

# **Bridging Efficiency and Empathy: The Role of Psychosocial Safety Climate in Mitigating Emotional Stress in Lean Manufacturing Environment**

**G.G. Udaya Priyasantha Rathnayake**

PhD Candidate

School of Business

Faculty of Business and Law

University of Wollongong (UOW)

NSW, Australia

[ggupr082@uowmail.edu.au](mailto:ggupr082@uowmail.edu.au)

**Anil Chandrakumara**

Senior Lecturer

School of Business and Law

University of Wollongong

Australia

[anilc@uow.edu.au](mailto:anilc@uow.edu.au)

**Anura De Zoysa**

Associate Professor

School of Business and Law

University of Wollongong

Australia

[anura@uow.edu.au](mailto:anura@uow.edu.au)

## **Abstract**

Managing employee emotional stress is one of the most significant global challenges in the manufacturing sector today, and it is anticipated to exacerbate the trend in the coming years. Notably, employee work-related stress is responsible for 12 billion lost workdays and a cost of over US\$1 trillion to the worldwide economy annually. Furthermore, Australian businesses incur an annual cost exceeding \$11 billion due to insufficient attention to their employees' mental health needs. Employee emotional stress occurs when there are discrepancies between the physiological demands of a workplace and the inability of employees to manage the work demands. There is a need for fresh viewpoints in light of recent scholarly discussions on employee emotional well-being, particularly the psychosocial safety climate, due to its features connected with employee emotional stress. The commitment of management and their support for employee psychological health to mitigate work-related stress is referred to as the psychosocial safety climate. It represents organisational policies, practices, and procedures for protecting workers' psychological health and safety. The authors propose investigating the relationship between psychological safety climate and emotional stress, optimising lean manufacturing environment, and upholding robust occupational health and safety practices. It will also allow the creation of the appropriate conditions for establishing and sustaining a psychosocial safety climate among manufacturing firms to mitigate employee emotional stress levels. This transformation involves shaping workplaces seamlessly, integrating efficiency and empathy, and propelling toward a future where manufacturing synchronises with the cadence of human resilience.

## **Keywords**

Emotional stress, Psychosocial safety climate, Lean Manufacturing Environment; Manufacturing

## **1. Introduction**

The manufacturing sector remains a crucial contributor to economic development in the contemporary global business environment. However, managing employee emotional stress is one of the sector's critical challenges that has steadily soared the priority ladder. This multi-faceted issue affects workers' emotional health and well-being and significantly impacts organisational productivity and business performance. According to recent statistics, work-related stress accounts for approximately 12 billion lost workdays annually, translating to an economic loss exceeding US\$1 trillion worldwide (World Health Organization 2023). Specifically, Australian businesses witness an annual financial drain of over \$11 billion due to insufficient consideration of employees' mental health needs (beyondblue 2015). Given how deeply emotional stress affects both individuals and the business results, the manufacturing sector needs to proactively address and prioritise employee emotional stress, ensuring a balance between the health of the workforce and the organisation's success.

This mounting challenge emphasises the need for novel strategies and structures to reduce the rising stress levels in the production environment. At the core of these approaches is a recognition that employee stress frequently arises due to a discrepancy between the work environment's physiological requirements and the employees' ability to cope effectively with these demands (Dollard & Karasek 2010; Law et al. 2011). This discrepancy can manifest due to several factors, including but not limited to high workloads, tight deadlines, insufficient resources, or lack of managerial support, contributing to an environment rife with pressure and anxiety (Dollard & Karasek 2010; Dollard et al. 2012; Idris et al. 2015). Hence, it is imperative for organisations to actively recognise and tackle these concerns, cultivating a conducive work environment that not only achieves production goals but also places emphasis on the emotional well-being of its workforce. Thus, it is imperative for firms to modify their management approach and explore novel manufacturing tactics.

Recent scholarly discourse has drawn attention to the psychosocial safety climate (PSC) within organisations, especially regarding its influence on employee emotional stress. PSC is an aspect of an organisation's mental makeup, epitomising the policies, practices, and procedures that focus on safeguarding employees' psychological health and safety. The concept encompasses more than just the implementation of physical safety precautions. It encompasses organisational leadership's dedication and proactive actions to mitigate job-related stress and foster a conducive work environment. (Dollard & Bakker 2010, p. 580). Hence, it is imperative for organisations to actively recognise and tackle these concerns, cultivating a conducive work environment that not only achieves production goals but also places emphasis on the emotional well-being of its workforce.

A strong psychological safety climate (PSC) indicates an organisation's commitment to valuing the emotional well-being of its employees, particularly in manufacturing settings characterised by demanding and stressful conditions. Organisations that acknowledge and address the emotional and psychological needs of their employees foster a workforce that is more motivated, efficient, and dedicated (Hammer et al. 2019; Loh et al. 2021).

In order for an organisation to flourish, it is imperative for employees to be psychologically fit by managing their level of stress so that they fulfil their formal job requirements and demonstrate prosocial behaviours. This might in turn contribute to a positive psychosocial organisational climate.

Understanding the interaction between PSC and emotional stress within the manufacturing sector is crucial. This sector is particularly known for its lean manufacturing environment, where efficiency, productivity, and continuous improvement are paramount (Rüttimann & Stöckli 2016; Stimec & Grima 2019). However, the emphasis on leanness and efficiency should not overshadow the importance of employees' psychosocial needs.

An organisational climate that fosters support can be categorised as either safety-oriented or service-oriented (Schneider et al. 2017; Zohar & Luria 2005). Manufacturing firms prioritise establishing and maintaining a safety-oriented environment, recognising the crucial role that safety plays in enhancing their workforce productivity and overall performance (Beus et al. 2021; Zohar & Luria 2005). The concept of a safety-oriented climate pertains to the well-being of employees in terms of their physical and emotional health (Baltes et al. 2009; Dollard et al. 2019; Idris et al. 2015). Nevertheless, when businesses place high importance on emotional well-being, employees are inclined to exhibit prosocial actions and enhance their performance as a result of reduced levels of stress, burnout, and mental health problems stemming from the organisational safety climate (Dollard et al. 2019; Idris et al. 2015). Therefore, sustaining a supportive PSC in manufacturing firms is more important to mitigate their challenges, such as emotional stress. However, most of the previous research on PSC was limited to a few industries, like healthcare, education, and hospitality (i.e., (Afsharian et al. 2018; Dollard & Bakker 2010; Dollard & Idris 2017; Garrick et al. 2014; Hu et al. 2022; Idris & Dollard 2014; Idris et al. 2015; Law et al. 2011; Loh et al. 2021; Loh et al. 2018; Mansour & Tremblay 2018; McLinton et al. 2018; Teo et al. 2020; Zadow & Dollard 2015; Zadow et al. 2019; Zadow et al. 2017)), and research is scarce on the psychosocial safety climate for the manufacturing sector. Therefore, research on PSC becomes crucial for the manufacturing industry.

This study bears significant potential for advancing the knowledge base in this field by highlighting how a positive psychosocial safety climate can optimise the lean manufacturing environment while maintaining strong occupational health and safety practices. It advocates for a transformative approach that reshapes workplace cultures by seamlessly integrating efficiency with empathy. This integration is pivotal in creating and maintaining a PSC that mitigates employee emotional stress and enhances organisational efficiency and overall business performance.

The insights from this study are anticipated to guide the formulation of informed strategies that bolster the psychosocial safety climate in manufacturing firms. By doing so, firms can potentially see a decrease in employee stress levels and an overall enhancement in business performance. Essentially, the research paves the way for a future where manufacturing processes are aligned with the principles of efficiency and resonate with the beats of human resilience and well-being.

## **2. Literature Review**

This study examines the fundamental connection between the psychosocial safety climate, lean manufacturing environment, and organisational citizenship behaviour (OCB). This chapter presents a comprehensive examination of the current body of literature in these areas to fully comprehend the interactions among these concepts and their consequences for the manufacturing industry.

### **2.1 Psychosocial Safety Climate**

Psychosocial safety climate (PSC) is a nascent construct within the realm of organisational climate, encompassing various facets of the work environment that employees encounter either directly or indirectly, which is widely considered that this construct exerts a substantial influence on employee behaviour (McMurray et al. 2010; Permarupan et al. 2013). Extensive research indicates that a robust PSC is associated with a decreased likelihood of experiencing work-related stress, burnout, and other forms of psychological distress among individuals in the workforce (Afsharian et al. 2018; Akanni et al. 2021; Bailey et al. 2015; Becher & Dollard 2016; Bronkhorst 2015; Dollard & Bailey 2021; Dollard & Bakker 2010; Garrick et al. 2014; Hu et al. 2022; Idris & Dollard 2016). Therefore, PSC plays a significant role in cultivating a favourable professional atmosphere, promoting the development of trust and mutual respect among individuals.

PSC can be described as an organisation's commitment to safeguarding its employees' psychological health and safety (Dollard & Bakker 2010). The psychosocial safety climate encompasses a specific element that pertains to different facets within an organisation, comprising the management's underlying principles and beliefs pertaining to the psychological well-being of their workforce. It is assessed by examining four key elements: management support and dedication, management prioritisation, organisational communication, and organisational engagement and participation (Dollard & Idris 2017; Dollard & Karasek 2010; Hall et al. 2010). These elements shed light on the organisation's strategic priorities regarding the psychological well-being of its employees. It also aims to predict how employees react to their working conditions, the design of their jobs, and the social and relational aspects (Dollard & Bakker 2010; Dollard et al. 2019). Thus, PSC could play a significant role by boosting employee well-being, lowering stress, and enhancing job satisfaction, supporting a culture of continuous improvement and efficiency.

We propose that the association between how employees perceive PSC and emotional stress can be changed using lean manufacturing practices in manufacturing firms. When Lean principles prioritise employee engagement, safety, trust, and cooperation and are successfully incorporated into the workplace, they may synergistically fit with the objectives of a supportive PSC. On the other hand, when transitioning from traditional manufacturing management to lean management, it is important to undergo significant alterations in norms, priorities, and values (Iranmanesh et al. 2019). When employees observe positive practices, it has the potential to motivate them and influence their levels of perception and behaviour. Within this context, it is seen that employees hold the perception that their overall well-being is highly regarded and safeguarded, therefore cultivating a sense of safety and assistance. As a result, it is probable that employees would exhibit less emotional stress when they surpass their prescribed job responsibilities and actively contribute to the organisation's overall functioning. Therefore, a lean manufacturing environment can directly and indirectly, impact employee perception of PSC and emotional stress.

### **2.2 Lean Manufacturing Environment**

Lean manufacturing aims to maximise productivity by reducing waste, optimising processes, and enhancing operations (Rüttimann & Stöckli 2016; Stimec & Grima 2019). Lean principles, which stem from the Japanese manufacturing industry, emphasise waste reduction, continuous refinement, and process efficiency (Jayanth et al. 2020; Kumar et al. 2022). Thus, lean Manufacturing is a widely embraced manufacturing strategy and

management approach organisations globally employ to improve their business performance (Ghobadian et al. 2020). With its fundamentals and proven efficacy, lean manufacturing is found to be an essential strategy that boosts global competitiveness by promoting operational excellence and a culture of continuous improvement, fostering sustainable growth and innovation in organisations across industries.

The concept of a lean environment encompasses various dimensions, including context, implementation, and practice, each of which can have distinct impacts on employees' working conditions, health, and overall well-being (Hasle et al. 2012). Previous research identified that lean manufacturing environment is based on five main principles: a) value defined by the customer and created by the organisation; b) value stream (the path a product takes from idea to finished product); c) flow (production with no buffer); d) demand-pull production (which lowers inventory); and e) performance and perfection (for the system to work right, it needs to constantly worry about the right way to use the techniques and the work's quality) (Hasle et al. 2012; Karim & Arif-Uz-Zaman 2013; Lowry 2003; Yang et al. 2012). Thus, numerous academics have observed a positive association between implementing lean manufacturing practices and business performance.

However, the successful execution of lean manufacturing depends upon the involvement of individuals, including leaders and followers, irrespective of the organisational context in which it is implemented (Grigg et al. 2020; Laureani & Antony 2017; Van Rossum et al. 2016). The lean manufacturing environment is characterised by its adherence to ideals such as "continuous improvement" and "respect for people" (Dinis-Carvalho 2021; Emiliani & Stec 2005). Implementing lean manufacturing principles not only prioritises the ongoing enhancement of processes and respect of individuals but also requires significant changes in culture and behaviour throughout all levels of the organisation. Therefore, employee behaviour and perceptions significantly connect with the lean manufacturing environment, and we propose the below hypotheses and the conceptual framework (Figure 1).

**H1:** Psychosocial safety climate (PSC) positively correlates low level of emotional stress.

**H 2:** Lean manufacturing environment positively relates to Psychosocial safety climate (PSC).

**H3:** Lean manufacturing environment positively relates to emotional stress.

**H4:** The relationship between psychosocial safety climate (PSC) and emotional stress is moderated by lean manufacturing environment.

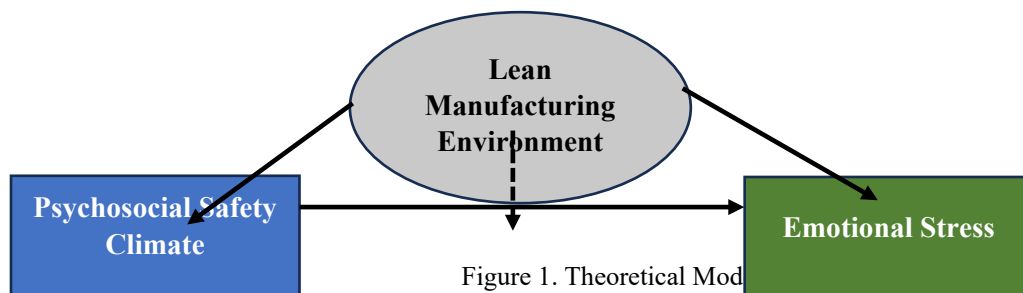


Figure 1. Theoretical Model

### 3. Discussion

Despite the extensive research focusing on psychological safety and its influence on various work-related and individual outcomes, there remains a noticeable gap in the literature. Specifically, no prior studies have explored the intersection of a lean manufacturing environment and the relationship between Psychosocial Safety Climate (PSC) and emotional stress. This represents a significant oversight, as understanding the dynamics of PSC and emotional stress within the unique context of lean manufacturing could yield critical insights into employee well-being, organisational efficiency, and the holistic impact of lean principles on organisational psychology, specially related to the manufacturing sector. This paper aimed to redefine the prevalent discourse by introducing a comprehensive framework that elucidates the mechanisms and circumstances under which the psychosocial safety climate might intersect with the lean manufacturing environment. This endeavour extends our understanding and highlights the nuanced interplay between organisational well-being and operational efficiency within the context of lean methodologies. Specifically, we posit that the psychosocial safety climate, as reflected in the diverse perceptions of psychosocial safety among individual employees, serves as a crucial boundary condition. This condition is instrumental in determining whether the psychosocial safety climate could potentially give rise to issues within the work environment. Essentially, the nuanced variations in employees' perceptions of safety dictate the climate's broader impact on organisational sustainability, health, and functionality. Our proposed theoretical model offers valuable insights with ramifications for scholarly inquiry and practical application in the workplace.

### 4. Implications for research

The theoretical framework presented in this study highlights the significance of psychosocial safety climate in a lean manufacturing setting and its potential impact on organisational outcomes. This offers numerous opportunities for further investigation in future research endeavours.

Future research endeavours may prioritise developing or modifying tools aimed at quantitatively assessing the psychosocial safety climate, particularly in the context of lean manufacturing environments. Due to the distinct attributes and challenges present in lean workplaces, it is possible that the current metrics employed may not comprehensively encompass the concept within this context. In addition, longitudinal and comparative studies are research methodologies commonly employed in academic settings. Longitudinal research is necessary to monitor the progression of the psychosocial safety climate over an extended period, particularly after the introduction or intensification of lean practices. Conducting such studies could aid in determining the causal effects of lean processes on psychosocial safety.

Investigating the fluctuation in employees' perceptions of the psychological safety climate across various hierarchical levels or jobs within an organisation can offer valuable insights into the dynamics within the organisation. Comprehending the reasons behind the variability of perceptions might provide valuable insights for developing focused solutions. Furthermore, future research is needed to understand the specific circumstances in which the psychosocial safety climate might impact both favourable and unfavourable outcomes within a lean environment. Moreover, the identification of moderator variables can contribute to predicting the circumstances under which specific outcomes are more probable. While this study proposes a link between the psychosocial safety climate and emotional stress in lean manufacturing, empirical research is needed to test this relationship. By investigating these domains, future research can have the potential to make a substantial scholarly contribution towards a more intricate comprehension of the dynamic relationship between lean environments, psychosocial safety climate, and organisational outcomes. This, in turn, can provide valuable guidance for enhancing management practises and fostering healthier and more productive work environments.

## **5. Implications for practice**

The current research also carries several important implications for practice. The findings of this study have significant significance for organisational practice, as they provide light on the interplay between psychological safety climate and lean manufacturing environments. Firstly, it is imperative for leaders and managers operating within organisations that implement lean methodologies to acknowledge the crucial significance of fostering a good psychological safety climate. This climate plays a vital role in ensuring employees' well-being and mitigating emotional stress. Managers should proactively develop methods to offset the possible implications of lean practices on employees' sense of safety, as they recognise that these practices can impose significant pressure on staff. Potential solutions that could be employed include routine psychosocial risk assessments, opportunities for open forums to gather feedback, and establishing support networks, such as mental health initiatives or peer-support programmes.

Moreover, the diversity in individual perceptions of psychological safety climate implies that a universal strategy may not provide the desired outcomes. Tailored interventions may yield greater efficacy, considering the distinct requirements, apprehensions, and perspectives of various employee cohorts or divisions. Training programmes might be designed and implemented to educate leaders and supervisors on the significance of psychological safety. These programmes would give them the necessary skills to cultivate a supportive environment, even when striving to achieve lean targets.

Furthermore, the potential correlation between a positive psychological safety climate and heightened organisational citizenship behaviour implies that allocating resources towards fostering psychosocial safety may result in substantial benefits for organisations, such as enhanced performance, increased innovation, and elevated employee engagement and loyalty levels. Therefore, organisations must see psychosocial safety climate as a fundamental element of their comprehensive strategy rather than only a secondary concern related to employee well-being.

In summary, organisations can derive various advantages, including improved employee well-being, morale, and operational competitiveness, by strongly emphasising fostering a resilient psychosocial safety climate, even in the demanding context of lean manufacturing.

## **6. Conclusion**

In conclusion, this research illuminates the critical interplay between the psychosocial safety climate and lean manufacturing, revealing its substantial impact on emotional stress. It underscores the need for organisations to

balance the rigors of lean methodologies with strategies that uphold psychosocial safety, fostering an environment conducive to enhanced employee well-being and operational efficiency. This equilibrium is pivotal in promoting individual employee health and discretionary effort and overarching organisational success and resilience. Ultimately, the study advocates for a symbiotic approach, where lean principles and psychological safety are interwoven, steering modern manufacturing towards holistic excellence.

## References

- Afsharian, A, Zadow, A, Dollard, MF, Dormann, C & Ziaian, T 'Should psychosocial safety climate theory be extended to include climate strength?', *Journal of occupational health psychology*, vol. 23, no. 4, p. 496. 2018,
- Akanni, AA, Ajila, CO, Omisile, IO & Ndubueze, KN, 'Mediating Effect of Work Self-Efficacy on the Relationship Between Psychosocial Safety Climate and Workplace Safety Behaviors Among Bank Employees After Covid-19 Lockdown'. 2021
- Bailey, TS, Dollard, MF, McLinton, SS & Richards, PAM, 'Psychosocial safety climate, psychosocial and physical factors in the aetiology of musculoskeletal disorder symptoms and workplace injury compensation claims', *Work & Stress*, vol. 29, no. 2, pp. 190-211, 2015.
- Baltes, BB, Zhdanova, LS & Parker, CP, 'Psychological climate: A comparison of organizational organisational and individual level referents', *Human Relations*, vol. 62, no. 5, pp. 669-700. 2009
- Becher, H & Dollard, M, *Psychosocial safety climate and better productivity in Australian workplaces: costs, productivity, presenteeism, absenteeism*, Safe Work Australia, University of South Australia, 2016.
- Beus, JM, Taylor, EC & Solomon, SJ, 'Climate-context congruence: Examining context as a boundary condition for climate-performance relationships', *Journal of Applied Psychology*, vol. 106, no. 9, p. 1332, 2021
- beyondblue, *State of Workplace Mental Health in Australia*, TNS Social Research, [https://www.headsup.org.au/docs/default-source/resources/bl1270-report---tns-the-state-of-mental-health-in-australian-workplaces-hr.pdf?sfvrsn=94e47a4d\\_8](https://www.headsup.org.au/docs/default-source/resources/bl1270-report---tns-the-state-of-mental-health-in-australian-workplaces-hr.pdf?sfvrsn=94e47a4d_8). 2015
- Bronkhorst, B, 'Behaving safely under pressure: The effects of job demands, resources, and safety climate on employee physical and psychosocial safety behavior', *Journal of safety research*, vol. 55, pp. 63-72.
- Dinis-Carvalho, J 2021, 'The role of lean training in lean implementation', *Production Planning & Control*, vol. 32, no. 6, pp. 441-2. 2015
- Dollard, MF & Bailey, T 'Building psychosocial safety climate in turbulent times: The case of COVID-19', *Journal of Applied Psychology*, vol. 106, no. 7, p. 951. 2021,
- Dollard, MF & Bakker, AB, 'Psychosocial safety climate as a precursor to conducive work environments, psychological health problems, and employee engagement', *Journal of occupational and organizational organisational psychology*, vol. 83, no. 3, pp. 579-99. 2010
- Dollard, MF, Dormann, C & Idris, MA, 'Psychosocial safety climate: a new work stress theory and implications for method', in *Psychosocial Safety Climate*, Springer, pp. 3-30. 2019
- Dollard, MF & Idris, MA, 'Climate congruence: How espoused psychosocial safety climate and enacted managerial support affect emotional exhaustion and work engagement', *Safety science*, vol. 96, pp. 132-42. 2017
- Dollard, MF & Karasek, RA, 'Building psychosocial safety climate'. 2010
- Dollard, MF, Opie, T, Lenthall, S, Wakerman, J, Knight, S, Dunn, S, Rickard, G & MacLeod, M, 'Psychosocial safety climate as an antecedent of work characteristics and psychological strain: A multilevel model', *Work & stress*, vol. 26, no. 4, pp. 385-404. 2012
- Emiliani, M & Stec, D, 'Leaders lost in transformation', *Leadership & Organization Development Journal*, vol. 26, no. 5, pp. 370-87. 2005
- Garrick, A, Mak, AS, Cathcart, S, Winwood, PC, Bakker, AB & Lushington, K, 'Psychosocial safety climate moderating the effects of daily job demands and recovery on fatigue and work engagement', *Journal of occupational and organizational organisational psychology*, vol. 87, no. 4, pp. 694-714. 2014
- Ghobadian, A, Talavera, I, Bhattacharya, A, Kumar, V, Garza-Reyes, JA & O'regan, N 'Examining legitimatisation of additive manufacturing in the interplay between innovation, lean manufacturing and sustainability', *International Journal of Production Economics*, vol. 219, pp. 457-68. 2020,
- Grigg, NP, Goodyer, JE & Frater, TG 'Sustaining lean in SMEs: key findings from a 10-year study involving New Zealand manufacturers', *Total Quality Management & Business Excellence*, vol. 31, no. 5-6, pp. 609-22. 2020.
- Hall, GB, Dollard, MF & Coward, J 'Psychosocial safety climate: Development of the PSC-12', *International Journal of Stress Management*, vol. 17, no. 4, p. 353. 2010.
- Hammer, LB, Truxillo, DM, Bodner, T, Pytlovany, AC & Richman, A, 'Exploration of the impact of organisational context on a workplace safety and health intervention', *Work & stress*, vol. 33, no. 2, pp. 192-210. 2019

- Hasle, P, Bojesen, A, Jensen, PL & Bramming, P 2012, 'Lean and the working environment: a review of the literature', *International Journal of Operations & Production Management*, vol. 32, no. 7, pp. 829-49.
- Hu, Q, Dollard, MF & Taris, TW, 'Organizational Organisational context matters: Psychosocial safety climate as a precursor to team and individual motivational functioning', *Safety science*, vol. 145, p. 105524. 2022
- Idris, M & Dollard, M 'Psychosocial safety climate: Past, present, and future research', *Psychosocial factors at work in the Asia Pacific*, pp. 89-134. 2016,
- Idris, MA & Dollard, MF, 'Psychosocial safety climate, emotional demands, burnout, and depression: a longitudinal multilevel study in the Malaysian private sector', *Journal of occupational health psychology*, vol. 19, no. 3, p. 291. 2014
- Idris, MA, Dollard, MF & Tuckey, MR, 'Psychosocial safety climate as a management tool for employee engagement and performance: A multilevel analysis', *International Journal of Stress Management*, vol. 22, no. 2, p. 183. 2015
- Iranmanesh, M, Zailani, S, Hyun, SS, Ali, MH & Kim, K, 'Impact of lean manufacturing practices on firms' sustainable performance: Lean culture as a moderator', *Sustainability*, vol. 11, no. 4, p. 1112. 2019
- Jayanth, BV, Prathap, P, Sivaraman, P, Yogesh, S & Madhu, S, 'Implementation of lean manufacturing in electronics industry', *Materials Today: Proceedings*, vol. 33, pp. 23-8. 2020
- Karim, A & Arif-Uz-Zaman, K, 'A methodology for effective implementation of lean strategies and its performance evaluation in manufacturing organizations'organisations', *Business Process Management Journal*, vol. 19, no. 1, pp. 169-96. 2013
- Kumar, N, Hasan, SS, Srivastava, K, Akhtar, R, Yadav, RK & Choubey, VK, 'Lean manufacturing techniques and its implementation: A review', *Materials Today: Proceedings*, vol. 64, pp. 1188-92. 2022
- Laureani, A & Antony, J, 'Leadership characteristics for lean six sigma', *Total Quality Management & Business Excellence*, vol. 28, no. 3-4, pp. 405-26. 2017
- Law, R, Dollard, MF, Tuckey, MR & Dormann, C, 'Psychosocial safety climate as a lead indicator of workplace bullying and harassment, job resources, psychological health and employee engagement', *Accident Analysis & Prevention*, vol. 43, no. 5, pp. 1782-93. 2011
- Loh, MY, Dollard, MF, McLinton, SS & Tuckey, MR 'How psychosocial safety climate (PSC) gets stronger over time: A first look at leadership and climate strength', *Journal of occupational health psychology*, vol. 26, no. 6, p. 522. 2021,
- Loh, MY, Idris, MA, Dollard, MF & Isahak, M, 'Psychosocial safety climate as a moderator of the moderators: Contextualizing Contextualising JDR models and emotional demands effects', *Journal of occupational and organizational organisational psychology*, vol. 91, no. 3, pp. 620-44. 2018
- Lowry, JR, 'A primer for lean marketing', *Business Horizons*, vol. 46, no. 3, pp. 41, 2003
- Mansour, S & Tremblay, D-G, 'The mediating role of work engagement between psychosocial safety climate and organisational citizenship behaviours: a study in the nursing and health sector in Quebec', *International Journal of Human Resources Development and Management*, vol. 18, no. 1-2, pp. 51-71. 2018
- McLinton, SS, Dollard, MF & Tuckey, MR, 'New perspectives on psychosocial safety climate in healthcare: A mixed methods approach', *Safety science*, vol. 109, pp. 236-45. 2018
- McMurray, AJ, Pirola-Merlo, A, Sarros, JC & Islam, MM, 'Leadership, climate, psychological capital, commitment, and well-being in a non-profit organization'organisation', *Leadership & Organization Development Journal*, vol. 31, pp. 436-57. 2010
- Permarupan, PY, Saufi, RA, Kasim, RSR & Balakrishnan, BKPD, 'The Impact of Organizational Climate on Employee's Work Passion and Organizational Commitment', *Procedia - Social and Behavioral Sciences*, vol. 107, pp. 88-95. 2013
- Rüttimann, BG & Stöckli, MT, 'Lean and Industry 4.0—twins, partners, or contenders? A due clarification regarding the supposed clash of two production systems', *Journal of Service Science and Management*, vol. 9, no. 6, pp. 485-500. 2016
- Schneider, B, González-Romá, V, Ostroff, C & West, MA 'Organizational Organisational climate and culture: Reflections on the history of the constructs in the Journal of Applied Psychology', *Journal of Applied Psychology*, vol. 102, no. 3, p. 468. 2017,
- Stimec, A & Grima, F, 'The impact of implementing continuous improvement upon stress within a Lean production framework', *International Journal of Production Research*, vol. 57, no. 5, pp. 1590-605. 2019
- Teo, ST, Bentley, T & Nguyen, D, 'Psychosocial work environment, work engagement, and employee commitment: A moderated, mediation model', *International Journal of Hospitality Management*, vol. 88, p. 102415. 2020
- Van Rossum, L, Aij, KH, Simons, FE, van der Eng, N & Ten Have, WD, 'Lean healthcare from a change management perspective: the role of leadership and workforce flexibility in an operating theatre', *Journal of health organization organisation and management*, vol. 30, no. 3, pp. 475-93. 2016
- World Health Organization 2023, viewed 10.09.2023, <<https://covid19.who.int/region/searo/country/lk>>.

- Yang, CC, Yeh, TM & Yang, KJ, 'The implementation of technical practices and human factors of the toyota production system in different industries', *Human Factors and Ergonomics in Manufacturing & Service Industries*, vol. 22, no. 6, pp. 541-55. 2012
- Zadow, A & Dollard, MF, 'Psychosocial safety climate', *The Wiley Blackwell handbook of the psychology of occupational safety and workplace health*, pp. 414-36. 2015
- Zadow, A, Dollard, MF, Parker, L & Storey, K, 'Psychosocial safety climate: a review of the evidence', *Psychosocial Safety Climate*, pp. 31-75. 2019
- Zadow, AJ, Dollard, MF, McInton, SS, Lawrence, P & Tuckey, MR, 'Psychosocial safety climate, emotional exhaustion, and work injuries in healthcare workplaces', *Stress and Health*, vol. 33, no. 5, pp. 558-69. 2017
- Zohar, D & Luria, G, 'A multilevel model of safety climate: cross-level relationships between organization organisation and group-level climates', *Journal of Applied Psychology*, vol. 90, no. 4, p. 616. 2005

## **Biographies**

**G.G. Udaya Priyasantha Rathnayake**, currently pursuing his PhD at the Faculty of Business and Law, University of Wollongong, NSW, Australia, brings a rich academic and professional background to his research. His educational journey spans a Master's in Human Resource Management and a Postgraduate Diploma in Human Resource Management and Labour Relations from the University of Colombo, Sri Lanka, capped by a BSc in Business Management from Rajarata University of Sri Lanka. Udaya's expertise is enriched by over 12 years as an HRM practitioner within prominent companies like Sri Lankan Airlines, Orange Electric and Maliban Biscuits Manufacturing in Sri Lanka. In addition to his extensive industry experience, Udaya is an active academic, contributing to research, publications, and guest lectures across various educational institutions. His work is featured in several journals and conference proceedings, underscoring his commitment to scholarly activity alongside his professional career. Udaya's research is both varied and specialised, reflecting his comprehensive background. His interests delve into realms such as employee citizenship behaviour, organisational climate, employee relations, engagement, and performance, focusing on manufacturing sectors and occupational health and safety. This unique blend of industry practice and academic inquiry positions him as a distinguished figure capable of providing profound insights and contributions to contemporary HRM and organisational studies.

**Dr. Anil Chandrakumara** is a Senior Lecturer in International Business Strategy and Cross-cultural Management and a former Director of Master of International Degree program of the University of Wollongong in Australia. He earned his PhD in International Management from the University of Sheffield, UK and holds an MBA and BSc. (Hons) Business Administration degrees from the University of Sri Jayewardenepura in Sri Lanka. Anil's scholarly achievements include publishing his work in top-tier international journals, such as the International Journal of Manpower, Thunderbird International Business Review, Employee Relations, Australian Accounting Review, International Employment Relation Review, Corporate Ownership and Control, International Journal of Management, Problems and Perspectives of Management, Academy of Taiwan Business Management Review, International Journal of Business & Social Science, etc. Dr. Anil is a professional member of several accredited bodies such as MAHRI (Australian Human Resource Institute), MAIB-USA (Academy of International Business) AFSEDA-UK (Associate Fellowship of Staff and Education Development Association), and a MANZA.

**A/Prof. Dr. Anura De Zoysa** holds the position of Associate Professor and serves as the Deputy Discipline Leader in the Accounting discipline at the University of Wollongong in Australia. He earned his PhD (Accounting) from the University of Wollongong, and he also holds an MEc (Hons) from Wakayama University in Japan, as well as a BCom (Hons) degree from the University of Sri Jayewardenepura in Sri Lanka. Anura's scholarly achievements include publishing his work in top-tier international journals, such as the International Journal of Accounting, American Business Review, Meditari Accountancy Research, Industrial Management & Data Systems, and the Journal of Small Business Management. Also, Anura is affiliated with three professional accounting bodies: the Certified Public Accountant (CPA), the Fellow Chartered Accountant (FCA), and the Certified Management Accountant (CMA). His ongoing research pursuits are centred around several areas, including cost management, carbon accounting, considerations of Corporate Social Responsibility (CSR) and Environmental, Social, and Governance (ESG) factors, performance management, and sustainability.