an essential practice for the commitment to Lean: "communication is important for commitment," "communication is the key." According to the respondents, although management communication is important for commitment, it is also valuable to listen to employees. When employees know that their opinions are heard, their motivation to participate in continuous improvement activities increases. In contrast, participants indicated that not being heard diminishes their degree of commitment and creates a feeling of detachment from the company. They also reported that the content and clarity of the information exchanged are as important as the communication itself: "communication is important, but it also depends on the information provided," "when the information is clear, it is easier to be committed." When analyzing this practice through the lens of workers' daily routines, we found an important dichotomy between office and production workers. Office workers confirmed that they must attend daily morning meetings to discuss work-related matters: "Daily Morning Meetings (DMM) are mandatory in our company," "during the DMM, we review all the problems and situations we face during the day." Production workers, in contrast, are not required to participate in morning meetings: "I don't participate in morning meetings", but they can easily communicate with their supervisors if need be: "he is an ear that is there to listen to us and help us." Although they use different communication approaches, both office and production employees emphasized the role of communication in facilitating their commitment in Lean.
3. **Fairness:** It refers to the fair treatment of human beings in a workplace free from arbitrary decisions, discrimination, and favoritism (Meltz, 1989). Fairness was among the most important practices for Lean according to our participants. Respondents underlined this practice by stating: "I think it is important in all companies and in all spheres that everyone is treated fairly." They mainly evoked the notion of fairness with respect to their colleagues:

“if you perceive that at the same level of employment others have better prospects or conditions than you, you will certainly be uncommitted.” Respondents reported that unfairness can create friction that may negatively affect their commitment: “unfairness can create commitment problems”, “unfairness can cause friction and employees will feel less committed.” Overall, fairness seems to be an important practice to prevent conflict in the workplace and hence improve employee commitment.

4. Supervisor/manager support: It denotes the support provided by supervisors and/or managers to their employees. It is defined generally as the extent to which supervisors/managers care about their employee’s well-being and value their employee’s contribution to the organization (Krishnan et al., 2017). The importance of supervisor/manager support for the self-involvement in Lean was indicated by 27 of the 30 respondents. They focused on support provided by the leader: “if the leader doesn’t support his employees, this can affect their commitment enormously,” “leaders have to support us to be committed; otherwise, it is demotivating.” Respondents believed that the lack of support can hinder their commitment. According to one respondent: “if we feel unsupported, there will be no incentive to be committed to the Lean process.” Moreover, interviewees pointed out the existence of a positive connection between support and performance, such that the more supported, the better they will perform and, therefore, the more committed they will be to the Lean project. Quoting one participant: “I think having support makes you perform better, and if you perform better, you are more committed.”
5. Training: It is defined as a planned learning experience designed to bring about permanent changes in an individual’s knowledge, attitudes, or skills (Campbell, 1971). Training is increasingly recognized as one of the best HRM practices (Chew and Chan, 2008). In the context of Lean, training is considered as a long-term ongoing process that allows creating a different mindset focused on the need for change (Martínez-Jurado et al., 2013). The indispensable utility of this HRM practice to embrace change and adapt to new work methods was noted by twenty-six interviewees. Furthermore, they favored individual training (i.e., adapted to the employee’s needs) over collective training (i.e., given to a group of employees who need to develop the same skill): “I think one-on-one training is more useful.” Regarding the relationship between training and employee commitment, participants were convinced of the positive impact of the former on the latter: “training

makes you skilled, and feeling skilled makes you committed,” “I think that all kinds of training are useful and will definitely increase commitment.” Furthermore, respondents pointed out that to become committed to Lean culture, it is imperative to understand its purpose and functioning by answering questions such as: What exactly is Lean? Why is the company adopting Lean? As one respondent put it: “I think the main point is education on Lean.” Providing answers to these and other related questions is the first step in helping employees understand what they are involved in and figure out how they can participate.

6. Occupational health and safety (OHS): It is defined as the science of the anticipation, recognition, evaluation, and control of hazards arising in or from the workplace that can impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment (Alli, 2008). Interviewees emphasized that safe work environments encourage them to work efficiently, whereas unsafe environments may inhibit their commitment: “if employees feel unsafe working here, they will find it difficult to commit.” Additionally, they made a direct connection between OHS and their commitment to continuous improvement process: “I would say that there is a link between OHS and commitment because if managers care about our well-being, it is because they want us to be committed.” The absence of OHS may have adverse consequences: “the lack of OHS may eventually have an impact on commitment, again only a negative impact.” Although OHS was deemed important by both employee categories, production workers devoted special attention to the need for a safe workplace: “if we don’t feel safe doing the work, I don’t think we are going to be that committed.” Office workers also acknowledged that OHS is far more critical for production workers since they are exposed to more potential hazards: “even if OHS affects me much less in the office, it is still essential to my commitment. But I am sure that if I were a production employee, I would be more affected, and if I had my life put at risk, I am sure that I would be much less committed.” Respondents, therefore, agreed that OHS is another necessary practice in the context of Lean.
7. Respect: It refers to evaluations by people of their standing and acceptance within their group (it is an intragroup evaluative judgment) (Blader and Tyler, 2009). Respect is one of the practices that was determined to be important for a genuine commitment in the Lean journey. Twenty-five participants articulated that respect goes hand-in-hand with their

commitment level: “without respect, there will be no commitment”; “if employees are not respected by their colleagues or supervisor, they will certainly not be committed.” Interviewees believed that respectful workplaces promote employee productivity and commitment, whereas a lack of respect may lead to misunderstandings, tensions, and even conflicts. This can reduce their level of commitment and sense of belonging in the team and in the company in general.

4.5 Discussion

Although the advantages of Lean are well known and largely undisputed, its successful implementation is more challenging. This is where HR play a critical role in Lean and where HRM practices can potentially determine the fate of the Lean journey within a company. Nonetheless, the interactions between Lean and HRM practices are seldom studied in the literature and poorly understood by both researchers and practitioners. It is at this intersection that our study is situated. Specifically, we analyzed the contribution of different HRM practices to lead to the successful implementation of Lean. First, we reviewed the literature on Lean, focusing on its human dimension and the role HRM practices play in its transformation. We found that HRM practices are a fundamental means to increasing employee commitment in Lean. We then set out to identify the most important HRM practices following the three-step process proposed by Strauss and Corbin (1998). Our results highlighted seven practices perceived as key in the Lean context, namely: job security, communication, fairness, supervisor/manager support, training, OHS, and respect. These practices were consistently found to provide employees with the motivation to be committed to the continuous improvement process.

Job security, a commonly used practice in Lean companies (Bonavia and Marin-Garcia, 2011), was unanimously highlighted by our interviewees. They believed that full commitment can only be achieved if they are confident about their job security. This practice is important because if employees do not perceive job security, they may be reluctant to engage in problem-solving (Nahm et al., 2012). Furthermore, job security facilitates the creation of favorable work environments where employees are motivated to participate in efficiency-building processes and continuous improvement initiatives (Signoretti and Sacchetti, 2020).

The literature confirms the existence of a positive association between job security and employee commitment (e.g., Akpan, 2013; Ramay, 2012; Iverson, 1996). This association can be explained

by the fact that employees who are assured of keeping their job in the future are more likely to be attached to the organization (Ramay, 2012). In contrast, employees who perceive a threat to their job security may become less committed to the organization and eventually decide to quit the job (Akpan, 2013; Ramay, 2012), as employees are willing to stay in an environment that provides satisfaction rather than instability (Ramay, 2012).

Participants also highlighted the important role of communication in their commitment to Lean. This practice is strongly related to the effectiveness of continuous improvement activities (Choi and Liker, 1995). Clear communication leads to greater employee participation, increased efficiency in problem solving, improved performance, and stronger relationships (Aij and Teunissen, 2017). Several authors emphasized the important role of clear communication for employee commitment. For example, Kakakhel et al. (2015) pointed out that clear communication promotes employee commitment since they know better what the organization expects of them. Wang (2011) suggested that employee commitment may be strengthened by clear communication about organizational activities, objectives, and intentions. More importantly, an effective communication fostering employee commitment is imperative for successful Lean transformations (Worley and Doolen, 2006). Our results were in accordance with the literature and further showed that communication is important across different employee categories, even though they may use different communication approaches. Office workers have daily morning meetings, whereas production workers are not generally required to attend meetings, but they may communicate with their manager at any time if it is needed. Although there are several ways to establish good communication within the organization (e.g., feedback, social events, emails), interviewees identified morning meetings and the possibility to ask for help as the main communication factors that facilitated their commitment to the continuous improvement process. In essence, both employee categories believed that good and steady communication ensures better alignment with the company's vision and proper functioning.

Furthermore, respondents recognized fairness as an effective practice that allows them to be committed to the continuous improvement process and remain motivated throughout this process. Fairness was markedly important for our participants vis-à-vis their coworkers. Employees' perception of fairness and the way they are treated may greatly affect their desire to work hard on the organization's behalf (Hassan, 2013). Adopting fair treatment of employees will more likely increase their willingness to be involved in Lean projects and participate in continuous

improvement initiatives (Angelis et al., 2011; Swartling and Poksinska, 2013). Angelis et al. (2011) reported a positive association between fairness and affective commitment, which drives employees to identify with the company and become involved in the Lean project, and Alkhoraif and McLaughlin (2016) identified fairness as a catalyst for Lean in organizations. Marksberry (2012) noted that fair treatment is particularly important when employees are experiencing changes in their organization because when employees are poorly or unfairly treated, they tend to be less committed and resist change. Although each employee may have a different reaction towards change, supervisors must adopt a fair approach when making decisions that may impact an employee's work area (Marksberry, 2012).

Evidence shows that supervisor and manager support play a vital role in any change program (Hao and Yazdanifard, 2015). Although our interviewees paid more attention to leaders, managers should also provide support to employees. Indeed, the lack of support from supervisors and management is a commonly reported obstacle towards successful Lean implementation (Lodgaard et al., 2016). Supervisors can show support by being more present through daily meetings for instance, and by acting as role models to illustrate the desired behaviors for the Lean implementation, and managers can be supportive by devoting time to oversee the implementation process and provide employees with the necessary resources to facilitate their commitment (Aij and Teunissen, 2017; Worley and Doolen, 2006). Supported employees tend to value their organization and be more committed to its objectives such that they work hard to achieve them (Alkahtani, 2015). From this perspective, Ferreira (2014) pointed out that employees receiving help and support from their supervisors/managers show a higher level of commitment towards the organization, which likely facilitates the transition to Lean.

Another important practice to recognize is training, which was deemed necessary by most interviewees to embrace change. Training is widely regarded as one of the best HRM practices (Chew and Chan, 2008). Martínez-Jurado et al. (2013) emphasized the ability of training to create a mindset focused on the need for change. Their findings showed that training and communication constitute key elements that should be incorporated at all company levels to facilitate the transition to and sustainability of Lean. In our study we found that participants were convinced of the positive impact of training on their commitment. Several authors found a positive correlation between these two concepts and reported that training should be an integral element in organizations seeking to enhance employee commitment (Muhammad et al., 2021; Ocen et al., 2017; Zehra, 2016). Training

is intended to improve the skills, abilities, and knowledge of employees to perform better in their organization. This consequently leads to an eventual increase in their confidence, motivation, and commitment (Ashar et al., 2013; Halawi and Haydar, 2018). Finally, we also found that participants were more inclined towards individual rather than collective forms of training.

The health of employees and the safety of their work environments were found to be of critical concern to our participants. OHS is considered an important practice in continuous improvement projects (Hafey, 2009; Imbeau et al., 2012). The application of a health and safety program in the Lean context has multiple benefits for both the employee and the company. Healthy employees tend to be more motivated and committed, experience greater job satisfaction, and contribute to higher quality products and services (Alli, 2008). Incorporating safety principles in the work environment further helps in increasing product quality and employee efficiency (Abbassinia et al., 2020), and in reducing waste, including the time lost due to absenteeism, and the cost of compensating for workplace injuries, among others (Jilcha and Kitaw, 2016). Managers who prioritize OHS matters are thus on the right track to eliminate many forms of waste and achieve a successful Lean implementation (Cirjaliu and Draghici, 2016).

As we noted with communication, OHS is another practice that was perceived differently by office and production employees. The latter placed more emphasis on OHS, which was expected given that they are exposed to a wider range of health and safety related risks compared to office workers. As expected, they emphasized the role of supervisors in ensuring the application of safety rules. Suárez-Albanchez et al. (2021) found that the implementation of occupational health and safety policies has a positive impact on employee commitment. The authors also noted that these policies should not only be implemented in the workplace, but also be instilled in workers to increase their commitment. In our study, workers were aware of their responsibilities, the importance of reporting hazards, and the necessity of their involvement in determining solutions to eliminate the associated risks.

Lastly, respect emerged as an effective practice to promote employee commitment in a Lean context. The concept of respect is a pivotal feature of Lean philosophy (Liker and Hoseus, 2008). Respect for employees can be manifested in many ways, including respect for their ideas, efforts, and contributions (Cardon and Bribiescas, 2015). When employees feel that their efforts are not acknowledged, they may become discouraged and have their commitment fail. Employees'

commitment along with their creativity are the main sources of continuous improvement and operational excellence (Romero et al., 2020). Hence, Lean managers should consistently demonstrate respect for employees, e.g., by visiting them regularly and encouraging their participation in improving the workplace and work-related processes.

The seven HRM practices identified in our study have never been reported in a single study, but rather appeared in different research works examining management practices across distinct sectors and industries. For instance, fairness was studied by Angelis et al. (2011), and training and job security were reported by Bonavia and Marin-Garcia (2011). It is obvious that there is no definitive list of HRM practices to be implemented across all Lean organizations. The choice of these practices may depend on the company's sector and context. The practices identified in our study were based on employees of an aerospace company. Organizations operating in the same sector usually share the same external and internal contingencies, and therefore, presumably require similar personnel management practices. Nonetheless, although the adoption of these practices by companies in the same sector may require little adjustment, their generalization calls for future work to identify the adjustments required to adapt them to other contexts.

4.5.1 Contributions

The literature on HRM in the context of Lean is scarce, and even more for aerospace companies. To our knowledge, Martínez-Jurado et al. (2013) is the only work to address the role of HRM practices in the aerospace sector. The research conducted in this study is therefore relevant for both researchers and practitioners. Researchers can build on our findings to explore the contribution of these practices to their specific fields. Both our data and findings give researchers the opportunity to investigate management practices in Lean companies operating in the aerospace sector. In fact, the collection of qualitative data represents another strength of this study. During the individual interviews, many participants provided rich and relevant information related to our research topic through some of the open-ended questions. The analysis of this information helped us understand the participants' perceptions and enrich the interpretation of the results. Another interesting characteristic of our sample is that our interviews were carried out not only with production employees, as is in the case of most studies, but we also included office employees, given that Lean is an approach that applies to all levels and functions of the organization to improve the system in its entirety (Emiliani et al., 2007). It is thus important for researchers to seek to diversify their

samples (e.g., including workers at different levels) to better test the suitability of HRM practices across different environments and worker categories. In our study, the heterogeneity of our sample allowed us to validate the usefulness of the selected HRM practices across different employee categories (office and production). Although here we focused on practices that are generally important to workers from both categories, there were differences in the perception of some practices: communication was more important for office than production workers, and vice versa for OHS. A promising line of future work is to investigate in more depth the differences between office and production workers. It is worth noting that some of the HRM practices that were studied in our work (e.g., fairness and respect) may be also considered organizational values rather than pure HRM practices. Another interesting line of future work is to explore the inter-relationships between HRM practices, values, attitudes, and behaviors, and their contributions to employee commitment towards Lean.

Our findings also provide valuable guidance for Lean leaders and managers to support the transition and long-term sustainability of Lean initiatives within their organizations. Our results may help managers understand the importance of HRM practices in developing their employees' commitment to the continuous improvement process. Our interviewees pointed out the role of the managers in the proper implementation of multiple HRM practices such as training, communication, and respect. When adequately implemented, these HRM practices can potentially lead to a successful transition to Lean.

4.5.2 Limitations

Our research is not without limitations. First, our study is cross-sectional, as respondents were only interviewed once. Since HRM practices may evolve and change over time, follow-up interviews may be required to provide insight into whether the perception of the preferred practices varies over time, i.e., which ones remain the same, and which ones need adaptation. There may be needed throughout the entire Lean journey but require adjustments to be adapted to each Lean stage. A longitudinal study would be more appropriate to shed light on these open issues. Second, the external validity of our findings may be impacted by the small size and specificity of our sample. However, it is worth mentioning that even though all participants in this study were employees of a Canadian aerospace company, they had different demographics (e.g., age and gender) and years of experience.

4.6 Conclusions

This work investigated several HRM practices often reported in the Lean-related literature and identified those that are likely to contribute most to the successful implementation and sustainability of Lean. These practices were identified based on employees of an aerospace company, a sector in which this kind of research is practically absent. Our findings also highlighted the decisive role managers play in the implementation of these practices, and in providing the adequate environment to foster workforce commitment. Overall, by studying the interactions between HRM practices and Lean, a highly underexplored topic, this research improves our understanding of the necessity of these practices in Lean implementations, and provides valuable information to help practitioners pick the practices that best motivate their employees to adhere to the company's Lean culture.

CHAPITRE 5 ARTICLE 3: INVESTIGATING THE IMPLEMENTATION OF TOYOTA’S HUMAN RESOURCES MANAGEMENT PRACTICES IN THE AEROSPACE INDUSTRY

Référence : Amal Benkarim et Daniel Imbeau, publié dans la revue *Merits* le 14 juillet 2022.

Abstract

Many companies try to follow Toyota’s production model to achieve better performance. In their attempts, however, they primarily focus on Lean Production tools, often overlooking the role of employees and HRM practices. In this work, we aim to investigate the implementation of Toyota’s HRM practices in the aerospace sector. For this purpose, we used a qualitative methodology, whereby data were collected through semi-structured interviews with thirty office and production employees from a Canadian aerospace company. Our results show that the company under study adopted several of Toyota’s HRM practices, including training, communication, respect, supervisor/manager support, fairness, and occupational health and safety. These findings underscore the importance of Toyota’s HRM practices in the aerospace sector. Notably, however, not all of Toyota’s HRM practices were adopted, and among those adopted, we found considerable differences in implementation. Overall, our findings provide novel insights into the implementation of HRM practices in the aerospace sector and highlight the flexibility in their implementation to adapt to the context of the target company.

Keywords: lean production; Toyota; HRM practices; continuous improvement; aerospace industry

5.1 Introduction

Toyota is one of the most competitive and successful companies in the world thanks to its reliable products, high productivity and increasing profitability every year (Liker, 2004; Gao and Low, 2015). Its success is greatly attributed to its production system, known as Toyota Production System (TPS) or Lean Production (LP) as popularized by Womack and his colleagues in 1990 (Womack et al., 1990).

LP is an approach that aims to produce the highest quality products while using less resources (less human effort, less time, less manufacturing space, less waste, and less investments in tools and

equipment) (Liker, 2004; Womack et al., 1990; Madsen et al., 2019; Ohno, 1988). More specifically, LP seeks to achieve maximum efficiency while minimizing costs and reducing waste (Martínez-Jurado et al., 2013; Palaniswamy, 2021).

The success achieved by Toyota through the implementation of LP has attracted the attention of companies around the world and inspired them to follow its path. Although Toyota concisely specifies that LP is a socio-technical system encompassing both the technical and social dimensions (Liker and Hoseus, 2008; Magnani et al., 2019), in their adoption of LP, the vast majority of companies place a disproportionate focus on the technical aspects of LP, neglecting its social side, which leads in most cases to their failure (Hines et al., 2020; Pearce and Pons, 2013; Shang and Pheng, 2012).

The technical dimension refers to tools, techniques and processes, while the social dimension refers to people-related issues (Gao and Low, 2015; Hadid et al., 2016). These two dimensions are complementary in the sense that human resources (HR) are the ones who use these tools and techniques to make daily continuous improvements and thus achieve high levels of performance (Shang and Pheng, 2012). The important role of HR in LP has been emphasized by several authors (Liker and Hoseus, 2008; Beale, 2007; Benkarim and Imbeau, 2021; Emiliani et al., 2007; Wincel and Kull, 2016), arguing that it is HR who bring LP to fruition by improving the workflow, solving problems, reducing errors, and eliminating non-value-added activities. Hence, the full benefits of LP cannot be achieved without proper treatment and effective management of HR (Vukadinovic et al., 2019). As stated by the Drexel University School of Education: HR are the machines that make businesses work; human resource management (HRM) is the practice of optimizing those machines for success (<https://drexel.edu/soe/resources/career-path/hrm-vs-hrd/>) (accessed on 17 February 2022).

While HRM practices are recognized as necessary for LP adoption and sustainability, they have seldom been studied in the literature. The few works (Gao and Low, 2015; Martínez-Jurado et al., 2013; Bonavia and Marin-Garcia, 2011; Cardon and Bribiescas, 2015; Signoretti and Sacchetti, 2020) that investigated these practices stressed their contribution to the success of LP initiatives and concluded that companies contemplating a transition from mass production to LP should consider, among other things, the HRM practices used by Toyota, and adapt them to their organizational context and sector of activity.

Previous works have widely investigated LP in the automotive industry, with very little attention paid to other sectors (e.g., aerospace). In this direction, a study carried out by Marodin and Saurin (2013) analyzing 102 articles to identify the domains of research related to the implementation of LP revealed that most works centered on electronic components and automotive sectors, with much less consideration for the aerospace industry. In the same direction, based on a review of 546 works on LP, Jasti and Kodali (2015) reported that only eight of these works addressed the aerospace industry, confirming the scarcity of research on this sector.

Studies on LP in aerospace companies are even rarer when the focus is on HRM practices. To our knowledge, there are only two works that investigated the contribution of HRM practices to LP in the aerospace sector (Martínez-Jurado et al., 2013; Benkarim and Imbeau, 2022). Both studies found that aerospace companies implement several of Toyota's HRM practices (e.g., training, communication, and supervisor/manager support), and further highlighted the importance of these practices during the transformation process. Nonetheless, due to the lack of research on this subject, it remains difficult to assess the projection and elucidate the adequacy of Toyota's HRM practices in other areas or sectors such as the aerospace industry. The aim of this study is therefore to investigate the implementation of Toyota's HRM practices in the aerospace sector. For this purpose, we address two research objectives. The first objective is to assess which of Toyota's HRM practices are adopted in one of the largest aerospace companies in Canada. The second objective is to explore how these practices are implemented.

The remainder of the article is organized as follows. Section 5.2 provides a review of LP in the aerospace industry. Section 5.3 outlines Toyota's HRM approach to provide an understanding of the way Toyota supports and incentivizes its employees to participate in the continuous improvement process. The methodology used in this research is described in the section 5.4, and the findings are presented in the section 5.5. Section 5.6 provides a discussion of our results, including challenges for future research. Finally, section 5.7 concludes the paper.

5.2 LP in the aerospace industry

The transferability of LP practices to the aerospace industry has been debated in the literature (Crute et al., 2003). Prior research highlighted the challenges and difficulties in transferring LP practices to an industry with considerable differences (Crute et al., 2003; Amrani and Ducq, 2020). The widespread barrier to implementing LP in aerospace is the belief that LP is, to some extent, an

“automotive industry idea” and that cannot be applied to the aerospace sector (Martínez-Jurado and Moyano-Fuentes, 2014).

The implementation of LP in the aerospace industry started to receive considerable attention in the early 1990s when some LP-based aerospace companies emerged to confirm the adaptability of the aerospace industry to adopt LP practices (Amrani and Ducq, 2020; Bozdogan, 2010). These companies proved that, although LP was originally developed in the automotive industry, its principles can also be applied in the aerospace industry. This in turn enabled them to improve their outcomes and their competitive abilities (Martínez-Jurado and Moyano-Fuentes, 2014; Bharadwaj et al., 2019). Similarly to other countries, a number of aerospace companies in Canada also adopted the LP approach (e.g., Bombardier Aerospace, Pratt and Whitney Canada) (Amrani and Ducq, 2020). In fact, the aerospace industry in Canada is a major source of employment, productivity, research, economic development, and trade (https://capitalhillgroup.ca/our_expertise/aerospace-sector) (accessed on 3 March 2022). According to the State of Canada’s Aerospace Industry (https://www.ic.gc.ca/eic/site/ad-ad.nsf/eng/h_ad03964.html) (accessed on 3 March 2022), this sector contributed over \$ 22 billion to the gross domestic product (GDP) and created close to 207,000 jobs in 2020. The Canadian aerospace industry is a world leader in several areas (e.g., in terms of export intensity and trade diversity) and an important contributor to the domestic economy (Theckedath, 2013). The interest of this industry towards LP comes from the fact that they seek to maintain their competitiveness and continually reduce their production costs. Nevertheless, most companies, whether in Canada or elsewhere, have not achieved the results expected following LP implementation (Martínez-Jurado and Moyano-Fuentes, 2014; Secchi and Camuffo, 2021).

Research suggests that the main reason behind this is that companies are generally more interested in eliminating waste and improving efficiency, while less consideration is given to the human factor and the implementation of HRM practices that support the LP transformation (Martínez-Jurado and Moyano-Fuentes, 2014; Bouranta et al., 2021; Varela et al., 2019).

5.3 Toyota’s HRM approach

The driving force behind LP is Toyota’s on-going investment in the management of its HR, which promotes their adherence to the company’s goals and values (Liker, 2004). Toyota has established a set of management practices that is widely known to be effective in incentivizing employees to be proactive in the work environment and to continuously seek ways to participate in the

improvement process. These practices include training, communication, respect, empowerment, job security, recognition, supervisor/manager support, fairness and occupational health and safety.

1. **Training:** Toyota stipulates that employees can only perform and make improvements if they are trained. For this reason, it provides them with different training approaches to improve their skills, including classroom training (i.e., developing an understanding of basic concepts), on-the-job development (i.e., learning by doing) and personal training opportunities (i.e., training is requested by the employee to meet a specific learning need) (Liker and Hoseus, 2008). These trainings are designed to educate employees about the main challenges and opportunities of LP adoption and to provide them with the necessary knowledge on LP principles and methods (Signoretti and Sacchetti, 2020). Once employees understand the objective of LP and learn how to use its tools and techniques, their participation in the continuous improvement process becomes easier (Signoretti and Sacchetti, 2020). Classroom trainings are very helpful in providing initial awareness and information about basic LP concepts, particularly about the concepts of value-added activities and waste. This form of training, however, does not lead to culture change (Soliman, 2015). Theory-based trainings cannot alter employees' behaviors or habits and are unlikely to motivate them to make improvements or get involved in the new system (Soliman, 2015). According to Toyota, actual learning comes from performing (on-the-job development), which enables employees to embrace the new work approach and truly understand LP and its goals (Liker, 2004; Liker and Hoseus, 2008). Liker (2004) emphasized that, especially in the beginning stages of lean transformation, there should be at least 80 percent doing and 20 percent classroom training and informing. Overall, adequate and effective training in the context of LP is training followed by immediately performing or performing followed by immediate training (Liker, 2004);
2. **Communication:** Toyota recognizes the importance of sincere communication and is aware that communication is a two-way street that requires information sharing between team members and managers. In this line, Alex Warren, the former Executive Vice President of Toyota Motor Corporation Kentucky stated: "At Toyota, we simply place the highest value on our team members and do the best we can to listen to them and incorporate their ideas into our planning process" (Liker, 2004). Toyota believes that two-way communication, especially face-to-face communication at Gemba (the place where the work occurs) is

generally more effective since it provides opportunities to listen to employees and give them immediate feedback which can help in addressing process failures and improving tasks (Liker and Hoseus, 2008). It should be noted that the communication system at Toyota is extensive and multifaceted. Typical internal communication methods include newsletters, bulletin boards, meetings, instant messaging, and the like (Liker and Hoseus, 2008), allowing the sharing of ideas, information, and opinions. Toyota managers believe that communication is the key to keeping employees working effectively within the company (Liker, 2004);

3. Respect: According to Toyota, respect is the foundation of relationships with colleagues and with others (Toyota Global Site, 2022). Toyota considers that everyone needs to be respected for both what they contribute and who they are, including their ideas and their cultural and personal beliefs. Toyota describes respect as follows: “through respect, we accept personal responsibility for what we do and build understanding with those around us” (Toyota Global Site, 2022). More precisely, Toyota demonstrates and promotes respect by treating employees fairly and by providing them with continuous training to improve their skills and knowledge, and thus grow to their fullest potential (Liker and Hoseus, 2008; Liker and Convis, 2012). Respect for employees at Toyota also means listening to and considering their opinions, valuing their abilities and qualities, and providing them with clear objectives to facilitate the achievement of their tasks (Liker, 2004; Orzen and Paidar, 2017). According to Toyota managers, important and true respect is shown through the problem-solving process (Womack, 2007). Through this process, supervisors and employees collaborate to identify the root causes of a problem and determine the optimal solution to eliminate it. Nevertheless, supervisors are not close enough to the problem to know all the facts and often rely on employees and their proficiency to find the best solution. This approach is considered as the highest form of respect because it demonstrates the value and importance placed by the company on the employees’ knowledge and role (Womack, 2007). On the other hand, there are two major elements that are seen as disrespectful in the context of LP and should be avoided: (1) treating employees as if they are wasting their time, and (2) ignoring their contributions (Liker, 2004; Coetzee et al., 2016). Respect is, therefore, a pivotal feature of LP philosophy (Bauer et al., 2018);

4. Empowerment: Toyota takes employee empowerment very seriously, recognizing that this practice leads workers to reach their full potential, and thus make the greatest contribution possible (Liker, 2004; Pal, 2019). Empowering employees consists in delegating certain functions and tasks to them and giving them the autonomy they need to do their job (Doustar et al., 2014). For example, they are usually asked to eliminate waste, solve work-related problems, prevent new problems from occurring, and enhance productivity, among others (McMahon, 2014; Olivella et al., 2008). In other words, they are asked to be proactive and find ways to improve the company instead of waiting for the manager to direct them all the time (Liker and Hoseus, 2008). Empowerment is important because it promotes ideas, creativity, and innovations in the workplace (Helmold, 2021). Another example of empowerment at Toyota is that employees can stop the production line in the event of a problem so that defects are not included in the final product (Emiliani et al., 2007; Liker and Convis, 2016). For this purpose, the role of the supervisors is twofold: (1) they should teach employees to stop the line when a defect occurs and (2) they should involve employees in discovering and correcting the root cause of the defect. In this way, any worker can stop the line at the right time, whenever necessary (Gao and Low, 2014). Overall, at Toyota, employees are not only empowered to find ways to improve the organization, but they are also provided the framework and coaching to be successful at it;
5. Job security: Toyota is dedicated to ensuring the long-term job security of its employees: “when you work for Toyota, you have job security” (Liker, 2004). Its HR department plays a major part in ensuring job security through its advanced methods that allow for hiring the right employees and forecasting workforce needs (Liker and Hoseus, 2008). Companies usually hire employees to fill an immediate need, which may be considered as a successful short-term strategy. Toyota’s method, however, seeks to align the competencies needed by the organization with those of the candidate (i.e., abilities and skills). This allows the company to successfully meet both the immediate need and the characteristics required to move employees into new roles and positions, thereby ensuring long-term job security (Liker and Hoseus, 2008). Toyota management believes that good results are associated with employment security and considers this security alleviates employee concerns about the company’s transformation and generates a strong workforce commitment that drives them to be involved in LP (Liker, 2009; Saurin et al., 2020; Yadav et al., 2010);

6. **Recognition:** This practice is crucially important in boosting morale and creating goodwill between employees and managers (Bowen, 2000). In that sense, Toyota takes great interest in reward/recognition programs to ensure that its employees remain loyal to the organization and aligned with its goals. At Toyota, recognition/rewards are not individual as they are in most companies, but rather group-based, seeking to build team spirit (Liker and Morgan, 2006; Sakikawa, 2022). Moreover, rewards tend to be increasingly process-oriented rather than results-oriented, and include small funds for team activities, group performance bonuses and quality circle awards (Liker and Hoseus, 2008). Even though rewards for creative ideas, suggestions, or opinions may, in most cases, be symbolic, they are needed to motivate employees to continuously make improvements in their workplace (Liker, 2004; McMahon, 2014);
7. **Supervisor/manager support:** One of the reasons LP works at Toyota is that all members support each other (Liker and Morgan, 2006; Helmold, 2020). Employees working in teams support each other in accomplishing common tasks, and management supports these teams by providing them with the necessary resources (e.g., time and materials) to actively achieve their objectives (Worley and Doolen, 2006). Toyota promotes teamwork, particularly in problem-solving because it believes that teams have better insights into the cause of the problem and can come up with effective solutions and improvement suggestions. Here, the supervisor's role is to provide support to solve the problem and encourage cooperation among team members (Liker and Hoseus, 2008; Liker and Convis, 2012). In this regard, Toyota elaborated several strategies to support teamwork, among which we find: cross-functional work teams, where employees with different functional expertise work together to achieve a common goal, and the team action plan which assigns specific instructions to each team member to perform tasks efficiently (Liker, 2004; Liker and Hoseus, 2008; Liker and Hoseus, 2010). In reference to Toyota, Liker (2004) pointed out that management takes seriously its responsibility to effectively support employees and help them get involved in the change;
8. **Fairness:** Fairness at work is among the factors that allow Toyota to succeed (Al-Najem et al., 2012; Husar, 1991). Its LP culture based on equal and fair treatment pushes supervisors/managers to treat everyone fairly at all times and under all circumstances (Convis, 2001; Marksberry, 2012). Fairness at Toyota encompasses multiple aspects (e.g.,

compensation, working conditions and environment, equipment and materials, and personal treatment) and is demonstrated in several ways. For instance, employees cannot be promoted or receive pay raises without HR approval because Toyota believes that if employee compensation and promotion are determined solely by the supervisor, individuals may have difficulty understanding and trusting the company's promotion policy, which may affect their sense of belonging (Liker and Hoseus, 2008). Moreover, dissimilar from most companies where HR personnel spend most of their time in front of a computer screen, at Toyota, HR staff also make visits to different departments to verify that everyone is treated fairly on the job and works under the right conditions (Liker and Hoseus, 2008; Liker and Convis, 2012). Toyota's approach is to create human resource systems and policies that enforce fairness in the workplace in order to incentivize employees to not only identify problems but also take responsibility to solve them (Liker and Convis, 2012). In such a fair work environment, employees tend to be more responsive and more involved within the company (Liker and Convis, 2012; Boulagouas, 2021);

9. Occupational health and safety (OHS): Toyota managers place a high priority on employees' health and safety (Liker and Hoseus, 2008; Liker and Hoseus, 2010; Abouhenidi, 2014). They promote preventive safety measures, safety awareness and ergonomic awareness to alert employees of abnormalities with potential health and safety consequences (Liker and Hoseus, 2008). They also implemented various formal mechanisms, such as health and safety committees that respond on the same day when a health or safety issue occurs (Liker and Hoseus, 2008). Moreover, at Toyota, safety meetings between employees and their supervisors are scheduled on a daily basis at the beginning of the shift. These group meetings last five minutes, a period during which the production line is stopped in order to communicate safety information and discuss work-related hazards (Liker and Hoseus, 2008; Alpenberg et al., 2009). The purpose is, on the one hand, to keep all employees focused on safety, and on the other hand to allow group leaders to find out if there are any issues or concerns to report on the company dashboard. The information listed in this dashboard is reviewed monthly during each department's safety meeting and then shared with all department managers. This approach serves to hold managers and group leaders accountable (Liker and Hoseus, 2008). Toyota makes major efforts to ensure that employees are physically safe and mentally healthy in their

workplaces so that they can be involved in making improvements (Liker, 2009). The focus of Toyota on occupational safety and health stems from the fact that, without it, employees cannot be truly committed and involved in the LP project (Liker, 2004).

Many of Toyota's HRM practices are adopted and implemented by companies in many other industries including the ceramic tile industry (Bonavia and Marin-Garcia, 2011), aerospace industry (Martínez-Jurado et al., 2013), construction firms (Gao and Low, 2015), and electronics manufacturing (Worley and Doolen, 2006). Training in particular is a practice that is found in the majority of the sectors of activity since it is paramount for understanding the objective and the necessity of the LP implementation.

5.4 Research methodology

5.4.1 Research design

This study aims to explore which of Toyota's HRM practices are used in a large company of the aerospace sector and how they are implemented. For this purpose, we used the qualitative method of research. A primary advantage of using a qualitative approach is to explore understudied research topics and gain a deeper understanding of people's experiences, intentions, perceptions, and attitudes (Kemperaj and Chavan, 2013), which is in alignment with the objectives of this study.

Data were collected in January 2020 using individual semi-structured interviews with 30 employees (15 production and 15 office workers) working in a Canadian aerospace company specialized in designing and manufacturing business jets. The company has several sites in Canada and abroad, with a workforce of over 13,000 employees. Of our 30 participants, seven were females and twenty-three were males. Their age ranged from 26 to 58 years, and their working experience ranged from 2 to 30 years.

Each interview was conducted face-to-face and lasted approximately 60 min. All of the interviews were recorded with the participant's permission and transcribed immediately afterward. Transcripts were designated by alphanumeric codes, which we assigned to participants in order to preserve their anonymity. These codes, ranging from E1 to E30, were distributed following the chronological order of the interviews, with code E1/E30 referring to the first/last performed interview.

To build the interview guide, a list of questions was developed based on the literature on LP. This procedure is used by researchers who draw on the content analysis method (Bernard et al., 2016). We used a funnel interview method, starting by posing general open-ended questions to end up with more specific and closed questions (Bernard et al., 2016). We started the interviews by asking general and open-ended questions with the purpose of gathering as much information as possible about our research topic. These questions included, for example: How would you describe the LP project that you are experiencing in the organization? What were the management practices that fostered your commitment to LP? What practices does your supervisor adopt to enhance and/or maintain this commitment? These were then followed with more specific questions about HRM practices, including questions about Toyota's HRM practices (see the previous section) to find out if these practices match those of the company under study and to assess the differences and similarities in their implementation. Furthermore, as recommended by Hermanowicz (2002), we concluded the interviews by offering our participants the opportunity to add information about aspects not covered, and to give their opinion on the interview and the topic at large. This approach gives participants the freedom to share additional information or issues that may be valuable for the research (Hermanowicz, 2002). Finally, the questions included in the interview guide were pre-tested with employees of the company where we carried out the interviews and readjusted to ensure that the questions were clear to our participants, well-sequenced and organized, and encourage them to open up (Hermanowicz, 2002).

For more details on the research method, see Figure B.1 and Table B.1 (in the appendix). Figure B.1 illustrates the six steps followed in the research method, and Table B.1 provides a description of each of these steps.

5.4.2 Data analysis

Data analysis followed the three coding techniques proposed by Strauss and Corbin (1998) as illustrated in Figure 5.1.

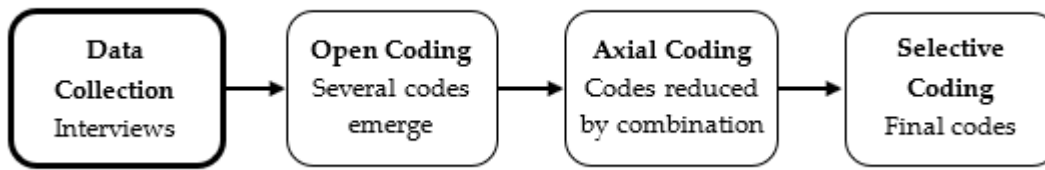


Figure 5.1 Overview of the coding process (adapted from Creswell and Poth, 2017)

After gathering data through interviews, we proceeded to the data analysis, starting with open coding. With open coding, data were analyzed, conceptualized, and categorized. The objective of this stage is to identify the central idea of each segment of a sentence or paragraph and develop a code to describe it. Several codes referring to HRM practices implemented in the organization under study were generated (e.g., communication, information exchange, training, and recognition). In the next step, axial coding was used to assess the relationships between the different codes identified in the open coding level. In the axial coding, codes with similar meanings were combined and grouped (e.g., communication-information exchange). At last, selective coding was conducted to determine the core and final codes related to the purpose of the present study.

5.5 Research findings

As a result of the qualitative analysis, we identified several HRM practices implemented in the aerospace company under study. Below, we list each of these practices and describe their implementation.

1. Training: Respondents reported that they had attended several forms of training within the company, including (1) classroom-based training, which is typically designed for a small group of employees and often focuses on developing basic knowledge and skills, (2) experiential learning, where employees learn by doing the tasks, and (3) individual training, designed to develop a specific skill or behavior related to the employee's work. According to our participants, many of the trainings they received were related to health and safety, quality, technical aspects, and to the LP project in general. It is important to note here that we found some differences between the trainings received by office and production workers. Production employees attended a variety of trainings that aim to facilitate their understanding of the LP philosophy, including lectures, demonstration videos, hands-on

activities, and case studies. As in Toyota, employees confirmed that they are applying the concepts learned in the workplace: “during the training sessions, you consider what you are actually doing on the shop floor [...] after those trainings, you put the knowledge into practice”. On the other hand, office employees received less training on LP: “there is not a lot of training or understanding on LP,” resulting in poor comprehension of the purpose of the LP project. Some of them believed that LP tools need to be further explained by referring in particular to the dashboard: “we should understand what exactly is the dashboard and why we need it, so that, at the meetings, we will not be mere spectators, we will be able to participate in filling it out and continuously improving it,” “we received courses about LP, and our manager asked questions about what is LP and how to fill in the LP dashboard, [...] but I still think that this is not well communicated or explained”. Although the components of the dashboard (health and safety, quality, productivity, human development, and costs) are discussed during the team meetings, its objectives and related key performance indicators are not fully explained to all office employees. Only a small number of employees from each team is selected by the company to receive appropriate training on the dashboard in order to be able to manage, monitor, and update it. Another reason why office employees tend to have difficulties understanding LP is that, although they are trained on some of its tools (e.g., 5S is a system to reduce waste and optimize productivity through maintaining a clean and orderly workplace (Liker, 2004), and standardized work is a process for documenting the steps of a job task and the sequence in which those must be completed (Liker and Hoseus, 2008); these learnings are usually not applied in practice due to reasons such as non-prioritization of these tools in the execution of their tasks, lack of awareness of the use of these tools, and lack of follow-up by supervisors and management: “the tools we learned often do not become our priorities and are put aside due to lack of time, lack of resources, lack of all sorts of things,” “there are tools to improve the workplace, but there is no follow-up or involvement from the company”;

2. Communication: Interviewees indicated the existence of good internal communication within the company, with a difference in its implementation among office and production employees. Office employees reported that they should attend daily morning meetings to exchange information with their colleagues and supervisor, and discuss work-related issues:

“during the meetings, we review all the problems and situations we face during the day”. During these meetings, employees may request assistance with their workload and ask for information that may help them complete their tasks on time, thus avoiding waste of time and resources. Moreover, office employees stated that the feedback received from their supervisors was useful for achieving their tasks. Other than in meetings, however, this feedback was not always immediate since it took place mostly over email. In contrast, production employees were not required to attend morning meetings, as communication among co-workers or with the supervisor typically occurred face-to-face on the shop floor to address work-related issues or improve the performance of their work duties. Moreover, they stated that they can easily communicate with their supervisors at any time if they need clarification or assistance in the accomplishment of their work: “our manager listens to our concerns and understands our issues,” “supervisors often understand everything we say because they are with us on the shop floor; we talk to them when we have a problem, and they help us with our work”. Production employees considered that the information communicated by their supervisor was valuable and useful because it allowed the production cycle to run smoothly and effectively;

3. Respect: Several interviewees reported feeling respected in the workplace, and most of them never experienced any problems in this regard. Although there may be differences of opinion regarding a particular issue or way of working, respondents revealed that, ultimately, everyone respects each other: “I think that respect is there all the time,” “we can’t agree on everything, there are different points of view, but in the end, we all respect each other’s points of view, and we all respect each other”. Respect is demonstrated by professional behaviors such as not talking down to employees, being understanding, listening to their opinions, and considering their ideas. For instance, when a complicated issue arises, whether for office or production employees, supervisors often interact with them to get their input and work out a solution together. Moreover, when an employee makes an error or oversight (e.g., failing to complete an urgent task on time, missing an important meeting, or not communicating critical information on schedule), the reaction of supervisors is professional and polite (e.g., using appropriate language and the correct tone of voice), focusing on understanding the reasons to quickly address the problem. Finally,

interviewees indicated that respect should be mutual to create a positive atmosphere at work, and hence enhance the performance and productivity of all organization members;

4. Supervisor/manager support: All interviewees recognized that they were supported in accomplishing their work in meaningful ways: “we are supported by our management [...] this helps us to do our work and perform better”. Respondents indicated that the support of their managers/supervisors can be presented in different forms, either by providing them with the tools they need to carry out their tasks correctly, by advising and guiding them, or by referring them to the right persons who can help with their issues. They furthermore stated that seeing their supervisors do their best to support them increases their willingness to address ongoing issues. Mutual support between co-workers was also pointed out by the interviewees who underlined that the company fosters this way of working to consolidate relationships in the workplace and thus achieve maximum efficiency.

Regarding the worker category, production employees work as a team and cooperate with each other to solve problems and get the job completed in time. New hires or less experienced employees often seek help and guidance on complex tasks from more senior team members: “if I have a work problem, I will go to the more experienced co-workers and ask if they did that task before, how exactly they did it; I will ask for help”. Moreover, production employees reported that their supervisor was usually present on the shop floor to monitor the progress of their tasks, observe how they carry out their work, and assist them when necessary. The supervisor ensures that employees have the necessary tools, products, and parts to complete their job. Office employees also frequently work in teams. The latter stated that technical support comes more frequently from their peers than from their supervisors: “I will go and ask for support from my co-workers, I will not go to my supervisor all the time”. However, they also relied on their supervisor when it comes to coordinating work and escalating issues that require higher-level support;

5. Fairness: According to our participants, employees are all equally treated: “we are all treated the same way,” “all people are equal, and all people are subject to the same rules”. One of the processes that the company under study implemented to ensure fairness in the workplace was the performance management process (PMP). PMP is a process by which supervisors and employees meet annually to evaluate employees’ performance and discuss

their accomplishments and overall contribution to the organization. Following these meetings, employees are asked to perform a self-evaluation rating, which is then reviewed by the HR department and management to fairly determine salary increases. Another way fairness is put in place by the company is by providing employees at a similar job level with the same benefits and resources, including equipment, physical workspace, and working conditions.

Interviewees stated that their company promotes fairness to avoid conflicts and tensions in the workplace. In other words, if employees perceive that management favors one worker over another, non-cooperative behaviors may emerge, and employees' continuous improvement initiatives and efforts may be reduced;

6. Occupational health and safety (OHS): Our participants perceived that their company is concerned with occupational health and safety issues and is well-equipped to provide a safe workplace: "the company takes employee health and safety seriously," "we see that health and safety is an important aspect of our company, and that many actions are taken in this area". Respondents articulated that the establishment of OHS within the company is reflected in several ways. For example, OHS is the first item presented in the dashboard and the first point addressed in group meetings. Two major questions are asked at the meetings regarding this item. The first question is: "did you observe any safety issues or unsafe acts?" When there is a report about an OHS-related concern (e.g., not enough fire extinguishers available, presence of chemicals or other hazardous materials in the office, expired items in the first aid kit), the staff responsible for the dashboard informs the health and safety committee to take the necessary actions. The objective of this question is to involve employees in OHS and raise their awareness. The second question (i.e., "did an incident or accident occur the previous day?") is used to keep a record of incidents and accidents. Each time an employee reports an accident/incident, the dashboard is updated accordingly. The supervisor uses this information to prepare monthly reports for the health and safety committee. This allows the company to monitor the number of incidents and accidents occurring on a monthly basis, determine if there were improvements or not in the OHS aspect, and take more corrective actions when there is an increasing trend.

Given that production employees are exposed to more potential hazards than office employees, they do not have to wait for meetings to report an OHS issue but can inform their supervisor immediately upon its occurrence in order to be addressed in the shortest time possible: “when we flag issues regarding OHS, our supervisors listen to us and often fix them right away; there are no delays with safety”.

Finally, both employee categories reported that there are extensive actions and discussions about health and safety within the company to sensitize and render everyone more responsible: “there is a lot of discussion about health and safety, a lot,” “the majority of the emails we receive from the company refer to health and safety”.

In comparison with Toyota, although there were some differences, the aerospace company under study implemented several of the HRM practices recommended by Toyota. Table 5.1 provides a compilation of HRM practices used by the two companies in question.

Table 5.1 Comparative table of HRM practices

Toyota	Aerospace Company
Training	Training
Communication	Communication
Respect	Respect
Supervisor/manager support	Supervisor/manager support
Fairness	Fairness
Occupational health and safety	Occupational health and safety
Job security	
Empowerment	
Recognition	

5.6 Discussion

Companies seeking to implement LP try to adopt the same methods and practices used by Toyota to achieve organizational performance and success (Gao and Low, 2014; Worley and Doolen, 2006; Kurdve et al., 2014). In this study, we set out to determine what are the HRM practices that were adopted by a large Canadian aerospace company and how they are implemented.

Our findings show that some of Toyota’s management practices also exist in the aerospace company under study but are not all implemented in the same way. This is to be expected because

companies should not simply copy LP practices but rather adapt them to their work environment and sector of activity (Liker and Convis, 2012; Foris et al., 2020; Rymaszewska, 2014). According to Toyota, companies can adopt its practices in a way that fits their context, because copying them to the letter will lead to failure (Liker, 2004).

Our results show that employees received different forms of training within the participant company. These trainings were similar to those listed by Toyota, including classroom training, experiential learning, and individual training. While these types of training seem to be diverse and target different objectives, office employees, in particular, reported that they were insufficient to fully understand the purpose of LP. They argued that more education is needed to clearly understand what exactly is expected from them and how to master LP tools and methods. Several authors emphasized the need to educate employees on the “why” and “how” of the LP implementation to encourage their involvement (e.g., Dinis-Carvalho, 2021; Ingaldi et al., 2018; Swank, 2003).

Beyond theory-based trainings, an important form of training underscored in this context by both office and production employees is experiential learning. This form of training is highly recommended by Toyota, especially in the early stages of the LP transformation, because it allows employees to experience and actually understand the tools they learned in the classroom. In the implementation of experiential learning, however, the company under study seemed to face challenges related to the translation of learnings into practice and the lack of follow-up from management.

Communication was recognized by the interviewees as an important practice in the workplace. Although Toyota proposed several internal communication methods (e.g., instant messaging, meetings, and bulletin boards) that can be useful in the context of LP (Liker and Hoseus, 2008), in our study we found that office employees relied, to a great extent, on regular meetings to exchange information and address work-related issues. On the other hand, production employees mainly relied on face-to-face communication on the shop floor, a communication method strongly advised by Toyota. Typically, supervisors listen to employees to ensure they understand the information provided and to gain more insight into their problems and suggestions (Aij and Teunissen, 2017; Alnadi and McLaughlin, 2021). Building two-way communication is necessary to improve understanding of the company’s goals and objectives so that employees can easily get involved

(Alnadi and McLaughlin, 2021). In alignment with Toyota, interviewees confirmed that their supervisors were generally good listeners and could readily communicate with them whenever needed. One important caveat is that except for team meetings, communication between office employees and their supervisors primarily took place over email, which may delay information exchange and downstream processes.

Interviewees also emphasized the importance of respect in the workplace. In accordance with Toyota's view that respect is the foundation of relationships, participants acknowledged that their company strives to ensure a respectful environment. They further claimed to have never felt disrespected by their supervisors or colleagues. One of the reasons is that when disagreements arise between team members or with the supervisor regarding particular work issues, these take place in a constructive and healthy atmosphere. Furthermore, according to our participants, the company takes great concern in providing a culture in which employees' opinions and ideas are valued and welcomed.

Overall, respect allows team members to work well together to accomplish the desired goals (Brown et al., 2003), which is necessary in the context of LP.

Supervisor/manager support is another practice that interviewees considered of the most interest in the LP context. According to our interviews, we found that the company under study follows Toyota's approach of fostering teamwork. Participants considered that their company encourages them to work as a team and mutually support each other to attain a common goal. Mutual support usually leads to better job performance and facilitates the accomplishment of the company's objectives (Cheah et al., 2019; Samuel and Matthew, 2021). Moreover, interviewees emphasized that the support received from their supervisor/manager was key to their work performance. For production workers, particularly, supervisors were frequently present on the shop floor to provide immediate support. Supervisor/manager support is one of the main facilitators of the continuous improvement process (Unzueta et al., 2020). When an organization undergoes changes, support from management and supervisors must be provided to involve employees in the change process and prevent their resistance to the new management approach (Teich and Faddoul, 2013).

Furthermore, interviewees highlighted the importance their company places on fairness at work. Similarly to Toyota, the company under study promotes fairness to encourage employee cooperative behaviors and boost their work effectiveness. Interviewees highlighted that their

company strives to build a culture in which all employees are governed by the same rules and employees in similar positions receive the same benefits and resources. Fairness is a major factor in the context of LP, as employees can only make continuous and sustainable improvements if they feel treated fairly (Benkarim and Imbeau, 2022; Angelis et al., 2011; Swartling and Poksinska, 2013). Fair treatment in the workplace contributes to employees' identification with the organization's culture and has been proven to have a direct effect on employees' involvement and commitment to the company (Coetzee and Botha, 2012; Workman-Stark, 2020).

Lastly, occupational health and safety was also deemed by our participants to be an important HRM practice. The implementation of occupational health and safety is broadly identical in both companies as both place a high priority on this practice by undertaking different actions to raise employee awareness and address health and safety issues in a timely manner. However, a peculiarity of the company under study is that, in addition to safety meetings, employees engage in broad discussions about health and safety on a daily basis. Moreover, this practice is the first item discussed during team meetings to assess the frequency of work-related accidents and prevent future incidents. The focus of both companies on employee safety and health is based on the realization that employees can only be committed and involved in LP initiatives if they work in a safe environment. Studies (e.g., Bertagnolli, 2022; Elapanda et al., 2020; Nahmens and Ikuma, 2009) underscored the impossibility to achieve a successful continuous improvement program without ensuring safety in the workplace. This is because injuries and their outcomes lead to major waste (e.g., time lost due to employee absence and workers' compensation cost), which runs counter to the LP philosophy.

Overall, although some of the aforementioned practices were implemented differently than at Toyota (e.g., communication relied mainly on meetings, and trainings do not cover sufficiently LP tools and methods, and its objectives), they are all part of Toyota's HRM system and are necessary in the context of LP. A promising line for future work is to thoroughly examine the implementation of these practices to determine if they are applicable to aerospace companies of different sizes and to assess the manner in which they are implemented.

In our work, we found that some of Toyota's HRM practices were not implemented by the company under study (i.e., job security, empowerment, and recognition). Job security is often difficult to establish in the aerospace industry due to the cyclical nature of this sector (Mocenco, 2016; Spreen,

2019; Vertesy and Szirmai, 2010). This can negatively affect the successful and sustainable transition to LP, as job insecurity forces employees into a short-term mindset that is hardly compatible with the more long-term horizon and thinking associated with a successful LP implementation (Ingelsson and Mårtensson, 2014; Trenkner, 2016). Moreover, job insecurity leads to employee instability and insecurity, which often leads them to look for another job, preventing them from being fully committed to the company's continuous improvement process (Benkarim and Imbeau, 2022). Regarding empowerment, we found no measures set in place by the company to strengthen this practice. In this direction, some studies concluded that employee empowerment is preferable but is not a necessary condition for achieving a successful LP implementation (Chiarini and Brunetti, 2019; Vidal, 2006). Lastly, recognition is another practice that was not found among those established by the company under study. Interviewees did not consider recognition to be a necessary aspect for their commitment to LP. They indicated that the omission of recognition does not affect their involvement, i.e., even if the supervisor does not recognize their work, it does not prevent them from being involved and committed to the continuous improvement process. While some researchers consider recognition as important for boosting workforce commitment to LP (e.g., Liker, 2004; McMahon, 2014; Chan et al., 2019; Connor and Cormican, 2021), others are in alignment with our findings, arguing that recognition does not affect employee commitment nor the successful implementation of LP (e.g., Jayaraman et al., 2012; Vallejo et al., 2020; Weerasooriyan and Alwis, 2017).

Although Toyota values these three practices (i.e., job security, empowerment, and recognition), it recommends that managers willing to implement LP not use all of its practices, but to choose those that meet the needs of their company and adapt them to its context if necessary. Nonetheless, to gain a better understanding of why these three practices are not being considered and to deeply examine whether they are necessary for aerospace companies, further research is needed.

5.6.1 Contributions

Our study is among the few to focus on HRM practices in the context of LP, particularly in the aerospace industry. Our findings provide a list of LP-related management practices that can assist managers operating in the aerospace sector to understand the relevance of these practices in supporting the successful transition and sustainability of LP within their companies. More importantly, our work provides a concise depiction of how these practices are implemented in a

large Canadian company in the aerospace sector. Furthermore, given the lack of studies examining the relationship between management practices and LP (Bonavia and Marin-Garcia, 2011; Bamber et al., 2014; Martínez-Jurado et al., 2014), researchers can build on our findings to conduct further investigations and expand the body of knowledge on this subject.

5.6.2 Limitations

We admit some limitations in this study. Our qualitative study is based on a small sample size which reduces the possibility of generalizing the results. A mixed methodology study combining qualitative and quantitative approaches is recommended to overcome this limitation. Moreover, our data were collected from a single company and our findings may not reflect the whole set of HRM management practices implemented in the entire aerospace industry. A study including multiple companies across different countries might provide a better picture of the whole sector. Nonetheless, it should be noted that our interviews were conducted in one of the largest sites of the company in Canada. Moreover, the main objective of our study was not to generalize the results but rather to explore the implementation of Toyota's HRM practices by a company in the aerospace sector.

5.7 Conclusions

In this work, we investigated the adoption of Toyota's HRM practices by a large Canadian company in the aerospace sector. Regarding our first research objective, our findings show that, in its transition to LP, some of Toyota's HRM practices were implemented by this company, suggesting the relevance of the social dimension in LP transformation. There was, however, no complete overlap with the practices recommended by Toyota, with some HRM practices not adopted at all. In addressing the second research objective, we found that, among the adopted practices, some were implemented differently, which may be explained by the differences between sectors (i.e., automotive vs. aerospace).

Overall, our findings reveal the importance of HRM practices in the aerospace sector and, at the same time, highlight the flexibility and adaptation required in the implementation of these practices across different industries. These findings are consistent with the existing literature, and particularly with the study by Martínez-Jurado et al. (2013), which highlighted the importance of HRM practices during the Lean transition. Their findings also showed that some of Toyota's HRM

practices (e.g., training, rewards, communication) were adopted in the aerospace sector, and underscored the flexibility in their implementation.

The generalizability of our study is limited due to the small sample size (30 participants). However, the research findings are relevant as they can help practitioners understand the importance of HRM practices when adopting LP and the way these practices can be implemented in their specific sectors of activity.

CHAPITRE 6 DISCUSSION GÉNÉRALE

Ce chapitre est consacré à la discussion des résultats obtenus en examinant le lien entre les pratiques de GRH et le Lean. Ces résultats rapportés dans les trois articles seront abordés respectivement. Ensuite, les contributions et les limites de ce travail de recherche seront présentées. Enfin, quelques pistes de recherche futures que nous estimons importantes seront suggérées.

6.1 Discussion des résultats de l'ensemble de la thèse

Cette thèse vise à étudier les pratiques de GRH et à examiner leur contribution à la réussite du Lean. Dans cette perspective, le premier article (chapitre 3) consiste en une revue de littérature qui discute les concepts du Lean, d'engagement organisationnel et de la GRH. Nous avons d'abord abordé le concept du Lean en présentant son origine et sa définition, ainsi qu'en exposant ses principaux piliers afin de mieux comprendre ses fondements et ses objectifs. Ensuite, nous avons présenté le concept d'engagement organisationnel à travers ses différentes facettes afin de mieux le cerner et d'identifier le type d'engagement organisationnel associé au Lean. Enfin, nous avons discuté de l'importance du rôle des employés dans la réussite du Lean et des différentes pratiques de GRH susceptibles d'améliorer leur engagement dans une telle démarche. Cette revue de littérature nous a permis de déduire que les études sur la dimension humaine du Lean sont rares. La majorité des articles s'intéressent aux outils et aux méthodes nécessaires sa mise en œuvre (p. ex., 5S, Kanban, Genchi Genbutsu) sans pour autant prendre en considération le rôle et l'importance du facteur humain. Bien que certains travaux soulignent l'importance des pratiques de GRH et de l'engagement des employés dans le cadre du Lean, ils se focalisent ensuite seulement sur les aspects techniques. Les conclusions de l'article 1 nous ont montré que la réussite de la mise en œuvre du Lean est liée au fait de considérer le Lean comme système sociotechnique englobant à la fois les dimensions technique et humaine. La dimension technique fait référence aux outils et aux processus alors que la dimension humaine fait référence aux RH et aux aspects qui leurs sont associés y compris la GRH. Ces deux dimensions sont complémentaires puisque ce sont les RH qui utilisent ces outils et processus pour apporter des améliorations continues au sein de l'entreprise. Ainsi, aucune amélioration ne sera possible sans la contribution et l'engagement des employés. Cette revue de littérature nous a également permis de déduire que parmi les différentes formes d'engagement organisationnel (affective, normative et continue), l'engagement affectif est

le seul type d'engagement lié au Lean. L'engagement affectif fait référence à l'attachement émotionnel, à l'identification et à l'implication d'un employé dans l'organisation. Ainsi, les employés engagés affectivement envers leur organisation adhèrent davantage à la culture et aux valeurs de cette dernière. Qui plus est, ces employés sont plus performants, innovateurs et ayant la volonté de s'entraider et de coopérer pour assurer le bon déroulement de l'entreprise. Il est donc important pour les organisations d'investir dans l'amélioration du niveau d'engagement affectif de leurs employés (p. ex., à travers les pratiques de GRH) afin de garantir non seulement des meilleures résultantes organisationnelles (plus de performance et de satisfaction au travail, moins de roulement et d'absentéisme), mais surtout une amélioration continue durable.

La synthèse des travaux que nous avons recensés dans ce chapitre 3 nous a servi de base pour mieux saisir le lien entre les différents concepts de notre étude. Nous avons plus particulièrement conclu que les pratiques de GRH constituent un moyen fondamental pour accroître l'engagement des employés dans le Lean. C'est dans ce sens que nous avons procédé à atteindre le premier objectif spécifique de cette étude présenté dans l'article 2 (chapitre 4). Rappelons que l'article 2 a pour visée d'explorer les pratiques de GRH favorisant l'engagement des employés dans le processus d'amélioration continue d'une entreprise aéronautique. Pour atteindre cet objectif, des entrevues individuelles semi-dirigées auprès de 30 employés (15 employés de bureau et 15 employés de production) ont été effectuées dans les locaux de cette entreprise. Les résultats obtenus ont révélé sept pratiques perçues par les répondants comme étant essentielles dans le contexte du Lean, à savoir : la sécurité d'emploi, la communication, l'équité, le soutien du superviseur/gestionnaire, la formation, la santé et sécurité au travail (SST) et le respect. Les répondants ont souligné que ces pratiques les incitent et les motivent à s'engager, puis à s'investir dans le processus d'amélioration continue. Ils ont rapporté, par exemple, que la sécurité d'emploi se traduit généralement par la stabilité professionnelle qui les encourage à s'attacher à l'entreprise et à s'aligner avec ses objectifs, tandis que l'insécurité d'emploi les pousse à la recherche continue d'un autre emploi, ce qui les empêche d'accomplir efficacement leurs tâches et d'apporter leur pleine contribution aux processus d'amélioration de l'organisation. D'ailleurs, plusieurs auteurs ont confirmé l'existence d'une association positive entre l'engagement des employés et la sécurité d'emploi en soulignant que cette dernière est une pratique courante dans les entreprises Lean (Bonavia et Marin-Garcia, 2011; Ramay, 2012). Quant à la communication, les répondants ont indiqué que cette pratique facilite leur implication au sein de l'entreprise, car lorsque l'objectif de

l'implantation du Lean et le rôle qu'ils doivent jouer pour sa réussite sont clairement communiqués, leur participation et leur engagement deviennent plus faciles à obtenir. En ce sens, une communication claire et régulière entraîne un meilleur alignement sur la vision de l'entreprise et assure son bon fonctionnement (Worley and Doolen, 2006). L'équité a été également considérée par les répondants comme un élément clé pour leur engagement dans le processus d'amélioration continue. Ces derniers ont révélé que la perception de l'équité au travail les encourage à fournir des efforts pour être plus performants et atteindre les objectifs organisationnels. Des auteurs tels que Angelis et al. (2011), Marksberry (2012) et Swartling et Poksinska (2013) reconnaissent l'importance de cette pratique dans les entreprises Lean et stipulent qu'un traitement équitable est particulièrement important lorsque les employés sont confrontés à des changements au sein de leur organisation, car si ces derniers perçoivent qu'ils sont traités d'une manière inéquitable, ils auront tendance à être moins engagés et à résister au changement. Les répondants ont également insisté sur l'importance du soutien offert par leur superviseur/gestionnaire dans l'amélioration de leur niveau d'engagement. Ces derniers peuvent montrer leur soutien en aidant les employés dans la résolution des problèmes liés au travail et en leur fournissant les ressources nécessaires à l'accomplissement de leurs tâches quotidiennes. Les auteurs avancent que le soutien est considéré comme l'un des facteurs qui motive les employés à s'impliquer dans le changement organisationnel (Ferreira, 2014). La formation, quant à elle, a été jugée par les répondants comme le moyen le plus efficace pour assurer la transition vers le Lean. Ces derniers sont persuadés de l'impact positif de la formation sur leur engagement en indiquant qu'une amélioration de leurs connaissances et de leurs compétences entraîne automatiquement une augmentation de leur motivation et de leur engagement. L'importance de la formation des employés pour la réussite de l'implantation du Lean a été soulignée par plusieurs études, dont celles de Bonavia et Marin-Garcia (2011), Forza (1996) et Piatkowski (2004). Par ailleurs, nos répondants ont établi une relation directe entre la SST et leur engagement dans le processus d'amélioration continue. Ils ont souligné que le fait d'avoir un environnement de travail sécuritaire les rend plus motivés et engagés et les incite à travailler d'une manière plus efficace. En ce sens, des études ont montré que la SST permet d'accroître la productivité des employés et de réduire le gaspillage tel que les coûts et le temps perdu dus aux accidents de travail (Abbassinia et al., 2020; Jilcha and Kitaw, 2016). L'intégration de la SST dans les processus apparaît donc incontournable pour éliminer le gaspillage et réussir la mise en œuvre de la démarche Lean. Enfin, les répondants ont insisté sur le fait que le respect est indispensable

pour leur engagement dans la démarche Lean. Le respect des employés peut se manifester de plusieurs façons, notamment le respect de leurs idées, de leurs efforts et de leurs contributions. Les répondants croient que le respect est non seulement important pour leur implication au sein de l'entreprise, mais il peut également avoir un impact sur leur niveau d'engagement dans le sens où il peut le maintenir ou l'améliorer.

Après avoir ressorti les pratiques de GRH que les employés considèrent nécessaires à leur engagement dans le Lean, nous avons jugé utile d'identifier les pratiques déjà mises en œuvre par l'entreprise à l'étude et la manière dont ces pratiques sont implantées en comparaison avec Toyota. Cette question est discutée dans l'article 3 (chapitre 5). Dans cet article, nous avons mentionné que les entreprises qui s'intéressent à l'implantation du Lean adoptent généralement les mêmes pratiques que Toyota pour obtenir de meilleures performances. Nous avons effectué les entrevues avec les mêmes participants de l'étude précédente, soit 30 employés (15 employés de bureau et 15 employés de production). Les résultats ont révélé trois constats à prendre en compte :

- Certaines pratiques de GRH de Toyota existent dans l'entreprise à l'étude et sont implantées de la même manière que Toyota (p. ex., soutien du superviseur/gestionnaire et SST). Les deux entreprises reposent sur différentes formes de soutien pour aider leurs employés à s'intégrer dans le changement en leur fournissant, par exemple, les outils dont ils ont besoin pour mener à bien leurs tâches, en les conseillant et en les assistant dans la résolution des problèmes. Ces entreprises encouragent également le travail en équipe en considérant que cette méthode pousse les employés à se soutenir mutuellement pour atteindre les objectifs visés dans les délais. La mise en œuvre de la SST apparaît très semblable dans les deux entreprises, car toutes deux y accordent une grande priorité via différentes pratiques (p. ex., rencontres quotidiennes pour discuter de la SST), et ce, afin de mieux sensibiliser les employés et ainsi aider à traiter les problèmes de santé et de sécurité en temps opportun. La priorité accordée par les deux entreprises à la santé et à la sécurité au travail des employés est fondée sur le constat que les employés ne peuvent s'engager ni s'impliquer dans les initiatives Lean à moins que leur environnement de travail soit sain et sécuritaire.
- Certaines pratiques (p. ex., communisation et formation) existent dans l'entreprise à l'étude, mais elles sont implantées d'une manière différente que chez Toyota. Toyota utilise plusieurs méthodes de communication interne (p. ex., la messagerie instantanée, les

réunions et les tableaux d'affichage) pour faciliter l'échange et la circulation d'informations, tandis que dans l'entreprise où nous avons réalisé notre étude, le principal moyen de communication est constitué des réunions qui se tiennent quotidiennement en matinée avec les employés de bureau, ou les rencontres organisées au besoin avec les employés de production. Durant ces réunions, toute problématique liée au travail est abordée et discutée. Quant à la formation, la différence majeure constatée avec Toyota est que les employés de bureau n'appliquent pas nécessairement dans leur travail les concepts appris durant les formations, alors que selon Toyota, il est nécessaire que tous les employés de l'organisation, qu'il s'agisse des employés de bureau ou de production, appliquent ces concepts afin de mieux les comprendre et saisir leurs objectifs.

- Certaines pratiques de Toyota n'existent pas dans l'entreprise à l'étude (sécurité d'emploi, responsabilisation et reconnaissance). La sécurité d'emploi est souvent difficile à assurer dans l'industrie aéronautique en raison de la nature cyclique de ce secteur (Mocenco, 2016; Spreen, 2019). Cela peut avoir un impact négatif sur la réussite de l'implantation du Lean, car l'insécurité d'emploi affecte négativement le bien-être psychologique des employés, ce qui les empêche de s'engager pleinement dans le processus d'amélioration continue de l'entreprise. La responsabilisation est aussi une pratique absente dans l'entreprise à l'étude. La responsabilisation consiste à confier aux employés certaines responsabilités tout en leur accordant plus d'autonomie. Selon les chercheurs, il est souhaitable de mettre en œuvre cette pratique, mais elle n'est pas considérée comme une condition sine qua non à la réussite du Lean (Chiarini et Brunetti, 2019). En outre, aucun programme de reconnaissance n'est instauré au sein de l'entreprise. Les employés interrogés ont déclaré que l'absence de la reconnaissance n'a aucun impact sur leur engagement dans le Lean. Bien que certains chercheurs (p. ex., Liker, 2004; McMahon, 2014) considèrent la reconnaissance comme importante pour stimuler l'engagement des employés, d'autres (p. ex., Vallejo et al., 2020; Weerasooriyan et Alwis, 2017) affirment que cette pratique n'a aucun effet sur leur engagement ni sur la réussite de l'implantation du Lean.

En résumé, les résultats de l'article 3 montrent que plusieurs pratiques de GRH de Toyota sont mises en œuvre dans l'entreprise aéronautique même si certaines d'entre elles sont implantées différemment. Ce résultat était prévisible étant donné que les entreprises ne sont pas tenues de

copier à la lettre les pratiques de Toyota, mais plutôt de les adapter à leur environnement de travail et à leur secteur d'activité.

Les principaux résultats de l'ensemble de la thèse sont présentés dans le tableau 6.1.

Tableau 6.1 Principaux résultats de l'ensemble de la thèse

Pratiques de GRH de Toyota	Pratiques de GRH privilégiées par les employés	Pratiques de GRH implantées par l'entreprise aéronautique
Formation	Formation	Formation
Communication	Communication	Communication
Respect	Respect	Respect
Soutien du superviseur/gestionnaire	Soutien du superviseur/gestionnaire	Soutien du superviseur/gestionnaire
Équité	Équité	Équité
SST	SST	SST
Sécurité d'emploi	Sécurité d'emploi	
Responsabilisation		
Reconnaissance		

6.2 Contributions de la recherche

Cette étude vise à combler un manque dans la littérature étant donné qu'il existe très peu d'études ayant traité de la dimension humaine du Lean, et en particulier des pratiques de GRH liées à l'engagement des employés. En outre, nous avons associé deux concepts qui sont souvent étudiés séparément, soient la GRH et le Lean. Notre étude vient introduire cette dualité et cerner ce phénomène dans le but d'aider les entreprises à mieux performer et atteindre l'excellence.

Par ailleurs, même si la littérature traitant du Lean rapporte certaines pratiques de GRH susceptibles de développer l'engagement des employés, le contexte d'implantation de ces pratiques est souvent spécifique à Toyota. Autrement dit, les chercheurs ont largement étudié le Lean dans l'industrie automobile, en accordant très peu d'attention aux autres secteurs, comme le secteur aéronautique. Nous avons donc identifié des pratiques de GRH spécifiques à une entreprise aéronautique, et de là, possiblement au secteur de l'aéronautique puisque les organisations opérant dans un même secteur d'activité peuvent avoir le même contexte d'affaires et partager les mêmes contingences internes et externes, et conséquemment auront probablement des pratiques de gestion du personnel semblables sinon identiques.

Plus précisément, les résultats obtenus ont fourni 1) une liste de pratiques de GRH nécessaires à l'engagement des employés dans le Lean et 2) une description concise de la façon dont ces pratiques sont mises place dans l'entreprise aéronautique. Ces résultats peuvent aider les gestionnaires opérant dans ce secteur d'activité à comprendre l'importance de ces pratiques pour une mise en œuvre réussie et durable du Lean. De plus, étant donné le manque d'études examinant la relation entre les pratiques de GRH et le Lean, les chercheurs peuvent s'appuyer sur nos résultats pour mener d'autres études et élargir les connaissances sur ce sujet.

6.3 Limites de la recherche

Les principales limites de cette recherche sont au nombre de trois. Premièrement, cette recherche est transversale puisque les répondants ont été interviewés une seule fois et les données ont été recueillies à un moment bien précis. Étant donné que les pratiques de GRH pourraient être modifiées ou changées lors de l'instauration et du déploiement du Lean, il serait alors intéressant d'interviewer les mêmes répondants quelques années plus tard pour déterminer si leur perception des pratiques de GRH varie au fil du temps. Deuxièmement, les données ont été recueillies auprès d'une seule entreprise. Ainsi, nos résultats peuvent ne pas refléter l'ensemble des pratiques de GRH mises en œuvre dans l'ensemble de l'industrie aéronautique. Finalement, notre recherche qualitative est basée sur un échantillon de petite taille, ce qui réduit la possibilité de généraliser les résultats. Cependant, la finalité de cette recherche n'était pas de généraliser les résultats, mais plutôt d'explorer les pratiques de GRH dans le domaine aéronautique.

6.4 Pistes de recherches futures

Cette section présente les différentes pistes de recherche qui pourraient remédier aux limites mentionnées précédemment. Étant donné que notre recherche est transversale, il serait pertinent de mener une étude longitudinale en effectuant à nouveau des entrevues avec les mêmes répondants sollicités dans la présente recherche, et ce, afin de comparer les résultats obtenus et vérifier s'ils demeurent constants dans le temps. Autrement dit, il serait question de vérifier si les employés considèrent toujours les pratiques ressorties comme nécessaires à leur engagement dans le Lean et si la mise en œuvre de ces pratiques a été modifiée durant les années.

Il est difficile d'envisager la possibilité de généraliser les résultats obtenus dans le cadre de cette recherche à l'ensemble du secteur aéronautique. Il serait donc utile que les chercheurs effectuent

des études mixtes combinant à la fois les approches qualitative et quantitative afin de constituer un échantillon plus large et ainsi surmonter cette limite. Aussi, au lieu de se limiter à une seule organisation, les chercheurs peuvent effectuer des études incluant plusieurs entreprises afin de fournir une liste plus précise de pratiques de GRH implantées dans l'ensemble du secteur aéronautique.

Par ailleurs, nos entrevues ont été effectuées non seulement avec des employés de production comme dans la plupart des études, mais aussi avec des employés de bureau, étant donné que le Lean est une approche qui s'applique à l'ensemble de l'organisation. Il est donc important que les chercheurs diversifient leur échantillon en incluant, par exemple, des travailleurs de différents niveaux et départements afin de mieux tester la pertinence des pratiques de GRH dans divers environnements et pour différentes catégories de travailleurs.

Bien que les pratiques ressorties des entrevues aient été considérées comme importantes par les deux catégories d'employés (bureau et production), nous avons constaté des différences quant à l'implantation de certaines pratiques. Par exemple, la communication pour les employés de bureau repose principalement sur les réunions matinales auxquelles ils sont tenus d'assister pour discuter des problèmes liés au travail. Les employés de production quant à eux ne sont pas obligés d'assister à ces réunions, car ils peuvent facilement communiquer avec leurs superviseurs en cas de besoin. Aussi, pour la formation, contrairement aux employés de production, les employés de bureau ont rapporté qu'ils n'appliquent pas nécessairement les concepts appris lors des formations. Il est donc important que les études futures examinent plus en profondeur la cause de ces différences quant à l'implantation des pratiques de GRH.

Enfin, l'association entre les pratiques de GRH et le Lean est pratiquement inexplorée dans la littérature notamment dans le secteur aéronautique. Les chercheurs peuvent explorer et examiner davantage les différents aspects de cette association et accorder plus d'attention à la dimension humaine du Lean puisqu'elle est considérée comme un facteur important pour sa réussite.

CHAPITRE 7 CONCLUSION ET RECOMMANDATIONS

La présente recherche contribue au développement des connaissances sur la dimension humaine du Lean. Cette étude est parmi les rares à s'intéresser au facteur humain, et plus particulièrement aux pratiques de GRH liées à l'engagement des employés dans la démarche Lean. Elle pallie ainsi une lacune dans la littérature et ouvre la voie à de futures recherches sur le sujet.

La méthodologie adoptée et les résultats obtenus ont permis d'atteindre les objectifs spécifiques de la thèse : explorer les pratiques de GRH favorisant l'engagement des employés dans le processus d'amélioration continue d'une entreprise aéronautique et identifier les pratiques de GRH mises en œuvre par cette entreprise et la manière dont elles sont implantées en comparaison avec Toyota.

En ce qui concerne le premier objectif (chapitre 4), les résultats ont montré que les employés accordent une grande importance aux pratiques de GRH dans le cadre du Lean. Ces derniers ont identifié, plus particulièrement, sept pratiques favorisant leur niveau d'engagement dans le processus d'amélioration continue de l'entreprise, à savoir : la sécurité d'emploi, la communication, l'équité, le soutien du superviseur/gestionnaire, la formation, la SST et le respect. Ces pratiques ont été jugées importantes tant par les employés de bureau que par les employés de production. En se basant sur des situations réelles vécues dans leur environnement de travail, les deux catégories d'employés ont décrit comment les pratiques identifiées influencent leur niveau d'engagement et de participation dans les initiatives Lean. Les résultats ont également montré que les gestionnaires jouent un rôle clé dans la mise en œuvre de ces pratiques et dans la création d'un environnement propice à l'engagement des travailleurs.

Quant au deuxième objectif de cette recherche (chapitre 5), les résultats ont révélé que l'entreprise à l'étude a adopté plusieurs des pratiques de GRH de Toyota. Toutefois, nous avons constaté que, parmi les pratiques adoptées, certaines ont été mises en œuvre différemment que chez Toyota, ce qui pourrait s'expliquer par les différences entre les deux secteurs d'activité (automobile vs aéronautique).

Il convient de noter que les entreprises peuvent adopter les mêmes pratiques de Toyota pour réussir l'implantation du Lean, sauf que leur mise en œuvre doit être adaptée à leur contexte et à leur environnement de travail.

Dans l'ensemble, nous avons conclu que les pratiques de GRH constituent un moyen fondamental pour accroître l'engagement des employés dans le Lean. Si ces pratiques sont choisies conformément aux besoins exprimés par les employés et mises en œuvre correctement, on peut s'attendre à ce que les employés développent un engagement affectif élevé envers leur organisation, facilitant de ce fait le déploiement du Lean et assurant sa pérennité.

En somme, cette thèse traite d'un sujet peu étudié dans la littérature et encore peu cerné par les chercheurs et les praticiens. Des recherches futures devraient être menées pour valider les résultats rapportés dans la présente étude, ainsi que pour enrichir et étendre les connaissances sur ce sujet.

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ANNEXE A : GUIDE D'ENTREVUE

GUIDE D'ENTREVUE

Questions générales

1. Sexe : femme ☐ homme ☐
2. Pourriez-vous me dire quel est votre âge ?
3. Pourriez-vous me dire depuis combien d'années travaillez-vous dans cette entreprise ?
4. Pourriez-vous me parler de votre fonction au sein de cette entreprise ?
5. Pourriez-vous me décrire le projet Lean de votre entreprise ?
6. Comment participez-vous à ce projet (votre implication, rôle) ?
7. Quel est votre niveau d'engagement dans ce projet ? Précisez.
8. Quelles sont les pratiques de GRH qui favorisent votre engagement ?
9. Quelles sont les pratiques de GRH que votre supérieur adopte pour améliorer ou maintenir votre engagement ?
10. Croyez-vous qu'il est possible d'améliorer le niveau d'engagement des employés dans ce genre de projet ?
 - a. Si oui, comment ? Pourriez-vous me donner des exemples ?
 - b. Si non, pourquoi ? Quelles sont, selon vous, les principales raisons ?
11. Selon votre expérience et d'une manière générale, quelles sont les pratiques de GRH qui pourraient renforcer l'engagement d'un employé dans le projet Lean ?

Questions spécifiques sur les pratiques de GRH

12. Recevez-vous le respect de votre supérieur au travail ?
 - a. Si oui, comment ce respect se manifeste-t-il ?
 - b. Si non, pourquoi à votre avis et quel est l'impact sur votre engagement ?
13. Est-ce que votre supérieur respecte vos idées liées au travail ? Expliquez.
14. Êtes-vous valorisés en tant que membre de votre groupe de travail ?
 - a. Dans le cas de l'affirmation ou de la négation, comment cela affecte votre niveau d'engagement ?
15. Quels sont les types de formations que vous recevez ?
16. Est-ce que ces formations sont utiles pour votre travail ? Expliquez.
 - a. Comment cela affecte votre engagement ?
17. Est-ce que vous appliquez les notions apprises pendant ces formations ?
 - a. Si oui, est-ce que cela renforce votre engagement dans le Lean ?

- b. Si non, pourquoi et comment votre engagement est affecté ?
- 18. Croyez-vous pouvoir garder votre emploi actuel aussi longtemps que vous le souhaitez ?
 - a. Si oui ou non, comment cela affecte votre engagement ?
- 19. Pensez-vous garder votre emploi quelle que soit la situation économique de votre entreprise ? Expliquez.
- 20. Avez-vous la sécurité d'emploi dans votre entreprise ?
 - a. Si oui ou non, quelles sont les répercussions sur votre engagement ?
- 21. Sentez-vous à l'aise d'échanger avec votre supérieur au travail ? Expliquez.
- 22. Est-ce que votre supérieur vous écoute quand vous lui parlez des problèmes liés au travail ?
 - a. Si oui, comment cela contribue-t-il à l'amélioration de votre niveau d'engagement ?
 - b. Si non, pourquoi et comment cela affecte votre niveau d'engagement ?
- 23. Comment l'échange d'informations se manifeste au sein de votre entreprise ?
- 24. Pensez-vous que vous êtes traités équitablement au votre travail ?
 - a. Pourriez-vous me donner des exemples ?
 - b. Quel est l'impact sur votre engagement ?
- 25. Percevez-vous du favoritisme dans votre milieu de travail ? Expliquez.
- 26. Est-ce que vous avez l'impression que vous travaillez plus comparativement aux avantages-bénéfices que vous recevez ?
 - a. Comment cela influence votre niveau d'engagement ?
- 27. Obtenez-vous de l'aide de votre supérieur lorsque vous faites face à un problème lié au travail ?
 - a. Comment cette aide se manifeste-t-elle ?
- 28. Bénéficiez-vous du soutien dont vous avez besoin pour accomplir votre travail ?
 - a. Si oui, cela vous aide-t-il à améliorer votre engagement ?
 - b. Si non, pourquoi et comment cela affecte votre engagement ?
- 29. Est-ce que votre entreprise prend en considération vos opinions ? Expliquez.
- 30. Participez-vous à la prise de décision dans votre groupe de travail ?
 - a. Si oui, comment cela motive votre engagement ?
 - b. Si non, pourquoi et comment cela affecte votre engagement ?
- 31. Avez-vous la liberté de décider comment faire votre travail ? Expliquez.
- 32. Est-ce que votre travail vous permet de prendre des décisions par vous-même ?
 - a. Pourriez-vous me donner des exemples ?
 - b. Si oui ou non, comment cela affecte votre engagement ?
- 33. Est-ce que votre entreprise se préoccupe de votre bien-être au travail ?
 - a. Si oui, comment cela se traduit dans la réalité et quel est l'impact sur votre engagement ?
 - b. Si non, pourquoi et comment cela influence votre engagement dans le projet Lean ?

34. Est-ce que votre environnement de travail est sécuritaire ? Expliquer.
 - a. Comment cela affecte votre engagement ?
 35. Est-ce que vous arrivez à vous concentrer sur votre travail ? Expliquez.
 36. Recevez-vous de la reconnaissance au travail ?
 - a. Si oui, comment se manifeste cette reconnaissance et quel est l'impact sur votre engagement ?
 - b. Si non, comment cela affecte votre engagement dans le projet Lean ?
 37. Pensez-vous que vos perspectives de promotion sont satisfaisantes ? Expliquez.
 38. Pensez-vous que les récompenses au travail sont nécessaires pour améliorer votre niveau d'engagement ? Expliquer.
 39. Est-ce que votre supérieur vous délègue des tâches importantes au travail ? Expliquez.
 - a. Dans le cas de l'affirmation ou de la négation, comment cela affecte votre niveau d'engagement ?
 40. Est-ce que votre supérieur vous accorde de l'autonomie dans l'accomplissement des tâches qu'il vous confie ? Expliquez.
 41. Est-ce que votre supérieur vous implique dans des projets importants ? Expliquez et citez des exemples.
 - a. Si oui ou non, quel est l'impact sur votre engagement ?
 42. Avez-vous des suggestions ou des points qui pourraient enrichir cette entrevue ?
-

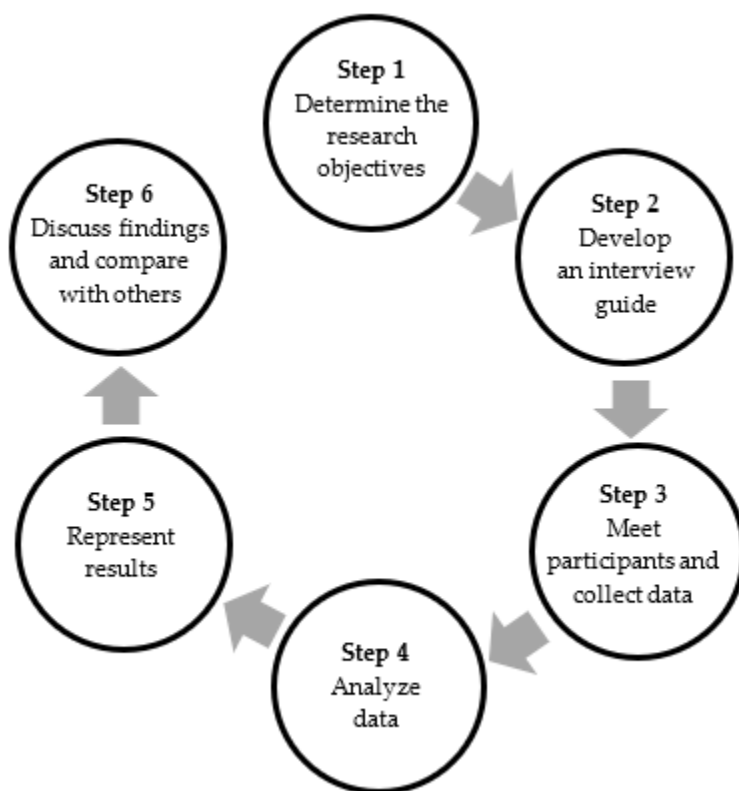
ANNEXE B : ANNEXE DE L'ARTICLE 3

Figure B.1: The main steps of the research method followed in our study (adapted from Creswell and Poth, 2017)

Table B.1: Description of the steps of the research method

Step 1 Determine the research objectives	Toyota's HRM practices were conceived in the automotive industry. The adoption of these practices may therefore require some tweaking when the target company is from a different industry. In this work, we set to investigate the implementation of Toyota's HRM practices in one of the largest aerospace companies in Canada. The objective of our research is twofold: Identify which of Toyota's HRM practices are adopted by the target company Explore how these HRM practices are implemented
Step 2 Develop an interview guide	In addressing our research objectives, we conducted semi-structured interviews with 30 employees from the target company. For this purpose, we developed an interview guide to explore the implementation of Toyota's HRM practices. The interview guide helped us direct the conversation and focus on the topics we want to discuss. The guide included two types of questions: General and open-ended questions to gather maximum data about our research topic (e.g., How would you describe the LP project that you are experiencing in the organization? What were the management practices that fostered your commitment to LP? What practices does your supervisor adopt to enhance and/or maintain this commitment?) Specific questions about HRM practices (e.g., Do you receive training within the company? What kind of trainings do you receive? How are these trainings implemented by the company? Could you give some examples of real-life situations within the organization?) Before starting the interviews, we pre-tested our interview guide with employees of the company where we conducted the interviews and readjusted it to ensure that the questions were clear to our participants.
Step 3 Meet participants and collect data	Interviews were conducted face-to-face, were recorded, and lasted approximately 1 h. Before the questions were asked, we explained to the interviewees the purpose of our research. We also gave a brief introduction to the Lean Production system to make sure that respondents knew what the LP was. We asked participants for their permission to record their responses and explained the reasons for the recording. The interviews did not begin until a consent form approved by the ethics committee of Polytechnique Montréal had been signed by the participants. Then, we proceeded to ask the questions included in our interview guide, starting with general and open-ended questions to progressively ask more specific questions about the implementation details of HRM practices. We ended our interviews by asking participants if they wanted to add any information or aspects that were not discussed. Finally, we thanked each participant for their time and the information they provided.

Table B.1: Description of the steps of the research method (continued and end)

Step 4 Analyze data	After gathering the data from the interviews, data analysis consisted of the following steps: We transcribed each interview in its entirety by repeatedly listening to the audio recordings. Each transcript was then used to identify the information relevant to our research objectives and discard the rest (e.g., content that is out of context). We organized and structured the collected information using the three coding techniques proposed by Strauss and Corbin [66]. With open coding, we broke down the data into discrete parts and created codes to label them (examples of emerged codes referring to HRM practices: communication, information exchange, training, professional support, personal support, and fairness). With axial coding, we combined codes with similar meaning (e.g., communication-information exchange). Lastly, we used selective coding to determine the final codes related to our research topic.
Step 5 Represent results	The data analysis step produced several HRM practices We found six of Toyota's HRM practices adopted by the company under study, namely: training, communication, respect, supervisor/manager support, fairness, and occupational health and safety. For each one of these HRM practices, we described the strategies used for its implementation in the target company. For more details on how these practices are implemented, please see Section 5.5.
Step 6 Discuss findings and compare with others	Finally, we discussed our findings, provided explanations as to why some of Toyota's HRM practices were adopted by the target company while others were not, and assessed the implementations of adopted practices, comparing their implementation details with those proposed by Toyota and considered potential reasons behind the different implementations. We furthermore argued the implications of our findings in this aerospace company with respect to the whole industry and compared them with other works. Briefly: In response to our first research objective, our results showed that not all Toyota's HRM practices were adopted by the company under study. In response to our second research objective, we found that some of the adopted practices were not implemented in the same way as Toyota. Our findings are consistent with prior work studying LP in the aerospace industry (Martínez-Jurado et al. [6]), which highlighted the fact that the aerospace industry adopts some of Toyota's HRM practices (e.g., training, communication) although there are differences in their implementation; we went a step further and documented a number of these differences.