

# Evolved leader behaviours for adopting lean and green in family firms: a longitudinal study in Indonesia

Nissa Syifa Puspani

*High-tech Business and Entrepreneurship Department, Faculty of Behavioural, Management and Social Sciences, University of Twente, Enschede, The Netherlands and Industrial Engineering Department, Widyatama University, Bandung, Indonesia, and*

Desirée H. Van Dun and Celeste P. M. Wilderom

*High-tech Business and Entrepreneurship Department, Faculty of Behavioural, Management and Social Sciences, University of Twente, Enschede, The Netherlands*

## Abstract

**Purpose** – This longitudinal study focuses on the specific behaviours of both top and other leaders in family firms that are implementing lean and green practices in order to contribute to the sustainability transition.

**Design/methodology/approach** – Over the course of two years and two months, longitudinal comparative case research was carried out within two Indonesian family firms in the logistics and transportation business. Data were collected via of 86 interviews, 37 observed meetings within the firms and 12 work floor visits. The thematic analysis approach was based on the “fuller full-range theory of leadership”.

**Findings** – Over time, the leaders at various hierarchical levels learned to diversify their behavioural repertoire; solely exhibiting the transactional or transformational leadership style was not effective for employees’ adoption of lean and green practices. Instead, the leaders had to integrate the behaviours from the transactional, transformational and instrumental leadership styles.

**Originality/value** – This study explores the extension of leaders’ behaviours over time. Our findings result in two propositions that theoretically explain the evolved behaviours that steered the organisational transformation towards a lean and green firm. Given its context (i.e. Indonesian family-owned logistics firms), this study offers insights that might generalise to similar family firms in other Asian countries.

**Keywords** Lean and green practices adoption, Family-owned logistics and transportation firms, Fuller full-range theory of leadership

**Paper type** Research paper



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## Introduction

Through adopting lean and green practices, logistics firms can improve their performance (Mason *et al.*, 2008; Mollenkopf *et al.*, 2010). Lean practices aim to eliminate non-value adding work activities (e.g. excess time, labour, equipment and inventories) and enable firms to improve their service quality and efficiency while at the same time reduce their costs (Mollenkopf *et al.*, 2010; Womack and Jones, 2003; Wang *et al.*, 2011). Meanwhile, green practices minimise the negative environmental impact of a firm's operations (Lun, 2011; Zhu and Sarkis, 2004; Yang *et al.*, 2011). Next to improving its ecological sustainability, green practices often help save a firm's resources and enhance its efficiency and reputation (Molina-Azorín *et al.*, 2009; Mustapha *et al.*, 2017). Although lean and green practices were initially popular in the manufacturing sector (Villarreal *et al.*, 2016; Garza-Reyes *et al.*, 2016), the adoption of such practices in the services sector is growing, particularly in logistics. Given their large storage demands, extensive distribution processes, high fuel consumption and relatively long transportation lead times, nowadays, logistics firms need to significantly optimise their efficiency and reduce their environmental impact (Garza-Reyes *et al.*, 2016; Villarreal *et al.*, 2016). Indeed, many countries worldwide wish to curb unnecessary logistics costs and emissions. However, lean and green adoption in logistics firms in most of Asia, including Indonesia, is still in its early stage.

Family firms are a significant driving force of the Indonesian economy as 60% are family-owned (Bin *et al.*, 2018). It is important for Indonesian family-owned logistics firms to be leaner and greener, as it will positively contribute to the country's performance. Lean and green principles might especially appeal to family-owned businesses given their prototypical longer-term orientation and focus on sustainability and their relative greater awareness of their impact on future generations (Lumpkin and Brigham, 2011). On the other hand, Lean and green practices involve the implementation of new technologies, the development of new skills and the creation of new policies and procedures (Mollenkopf *et al.*, 2010; Garza-Reyes *et al.*, 2016). Adopting an innovation, such as lean and green practices, poses a challenge to family-owned firms as they tend to preserve traditional ways of working, due to their risk-averseness combined with a long-term orientation (De Massis *et al.*, 2015; Rondi *et al.*, 2019).

Thus, to successfully adopt lean and green practices, (family) firms must ensure that their employees are willing to improve their ways of working (Magnani *et al.*, 2019; Van Dun and Wilderom, 2021). Employee willingness is known to be determined by individual factors, such as job satisfaction, rewards and stress levels at work (Magnani *et al.*, 2019) but also leaders' behaviours as they shape their organisations (Foo *et al.*, 2021; Van Dun and Wilderom, 2012; Tortorella *et al.*, 2019). Leaders are strong determinants of employees' successful adoption of lean and green practices (Potosky and Azan, 2023; Van Dun and Wilderom, 2012; Tortorella *et al.*, 2019). In family-owned firms the direction of the business is heavily dependent on top managers, who are typically family members or those with close ties to the owning family (Fries *et al.*, 2021; Gagné *et al.*, 2021; Efferin and Hartono, 2015; Maharajh *et al.*, 2023). Moreover, as such leaders tend to perpetuate family values and visions through their firms, the success of family-owned firms largely relies on the behaviours of their leaders (Fries *et al.*, 2021).

Indeed, family-firm employees' behaviour tends to depend on the top leaders with control over the firm's decisions to navigate changes (Fries *et al.*, 2021). Thus, to successfully adopt lean and green practices, leaders in family-owned firms are likely to exhibit a certain set of behaviours. In particular, Antonakis and House (2014) introduced the "fuller full-range leadership theory" which suggests that effective leaders exhibit a broad repertoire of (leader) behaviours. Involved here are not only transformational type behaviours and transactional ones, but also behaviours falling within the purview of the instrumental leadership style. The study of transformational and transactional leadership styles is already well-established, also in the family business literature (Fries *et al.*, 2021; Abdullah *et al.*, 2022). The instrumental

leadership style, however, is still quite novel and includes leader behaviours that relate to strategy implementation (Antonakis and House, 2014). At the outset of this study we assumed that exhibiting these three styles might be key to the effective adoption of lean and green practices in family firms in the logistics sector. Given that our study is one of the first to explore this assumption in family firms, our research question is: *How do leaders' fuller full-range of leadership behaviours facilitate employees' adoption of lean and green practices in family-owned logistics firms?*

We present a longitudinal, qualitative study in two Indonesian family-owned logistics firms. For two years and two months, we collected data on leaders' behaviours in relation to their employees' adoption of lean and green practices.

In terms of our theoretical contribution, we illustrate the relevance of the fuller full-range leadership theory (Antonakis and House, 2014) for future studies on the effective adoption of lean and green practices in family firms. We found that to successfully implement those practices within the firms, leaders have to broaden their behavioural repertoire. The findings can guide leaders of family-owned (Asian) logistics firms to ensure effective lean and green practices adoption in their firms.

## Literature review

### *Family businesses in the logistics sector*

Family-owned firms have significant importance in driving the economy in various sectors, including logistics. They have major contributions to the gross domestic products (GDP) in both developed and developing countries, for example, 60% in France, 55% in Germany, 76% in Philippines and 90% in Mexico (Birdthistle and Hales, 2023). Family-owned firms are characterised through a concentration of ownership by one or more families (Pounder, 2015), which allow the owning family members to have the rights to determine strategic decisions and management practices within their firms (Anderson and Reeb, 2003). Unlike non-family firms that often prioritise short-term financial performance to satisfy shareholders, family-owned firms focus on sustaining the business across generations, yet they might also be risk-averse or laissez-faire (Rondi *et al.*, 2019).

In the effort of sustaining the businesses, family-owned firms, including those in the logistics sector, face significant challenges in fostering innovation while maintaining family values (Baltazar *et al.*, 2023). Family firms in general tend to have a conservative approach to its operations which make them somewhat less innovative than non-family firms in adapting the rapid pace of change in business environments (De Massis *et al.*, 2015; Nieto *et al.*, 2015). This conservative tendency limits a family firm's ability to invest in innovation, including lean and green practices, which seems nowadays necessary for serious growth (Heider *et al.*, 2022).

The ability of family firms to navigate lean and green challenges relies on their family members' top leaders with control over the decisions in the firm (Fries *et al.*, 2021). These top leaders often perceive their firm as their "baby" and also infuse family values, visions and virtues into their firm (Fries *et al.*, 2021; Chung and Dahms, 2021; Boyatzis and Soler, 2012). Since the adoption of lean and green firm practices requires a significant change to established business practices, family firms may need to balance the need for change (to co-enable a sustainable planet for future generations) with maintaining earlier established family practices (Basco, 2013).

### *Lean and green practices adoption*

Lean and green practices adoption requires firms to make major changes to their ways of working, at the operational, tactical and strategic level. Lean practices focus on eliminating

non-value-adding (wasteful) activities (e.g. excessive time, labour, equipment and inventories) to achieve customer value and, therefore, operational excellence (Hines *et al.*, 2008; Pampanelli *et al.*, 2014). Lean thus enables organisations to enhance their service quality while simultaneously reducing costs (Mollenkopf *et al.*, 2010). In addition, lean practices can be the catalyst to adopt green practices (Dües *et al.*, 2013). For instance, minimising lead times in transporting goods not only improves efficiency but also reduces CO<sub>2</sub> emission (Dües *et al.*, 2013; Garza-Reyes *et al.*, 2016). By also adopting green practices, firms not only improve their ecological sustainability but also save resources and thereby enhance the efficiency of their business processes (Molina-Azorín *et al.*, 2009; Mustapha *et al.*, 2017).

To successfully implementing both lean and green practices, firms need to involve their employees in the adoption process to ensure long-term success (Dües *et al.*, 2013; Womack and Jones, 2003). However, in most cases, employees resist changes in their work routines (Oreg *et al.*, 2018). Thus, the success of lean and green practice adoption is highly dependent on effective leadership: to persuade employees to change their extant practices (Magnani *et al.*, 2019; Van Dun and Wilderom, 2021; Van Dun *et al.*, 2023).

### *Leadership*

Indeed, leaders' behaviours shape a firm's values, culture and practices, which in turn determine employees' willingness to adopt changes in their tasks (Van Dun *et al.*, 2017; Tortorella *et al.*, 2019). To ensure employees' willingness to adopt lean and green practices, leaders across hierarchical levels should encourage employees; listen to them; and provide sufficient resources, including a supportive Human Resources policy and training (Van Dun *et al.*, 2017). In other words, effective lean and green practice adoptions are driven by leaders who can inspire and motivate employees towards sustainable practices (Tariq *et al.*, 2016). To do so in ways that also leads to success for the firm is not something that all people in leadership positions can do naturally.

The role of top leaders in the adoption of lean and green practices is larger than expected; it has shown to stretch itself beyond the initial implementation stage; They should provide ongoing support and training to sustain the full adoption of lean and green practices (Tariq *et al.*, 2016; Van Dun *et al.*, 2017). Moreover, successful leaders should actively collaborate with employees to identify improvement areas and develop new strategies to align with evolving customer preferences. This will not only reduce process inefficiencies and improve sustainability, but also enhance employee engagement and business performance (Achanga *et al.*, 2006). The question we explore in the below deals with the specific leader behaviours needed for successfully implementing lean and green practices over time: through a longitudinal study.

A key theory in the domain of Organisational Behaviour constitutes the original full-range leadership theory (Antonakis and House, 2013), leader behaviours can be grouped into transformational, transactional and laissez-faire leadership styles, whereby a combination of transformational and transactional leader behaviours are deemed most effective. Transformational leaders are characterised by charisma, inspirational motivation, intellectual stimulation and individualised consideration. To effectively achieve the organisation's goals, they combine creative insight and persistence as well as intuition and sensitivity to the needs of their subordinates (Bass and Avolio, 1993; Antonakis and House, 2014). Transactional leaders rely on contingent rewards and sanctions to reach high job performance; they tell their subordinates in advance what to expect if they do their tasks right or wrong (Bass and Avolio, 1993; Antonakis and House, 2014). Such type of a leader views workers' motivation as a transaction between them and the organisation.

In line with the full-range leadership theory, the combination of transformational and transactional leadership styles ensures that employees follow the established procedures while

inspiring and motivating them towards goal attainment (Hoozeboom and Wilderom, 2019). However, effective leaders also have to ensure a firm is adaptive to the external environment and uses resources efficiently, especially when adopting new work practices (Antonakis and House, 2014). Therefore, Antonakis and House (2014) introduced the *fuller* full-range leadership theory which proposes the instrumental leadership style to complement transformational and transactional leader behaviours, to fill the gap between setting a vision and achieving the set goals.

Instrumental leadership is seen as a leader's ability to monitor the firm's environment and performance, and to implement strategic and tactical solutions (Antonakis and House, 2014; Chammas and Hernandez, 2019). This style is reflected in four leader behaviours:

- (1) Environmental monitoring, i.e. scanning the internal and external environment of the firm to know the firm's strengths, weaknesses and opportunities;
- (2) Strategy formulation, i.e. developing policies, goals and objectives to support the attainment of firm's vision and mission;
- (3) Path-goal facilitation, i.e. giving direction, support and resources, removing obstacles for goal attainment and providing path-goal clarifications; and
- (4) Outcome monitoring, i.e. providing useful feedback to employees' goal-directed efforts.

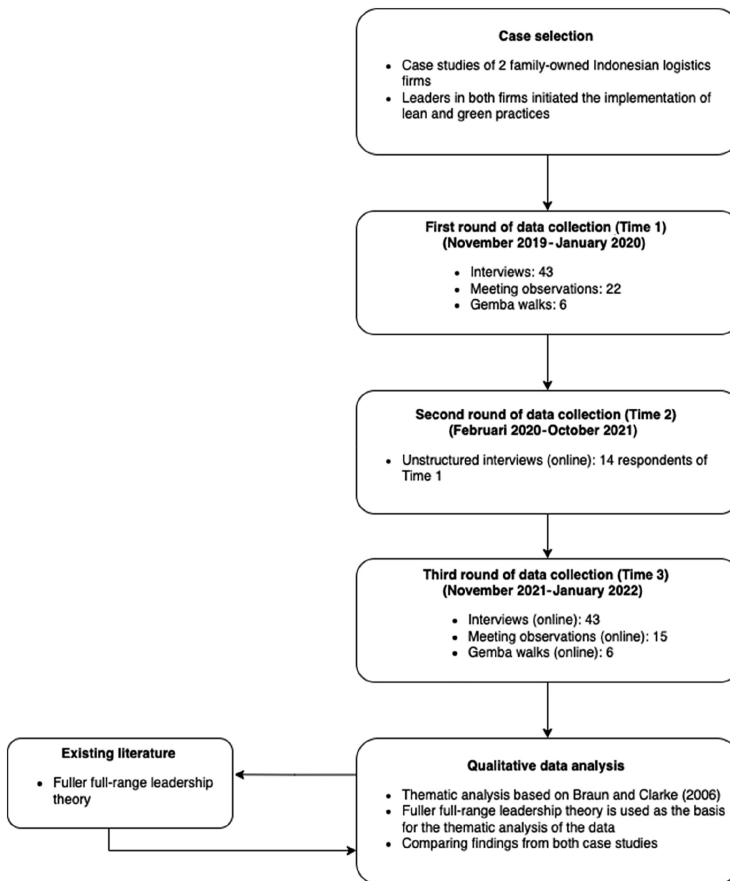
In the context of family-owned firms, instrumental leadership may be particularly relevant. Family firm leaders tend to be highly emotionally attached to ensuring the firm's success. Often this is coupled with a clear vision for the firm and a high motivation to achieve it (Fries *et al.*, 2021; Neffe *et al.*, 2022). Instrumental leadership could help these leaders to achieve their vision by formulating an executable strategy and facilitating the path for employees to work toward it, including performance-enhancing feedback (Antonakis and House, 2014). However, so far, we have not come across family firm studies that have examined the full spectrum of the fuller full-range of leadership theory; this study fills that void.

## Methodology

### *Research design*

In this study, we examine how full-range leadership behaviours facilitate employees' adoption of lean and green practices in family-owned logistics firms. This means we address leader behaviours in a new light and explore the possible causal relationship between leadership behaviours and the adoption of lean and green practices, which requires an exploratory approach (Saunders *et al.*, 2009). In particular, we undertook a longitudinal comparative case study (Caniato *et al.*, 2018; Ljungkvist *et al.*, 2022; Piercy and Rich, 2015), where we compare multiple firms with a common context over time: to explore crucial leader-behavioural patterns (Ljungkvist *et al.*, 2022; Ragin *et al.*, 2003).

In particular, we selected two Indonesian logistics and transportation firms that engaged in lean and green practices implementation. We collected data from November 2019 until January 2022. Figure 1 illustrate the three data collection rounds and methods used. The first round (T1) was carried out from November 2019 until January 2020; we conducted interviews among leaders, employees and truck drivers. Moreover, we observed meetings and performed work floor walks ("Gemba walks") with the top managers aimed at observing the employees' actual work situations (Gaiardelli *et al.*, 2019). At T2, from February 2020 until October 2021, we contacted some of the respondents again through online meetings to ask follow up questions based on their T1 interview results. From November 2021 until January 2022, we executed a third round (T3) that was identical to T1. However, due to the Covid-19 pandemic, all the T3 activities were conducted virtually.



Source(s): Created by authors

Figure 1.  
Longitudinal research design

### Sampling and sample description

To sample the family firms, we first spoke with the CEO of a large Indonesian logistics firm, who also led the Indonesian Association of Logistics and Transportation Firms. The selection of the two firms was based on a recommendation by this association's board. Our prime selection criterium was that both family firms seriously adopted lean and green practices. Table 1 summarises the profiles of both selected firms.

Case 1 is a small family-owned logistics and transportation firm (Firm 1) which operates in the area of warehousing and domestic goods delivery. Its CEO represents the third generation of family owners and is assisted by a general manager who is his cousin. The CEO had started to implement lean already a year before T1 and was inspired to become green. The lean practices being adopted by Firm 1 include Just in Time, 5S, elimination of wasteful activities, live tracking of trucks and warehouse management. The adopted green practices cover waste management, emission control, paperless office policy and truck speed limits (Cherrafi *et al.*, 2018).

Case 2 constitutes a much larger family-owned Indonesian logistics and transportation firm (Firm 2), which had started to adopt lean five months before T1 and aspired to become

**Table 1.**  
Profile of both  
selected firms

Company	Firm 1	Firm 2
Size (in FTE)	25	900
Location	Jakarta, Indonesia	Jakarta, Indonesia
Year of establishment	1985	1987
Start of lean and green adoption	2018	2019
Lean practices being adopted <sup>1,2</sup>	<ul style="list-style-type: none"> <li>- Just in time</li> <li>- 5S</li> <li>- Elimination of wasteful activities</li> <li>- Live tracking</li> <li>- Warehouse management</li> </ul>	<ul style="list-style-type: none"> <li>- Just in time</li> <li>- 5S</li> <li>- Elimination of wasteful activities</li> <li>- Live tracking</li> <li>- Warehouse management</li> <li>- Milk run distribution</li> </ul>
Green practices being adopted <sup>1,3</sup>	<ul style="list-style-type: none"> <li>- Waste management</li> <li>- Emission control</li> <li>- Paperless office policy</li> <li>- Truck speed limits</li> </ul>	<ul style="list-style-type: none"> <li>- Waste management</li> <li>- Emission control</li> <li>- Paperless office policy</li> <li>- Truck speed limits</li> </ul>

**Note(s):** <sup>1</sup>Cherrafi *et al.* (2018), <sup>2</sup>Kilic *et al.* (2012), <sup>3</sup>Centobelli *et al.* (2020)  
**Source(s):** Created by authors

green as well; the general manager was selected and trusted by the family and was very close with them, albeit not a member of the owning family. Firm 2 operates in the area of warehousing, domestic goods delivery and international goods delivery. This firm adopted the same lean and green practices as Firm 1, plus milk run distribution (Cherrafi *et al.*, 2018; Kilic *et al.*, 2012).

In terms of the sample of firms' respondents, at T1, 43 interviews were conducted on site with six key leaders of both firms and 25 randomly selected employees as well as 12 randomly selected truck drivers (see, Table 2). The interviewees consisted of 35 males and 9 females, with an average age of 33 years. At T2, we conducted 14 unstructured interviews with key respondents from T1 who had agreed to proactively give updates on the progress of lean and green practices afterwards. At T3, we interviewed the same 43 respondents. Hence, in total, 86 interviews were conducted. Moreover, we observed 37 weekly meetings of 60–90 min each, in both firms (including online meetings, due to the pandemic), and 12 work floor visits of about 60 min each (half of which were held online). Table 2 specifies the key characteristics of the dataset.

**Table 2.**  
Collected data

Firm and period	Total # of employees	No. of interviewees			No. of observed meetings	No. of work floor visits/Gemba walks
		Leaders	Employees	Truck drivers		
<i>Firm 1</i>						
T1	25	2	15	6	20	4
T2						
T3		2	15	6	10	3
<i>Firm 2</i>						
T1	900	4	10	6	2	2
T2						
T3		4	10	6	5	3
Total		12	50	24	37	12

**Source(s):** Created by authors

### *Data collection*

To ensure similarity of data collection across both cases, our data-collection protocol (Caniato *et al.*, 2018; Yin, 2014) was as follows. First, we utilised a standardised interview guide with semi-structured, open-ended questions, ensuring that each interview covered the same key topics. Appendixes 1 and 2 depict the used interview protocol for leaders and employees, respectively. The interviews were conducted in the respondents' workplaces, providing a consistent environment across both cases. In our interviewing, we ensured consistency in the ways we approached the respondents, to minimise interviewer bias. Secondly, after the interviews, we then also selected similar types of weekly progress meetings across both cases, to ensure comparability of the observation data. Finally, the Gemba walks were always conducted with the top managers. Below we further explain the methods we used as part of our data collection protocol. *Interviews*—The interviews were carried out during the respondents' breaks and took approximately one hour, following the previously mentioned semi-structured interview guide. The questions were inspired by Robertson and Barling (2013), we asked about their views on how their firms had adopted lean and green; the benefits of the adoption for employees, how they perceived their leader's support, plus how the degree of adoption could be improved. To curb confusion for the respondents, we avoided the use of the more abstract term "lean." Instead, we used terms like "efficiency", "initiation of change", "improvement" or "new regulations". For "green" we used synonyms like "sustainability" or "pro-environment". All the questions were developed in English and translated into Indonesian. The questions were then pilot-tested with one top leader and one employee, and all interviews were held in the respondents' native Indonesian language.

The interviews were audio-taped after which transcripts were made by a native-speaking Indonesian research assistant to avoid bias and subjectivity; these transcripts were translated to English by a licensed translator. While at T1 the first author performed the interviews, at T3 one additional researcher, with a master's degree in management, attended each interview. This enabled the first author to probe for more detail and obtain from the second researcher information about the body language of the respondents, thereby assuring the quality of their provided data. Both interviewers took notes to curb interviewer bias (Eisenhardt, 1989).

At T2, we reviewed the interview results from T1. When we found unclarities, we contacted the respondent through video calls and text messages. We did not carry out formal data collection activities but it seemed important to maintain relationships with key persons in both firms allowing us to keep access to data collection and track their lean and green practices adoption. Hence, we kept in close contact with the CEO, general manager and several staff members of Firm 1, plus with the general manager, middle managers and several staff members of Firm 2.

*Observations* – We attended in-person weekly coordination meetings between leaders and their employees. The goal was to cross-check whether the leaders' behaviours and the corresponding employee responses gathered from the interviews complied with the actual work floor reality (Van Dun and Wilderom, 2021). The meetings lasted between 30 and 45 min and were attended on average, by five persons from the same department, including one or more leaders. Thus, to ensure that the participants behaved as they would do normally, assuring reliable observations, we explained that the researcher did not assess or evaluate their (job) performance. At T3, when we joined the meetings online, we turned off our camera and muted our microphone.

*Gemba walks* – In addition, we performed one-hour Gemba walks during which we observed how the employees performed their tasks and lean and green practices in their working stations. To ensure employees felt comfortable with our presence, we introduced ourselves to the employees and explained that we were not assessing or judging them. At T3, the walks were carried out virtually with the help of the leaders showing us their work floors

through their smartphones, which enabled us to observe employees' use of the lean and green tools and ask them about individual perspectives on these implementations.

### *Data analysis*

The data was analysed following the thematic analysis approach of [Braun and Clarke \(2006\)](#), so that patterns of themes could be identified within the data ([Abbate et al., 2023](#)). After the data was collected, as will be elaborated in more detail below, this analysis consisted of transcribing the data, generating codes that consisted of relevant features in the data, and collating the codes into themes that expressed patterns in the data.

Firstly, we transcribed the interviews into 190 pages. These transcriptions were then verified by comparing it to our 40 pages of field notes made during the observations and Gemba walks. Secondly, we created initial codes from the data that represented basic segments of the raw data, i.e. the transcripts ([Braun and Clarke, 2006](#)). These codes were extracted by analysing the transcriptions, specifically focusing on the leaders' behaviours and employees' responses concerning the adoption of lean and green practices. For example, one of the codes related to leaders' "focus attention on deviation from the standard" (see, case 2).

We continued with sorting the codes into themes of the three leadership styles according to the fuller full-range leadership theory ([Antonakis and House, 2014](#)), i.e. insofar these codes were to fit with any corresponding characteristics noted in the literature review section (following the approach of [Van Dun et al., 2023](#)). For example, codes related to leaders' behaviours on rewards, as well as the example provided above, were grouped into transactional leadership. Those codes on motivating employees (e.g. "building trust with employees") were grouped into transformational leadership, and codes on implementing solutions (such as "assist employees to avoid mistakes") into instrumental leadership.

To avoid researcher bias, the coding was performed by both the main researcher and the additional researcher who was involved also in the interviews. The identified codes were internally validated by the two co-authors who specialise in the field of leadership behaviours. Finally, we created case narratives: over time and across the two cases.

## **Findings**

[Table 3](#) presents a thematic analysis of the concrete leader behaviours within both firms and their impact on the degree of employee acceptance of the lean and green practices, over time, as will be elaborated below.

### *Firm 1*

*Lean and green adoption.* A third generation family member led this firm. The family prepared him to lead this firm as its CEO by ensuring he got the best education possible; they sent him to study abroad, which equipped him with novel insights and knowledge on business and logistics in a global perspective. With this background, the CEO developed an open mindset and a drive to foster innovation for the firm's benefit.

The CEO was actively involved in an international business logistics association. He was inspired by combining the Sustainable Development Goals and efficiency improvements, both in his own firm and in Indonesia. This created a strong drive for him to offer pro-environmental and efficient logistical services with his firm. Also, he had the power to drive the firm's resources toward the success of lean and green practices adoption. His approach was to inspire the employees to share his vision and empower them to achieve the goals. This approach was shaped by the values of the family that taught him to see the firm as an extended part of the family and approach his employees with a transformational style.

T1

T3

Firm 1

Leaders' behaviours

Transformational

- Building trust with employees: "We always share our problems and engage quite closely with my employees to earn their trust" (CEO)
- Considering employees' personal needs: "I always invest 5 or 10 min to talk with my staff in private, just to know about their family or personal issues. I treat them as my family. For me it is important, especially because we are a family-based firm" (CEO)
- Encourage learning process: "When my employees make a mistake in their jobs, I often tolerate the mistake and ask them to learn from it. I am sure they now understand how to avoid the same mistake" (General Manager)
- Let the employees take ownership: "Yesterday, I kept silent during the weekly meeting and just followed the staff discussion. I was surprised that they were confident, talked actively, and shared good ideas to solve what I had never seen before. We also gave them feedback to improve things further" (CEO)

Transformational (retained behaviours from T1)

- Building trust with employees: "In this firm, we treat our employees as an extension of our family. So, we ensure to involve them closely in our important decisions" (General Manager)
- Considering employees' personal needs: "I keep spending time with my employees to have small talks, such as about their feeling at work or about situations with their family" (CEO)
- Encourage learning process: "During the weekly meeting, I always encourage and support the employees to find solutions to challenges in their jobs" (General Manager)
- Let the employees take ownership: "I always first ask my employees' for own ideas, when they ask me for solutions to their problems, before I give mine. Often times, their ideas are the effective ones" (General Manager)

Transactional

- Provide awards based on good performance: "We define performance targets for the employees and give them an award when they achieved it" (General Manager)

Instrumental

- Assist employees to avoid mistakes: "I have to give examples to make them understand lean and green adoption. Instruction and knowledge are not enough, they need visualization and clear practices. I would say this is learning by doing" (General Manager)
- Improve employees' training facilitation: "We have added additional training programs to help employees adopt the lean and green practices. These programs were tailored based on our observations about the needs of our employees" (CEO)

Employees' behaviours

Uncomfortable with new practices

"I understand that these new tools and procedures (of lean and green practices) are beneficial for the firm and us. But in practice I feel confused since I lack knowledge. For example, we have to use the application when loading and unloading or for trip reports. (...) It is a bit difficult for me to adjust to this tool; sometimes we feel bothered while using this system" (Staff Warehouse)

Misunderstanding of new practices

Truck drivers misunderstood green practices as cleaning their trucks:

"... and by being clean, do you mean we have to be cleaner? Of course, I always am: I clean my truck after a long journey" (Truck Driver)

Understand the benefit of the new practices: "The management installed a tool here. [points to the truck dashboard] Well, it is a good system: It will help control young drivers' habits, and for me it is also a good idea!" (Truck Driver)

Take self-initiative

"I just take self-initiative while meeting to share the ideas ... I meant without someone asking first" (Staff Material-handler)

Self-benefit toward new practices

"I have a new habit without realizing it. I turn off my pc during the break and I also help the group to turn off the air conditioning. Last year this seemed hard, but now I did it, easy!" (Staff Warehouse)

(continued)

**Table 3.** Qualitative evidence of both firms' leaders and employee behaviours over time

T1	T3
<p><i>Firm 2</i></p> <p><i>Leaders' behaviours</i></p> <p><i>Transactional</i></p> <ul style="list-style-type: none"> <li>• Focus attention on deviation from standard: "By conducting strict supervision of the scheduling of truck engines and truck drivers, coupled with a simple implementation (5S), with that alone, we can ensure that the operational situation is under control and also retain customers" (Transportation Manager)</li> <li>• Aversive reinforcement: "We must be hard when giving instructions, if we do not, it will be difficult for the drivers to become more disciplined" (General Manager)</li> </ul> <p><i>Employees' behaviours</i></p> <p>Uncomfortable with new procedures  <i>"It is hard for me to adopt new things. Management just told us to change during a meeting; we had no time to think. They also put visual rule reminders. Then, I felt stressed"</i> (Truck Driver)</p> <p>Passive communication/not sharing ideas  <i>"I want to give some suggestions to improve the way employees are working. But we feel the manager doesn't want to listen to our opinion. This situation makes us uncomfortable at work"</i> (Staff Warehouse)</p> <p>Stressful  <i>"The manager keeps telling me about the importance of the on-time delivery and the sanction if we not deliver the package on time. That approach is very strict. They do not tolerate delays, even those beyond our mistake, like traffic jams. This approach makes me stressful and lead to a higher risk of accident, because to avoid the sanction I sometime drive the truck faster than permitted"</i> (Truck Driver)</p> <p><b>Source(s):</b> Created by authors</p>	<p><i>Transactional</i> (retained behaviours from T1)</p> <ul style="list-style-type: none"> <li>• Focus attention on deviations from standards: "We keep closely monitoring the job schedule of our employees, particularly the driver. We want to make sure they deliver the packages on time" (General Manager)</li> </ul> <p><i>Transformational</i></p> <ul style="list-style-type: none"> <li>• Empowering employees: "I tried to closely observe employees' potential skills because these tools will change their work habits, and I assumed that they would resist in the beginning. And here we are; they felt unconfident to start" (Manager Logistics)</li> </ul> <p><i>Instrumental</i></p> <ul style="list-style-type: none"> <li>• Setting the example to employees: "I know that they need time to adopt the improvement system. I need to help them and develop their knowledge through what I learned from the training and giving them examples" (Transportation Manager)</li> <li>• Providing direct instructions: "We gave the employees intensive trainings [on lean and green], so they understand the key concepts. With that knowledge, I can give clear instructions to them, which they can follow." (General Manager)</li> <li>• Active monitoring: "We actively monitor how well employees implement the new procedures and at the same time we look for their feedback" (General Manager)</li> </ul> <p>Accepting the efforts to adopt new procedures  <i>"I am not confident, I always doubt myself: is it okay, is it good? Is this the right way? I feel stressed, but I keep going, because I know this system will improve our firm"</i> (Staff Maintenance)</p> <p>Understand the benefit of the new procedures  <i>"I just follow the managers' tasks list. Our firm had a hard time a few years before, and now the lockdown. I have to follow the new system. It is the best for everyone"</i> (Staff Operations)</p>

**Table 3.**

Due to this leader-owner engagement in lean and green practice adoption, his behavioural pattern and the small company size, the organisational changes he initiated were easily accepted; three months before T1 they had started to adopt lean practices. However, for the externally contracted truck drivers, the stipulated changes were too difficult; they appeared to lack the necessary knowledge. Given also their part-time, temporary contracts, they were not immediately inclined to change their (driving) behaviour in line with the firm's lean and green philosophy. Therefore, one year after the start of lean and green practices adoption, the two top managers initiated an intensive lean and green training for upgrading truck drivers' knowledge; at the same time other work floor level employees were being trained by external experts.

*Leaders' behaviours and employees' acceptance of lean and green (T1).* The firm's leadership, particularly the CEO and the general manager, were mostly exhibiting transformational behaviours. They focused on encouraging the employees to have a positive attitude toward adopting the initiated lean and green practices. To achieve that, both leaders engaged closely with the employees, as indicated by the CEO: *"We always share our problems and engage quite closely with my employees to earn their trust"*. Moreover, the leaders also engaged in small talk with individual employees, about employee needs which stimulated in reaching people's tasked goals; *"I always invest 5 or 10 min to talk with my staff in private, just to know about their family or personal issues; I treat them as family. For me that is important, because we are a family-based firm"*.

The leaders considered the employees' adoption of lean and green practices as a learning process. If the employees made mistakes on their jobs, they were not punished but instead encouraged to learn from their mistakes. The general manager illustrated this: *"When my employees make a mistake in their jobs, I often tolerate the mistake and ask them to learn from it. I am sure they will eventually understand how to avoid the same mistake"*.

However, despite the top managers' encouragement, the employees felt uncomfortable with the new ways of working along the lines of the lean and green practices. A warehouse operator illustrates this situation: *"I understand that these new tools and procedures are beneficial for the firm and us. But in practice I feel confused since I lack the knowledge. For example, we have to use the application when loading and unloading or for trip reports. (...) It is a bit difficult for me to adjust to this tool; sometimes we feel bothered while using this system"*. In addition, some employees misunderstood the new practices. For example, the truck drivers assumed cleaning their trucks as "green" behaviour; *"Of course, I always am: I clean my truck after a long journey"*.

*Leaders' behaviours and employees' acceptance of lean and green (T3).* Over time, while retaining their existing behaviours as identified at T1, the leaders adjusted their behaviours slightly to improve the employees' acceptance of lean and green practices. On top of the transformational leadership style, they started to give awards to the employees based on their performance: the latter is an example of transactional leadership. A general manager recalled: *"We define performance targets for the employees and give them awards when they achieve it"*. Moreover, the leaders started to exhibit also instrumental behaviours, which was reflected in their expertise to formulate solutions to ensure the employees would adopt lean and green. For instance, the management of the firm provided additional training of lean and green practices, which was *"tailored based on our observations of the needs of our employees"* as the CEO recalled. In addition, to avoid employees' mistakes, the general manager closely assisted the employees, through performance feedback on how the lean and green practices should be carried out; *"Instruction and knowledge are not enough, they need visualization and clear practices. I would say this is learning-by-doing"*.

With the aforementioned adjusted leaders' behaviours, we noted that at T3 employees had started to accept the lean and green practices. They had a much better understanding of the benefits of the changes in their daily jobs due to the lean and green initiatives. A truck driver

expressed: “*The management installed a tool here. [points to the truck dashboard] Well, it is a good system: It will help control young drivers’ habits, and for me it is also a good idea!*” The employees also felt more inclined at T3 to share their own ideas regarding the lean practices. One employee recalled: “*I just take self-initiative to share ideas during meetings (. . .) I meant without someone asking first*”. At T3, the employees found that the new practices were beneficial for them. A warehouse employee stated: “*I have a new habit without realizing it. I turn off my pc during the break and I also help the group to turn off the air conditioning. Last year this seemed hard, but now I did it, easy!*”

#### *Firm 2*

*Lean and green adoption.* Although the family founded this firm and still held most shares, non-family members largely managed the firm’s daily operations. The approach to implement lean and green practices within this firm (with about 900 employees, see Table 1) was rather pragmatic; they were simply seen as the most effective business practices.

Because of initial difficulties at T1, the top managers decided to invest in intensive lean training for the 15 most senior managers. Its general manager also attended these trainings; during the Gemba walk at T3 this manager noted the firm’s increased adoption of lean tools: “*We took the first step by doing an A3 analysis and observing which activities or jobs did not provide great benefits to the company*”. This led the organisation between T1 and T3 to improve their business processes: They started to change the distribution system following the “milk run” practice, allowing multiple pick-ups and drop-offs at many more customers. However, several senior managers confessed that they needed more time to fully adopt lean. The logistics manager, who was one of the senior managers who attended the lean training, noted that learning-by-doing would have eased the start of the lean adoption: “*At first, I had no idea how to apply lean. Then the firm hired an external, professional trainer to develop our knowledge about lean and sustainability. By following this training and applying the learnings at the same time, the adoption went faster*”.

Green practices were also gradually applied onto general “house” rules. For instance, the general manager started to prescribe when and how to use the air conditioner: “*This week we installed the new rule that all staff turn on the air conditioner around 11 AM, and the minimum people in the room for doing so should be four. The air conditioner must be turned off again at 3 PM*”.

*Leaders’ behaviours and employees’ acceptance of lean and green (T1).* In the early stage of adopting the lean and green practices, given the large firm size, the general manager implemented them through setting up rules of reward and sanctions. This approach, which reflects a transactional leadership style, was expected to provide the foundations of clarifying the expectations from the top managers vis-à-vis the employees. The general manager focused the attention on deviations from standards by applying strict supervision. A transportation manager recalled this controlling approach from the general manager: “*By conducting strict supervision of the scheduling of truck engines and truck drivers, coupled with a simple lean practice [5S], we can ensure that the operational situation is under control and also retain customers*”. Moreover, the leaders applied aversive reinforcement (such as punishing employees for their mistakes) to ensure the employees adhere to the rules of lean and green practices. This general manager stated: “*We must be hard when giving instructions. If we do not, it will be difficult for the drivers to become more disciplined*”.

The approach to forcing employees to enact the lean and green practices made the employees uncomfortable with performing them. A truck driver expressed: “*It is hard for me to adopt new things. Management just told us to change during a meeting, we had no time to think. They also put visual rule reminders. Then, I felt stressed*”. Also, most of the other employees felt stressed because of this approach. A truck driver recalled: “*The manager keeps*

telling me about the importance of the on-time delivery and the sanction if we not deliver the package on-time. (. . .) They do not tolerate delays, even those beyond our mistake, like traffic jams. This approach makes me stressed and leads to a higher risk of accidents, because to avoid the sanction I sometime drive faster than permitted". Truck drivers also felt discouraged to give improvement feedback. One of them stated: "I want to give some suggestions to improve the way employees are working. But we feel the manager doesn't want to listen to our opinion. This situation makes us uncomfortable at work".

*Leaders' behaviours and employees' acceptance of lean and green (T3).* At T3, Firm 2 had been adopting the lean and green practices for about two years. However, the general manager observed that the adoption process had been slow and had not improved the productivity of the employees. This situation motivated top managers of the firm to find new ways for nudging employees into lean and green practices. They realised that the strict transactional approach had led to unnecessary stress among their employees. The top managers, which consisted of the owner (i.e. the family) and the general manager trusted by the family, started to change their behaviours. Moreover, as these top managers now had started to view all the members of the firm as part of their family, they started to empower the lower-level managers through trainings: to have them also adjust their behaviours, in the hope of establishing a more conducive working atmosphere.

The leadership team still paid attention to deviation from standards, but no longer punished while reinforcing the new practices; they started to exhibit also transformational behaviours by empowering employees in utilising their potential. A logistics manager recalled: "I tried to closely observe employees' potential skills because these tools will change their work habits, and I assumed that they would resist in the beginning. And here we are: they felt unconfident to start". Hence, at T3, the leaders exhibited instrumental behaviours, to provide practical directions, so that employees felt better understood and supported when trying to adopt the lean and green practices. The leaders' emphasised setting examples on how the new practices should be carried out. A transportation manager stated: "They need time to adopt the improvement system. I need to help them and develop their knowledge through what I learned from the training and give them examples". The leaders also focused on providing clear instructions to ensure the employees understand the new procedures correctly. The general manager recalled: "We gave the employees intensive trainings [on lean and green practices], so they understand the key concepts. With that knowledge, I can give clear instructions to them, which they can follow." In addition, the leaders monitored employees' performance while adopting the new procedures as laid out by the general manager: "We actively monitor how well employees implement the new procedures and at the same time we look for their feedback".

We found at T3 that the improved behaviours of the leaders had eased the employees' effort to adopt the new practices. An employee recalled: "I am not confident, I always doubt myself, is it okay, is it good? Is this the right way? I feel stressed, but I keep going, because I know this system will improve our firm". At T3, the employees had a better understanding of the benefit of the new practices, as noted by an employee: "Our firm had a hard time a few years before, and now the lockdown. I have to follow the new system. It is the best for everyone".

#### *Cross-case comparison*

In both firms, the initially prevailing leadership style was found to be ineffective in implementing the change-over to lean and green practices. Given the family value that sees employees as an extended part of the family, the CEO of Firm 1 initially opted for merely performing a transformational leadership style to make employees to adopt lean and green. Despite being motivated, the employees were not adopting the new practices well. Only after the Firm 1's leaders offered more instrumental training and feedback to help the employees to implement the practices, did the employees make and appreciated the change.

In the much larger Firm 2, the top and lower-level managers had initially a transactional leadership style with which they attempted to become lean and green, thereby setting clear mutual expectations and rules and rewards for the employees. Given the large number of employees that had to be engaged in the lean and green implementation, this style was being viewed by the leaders as the most effective at T1. Nevertheless, the employees felt that this approach made them uncomfortable and stressed.

Over time, the top managers of both family firms, consisting of family members or managers close to the family, started to treat their employees as extended family members, and thus empathised with their discomfort and stress of adopting the new practices. Consequently, these leaders were more actively seeking ways to help the employees to adopt the new practices. The CEO and the general manager in Firm 1 initiated a shift in their leadership approach. They started to adopt behaviours of both the transactional and instrumental leadership styles, in addition to their common transformational style. Also, Firm 2's family owners and the trusted general manager started to adopt behaviours fitting the transformational as well as instrumental leadership styles, on top of their existing pattern of transactional leadership.

Eventually, we found that this expansion of top managers' behaviours in both firms, had inspired their lower-level leaders to *also* change their leadership style. For example, the managerial behaviours at T1 and T3 suggest that, in Firm 1 the CEO inspired the general manager, and in Firm 2 the general manager inspired the transportation manager. This gradual cascading of all firm leaders' range of behaviours in both firms was found to be effective in facilitating employees to effectively adopt lean and green practices.

## Discussion

Effective leaders in our longitudinal comparative cases, two Indonesian family firms, demonstrate a need to develop a broader set of behaviours (transformational, transactional and instrumental) to support employees to effectively adopt lean and green practices. In both family firms, the initially dominant leadership style was insufficient to effectively implement these new practices that were meant to boost their firm's sustainability transition. Below we elaborate on the study's theoretical and practical implications.

### *Theoretical implications*

In comparison to non-managerial personnel, leaders/managers need to show exemplary behaviours and improve their own behaviours first, especially when employees are confronted with integrating new tasks into their daily jobs, such as adopting lean and green practices (Cook *et al.*, 2018; Larson and Greenwood, 2004). It is likely that leaders who task their employees to adopt lean and green practices must go themselves first through the process of extending or adjusting their own behavioural style so that their followers can follow their lead and start to continuously improve their own task execution in the direction of lean and green. Indeed, over time the typical leader behaviours in both firms changed, from exhibiting a single leadership style (i.e. the transformational one in Firm 1 or the transactional one in Firm 2) to a much broader behavioural pattern: a more integrative or so-called fuller full-range leadership style, including instrumental leadership (Antonakis and House, 2014). We found in both firms that adopting the instrumental leadership style, on top of both the transactional and transformational styles, resulted in more effective employee adoption of the new lean and green practices. This behavioural change that spread throughout both firms can be explained by at least two behavioural phenomena: (1) the extended family concept (Efferin and Hartono, 2015) and (2) coactive vicarious learning-by-doing (Van Dun and Wilderom, 2021).

The extended family concept suggests that the firm owners or top managers view and treat all organisational members of the whole firm, encompassing also their front-line employees, as part of their (larger) family (Efferin and Hartono, 2015). This perspective not only encourages top managers to be receptive to advice and insights from the broader leadership team, but also motivates them to provide hands on guidance to non-family leaders and lower-level members of the firm to achieve the firm's goals (Neffe *et al.*, 2020). This familial view suggest that firm owners induce employees to take psychological ownership of their jobs, through direct personal relationships (Ramos *et al.*, 2014). By nurturing employees' sense of psychological ownership, family-owned firms can foster a deeper sense of loyalty and commitment among their workforce, which is a key factor in the success of family-owned firms (Zhu *et al.*, 2013). Moreover, this familial view encourages leaders to foster a shared vision with their employees through building interpersonal relationships, including genuine information exchange among employees across hierarchical levels (Yan and Sorenson, 2003), thus creating an environment that empowers employees to actively engage in successfully adopting lean and green practices. This extended family perspective can even trigger the behavioural pattern of coactive vicarious learning-by-doing, where the leaders change their behaviours through interpersonal interaction and joint learning, together with their employees (Van Dun and Wilderom, 2021).

Indeed, through interpersonal interaction with all sorts of employees, leaders learned that their initial behavioural repertoire was ineffective, and therefore, they changed their behaviours to help facilitate employees to adopt the lean and green practices. For example, in firm 1, the CEO was closely engaged with the employees, such that he vicariously understood their difficulties of adopting lean and green practices. Given this situation, the CEO initiated change, which was eventually followed by lower-level leaders, learning better approaches to enable employees to adopt the lean and green practices. Additionally, the general manager of Firm 2 tended to actively monitor the performance of his employees. Upon observing subpar performance in the desired lean and green practices, he was prompted to learn better ways to enable his employees to adopt both practices.

Our findings uncovered that the extended family concept induced by the top managers of both family-owned firms triggered coactive vicarious learning by their leaders; they had extended their range of leadership behaviours to facilitate their employees to reach the goal of effectively adopting the desired lean and green practices. Hence, we suggest the following:

*Proposition 1.* The extended family concept in family-owned firms enables coactive vicarious learning by their leaders, motivating them to extend their leadership style according to employees' needs, thereby facilitating employee adoption of lean and green practices.

Moreover, our empirical study is in support of the fuller full-range of leadership theory of Antonakis and House (2014): instrumental leader behaviours can complement the transformational and/or transactional leadership style. This finding extends the literature on family-firm specific leadership behaviours of Fries *et al.* (2021): in order to be effective, one must incorporate also the range of behaviours of an instrumental leader. Instrumental leaders translate the strategy (here: of adopting lean and green practices) into practical instructions that help work floor and other employees to actually adopt the new practices. As found in both firms, over time, the leaders exhibited instrumental behaviours, such as path-goal facilitation (e.g. improve training facilitation, provide examples and offer clearer instructions) and outcome monitoring (e.g. engage in active monitoring and assist employees to avoid mistakes) to complement their initially more traditional transactional and/or transformational styles. We highlight the importance of instrumental leadership as strongly relevant for family-owned firms, in Indonesia and beyond. Leaders of family-owned firms may need to exhibit an instrumental leadership style as it drives the formulation

of executable strategy and facilitation of doable paths for employees to implement the new strategy, which in turn helps to achieve the desired high performance (Antonakis and House, 2014; Fries *et al.*, 2021). Hence, we noted the following more generic proposition.

*Proposition 2.* In addition to transactional and transformational behaviours, leaders of family-owned logistics firms have to exhibit instrumental behaviours to ensure employees' effective adoption of new work floor practices.

To effectively change employee behaviours, the improved leader behaviours have to be manifested in a way that is perceivable by employees, which has been found to be most effective through various forms of interpersonal contact (Van Dun and Wilderom, 2021). This particularly applies to family-owned firms, as they are characterised by a high degree of transparency between management and employees which helps avoid resistance and strengthens the support from employees to adopt initiatives driven by their leaders (such as lean and green practices) (de Groote and Bertschi-Michel, 2020).

### *Practical implications*

To effectively persuade employees to adopt lean and green practices, leaders of and within family-owned firms need to go beyond the more traditional transactional and transformational leadership styles. In addition to influencing employees at the interpersonal level and establishing rules within the firm, leaders must be capable of initiating and implementing strategies that suit their firm's situation and support employees in more practical ways (manifesting instrumental leadership). Leaders should thus provide clear direction; lead by example; facilitate employees' training; and actively monitor performance, aimed at inducing continuous improvement rather than punishment. Hence, leaders (and advisors) of family-owned firms could offer leadership training to adopt the broad set of identified leader behaviours.

Yet, the degree to which the lean and green practices adoption could have been more effective had the instrumental leadership style been introduced right from the start is unknown; in more paternalistic Asian countries like Indonesia (Irawanto *et al.*, 2012) where the transactional style is most common, it is likely that the change process towards new practices adoption may go slower than elsewhere, like in the West. Therefore, to successfully facilitate employees in adopting lean and green practices, leaders in family firms may need to make conscious efforts to learn to display a confluence of all three leadership styles.

In addition, our findings suggest recommendations to adapt firms' policies to facilitate employees' adoption of lean and green practices. It is recommended for family firms to implement a continuous training plan (e.g. every six months) to improve employees' knowledge and skills regarding lean and green practices. Additionally, firms are advised to install a lean and green knowledge centre (including, e.g. an online resources library and internal lean experts) to be easily accessed by the employees whenever they encounter issues in their job related to adopting lean and/or green practices.

### **Limitations and future research**

This study examined leaders' behaviours in two firms. While we did find a clear and explainable behavioural trend, the limited number of cases runs the risk of not having achieved theoretical saturation (Eisenhardt, 1989). Thus, to improve the generalisability of the findings, future research must conduct more study by adding more cases/data, possibly (also) in other (Asian) countries.

Secondly, we assessed the behaviours of leaders as a group, after which we did note some differences among employees at the various hierarchical levels of leadership. Future research

must more precisely distinguish the behaviours of leaders and their followers at different hierarchical levels (Oshagbemi and Gill, 2004), and perhaps also consider the organisational culture which tends to be determined to a large extent by top-managerial behaviours.

Thirdly, we did not measure the potential impact of the lean and green practices on the long-term performance and sustainability of the two family firms through objective key performance indicators. Future studies must take an even longer time span and measure even more precisely (e.g. through video-based technologies) the actors' behaviours and their actual impacts. New research should explore the effectiveness of different combinations of leadership styles in facilitating the adoption of lean and green practices in firms that are not family-owned, as well as the influence of factors such as industry and national culture (Van Dun *et al.*, 2023).

Finally, due to the exploratory purpose and the novel context of our study (family-owned firms adopting joint lean and green practices), we decided to collect qualitative data. Therefore, follow-up research can build on our findings by taking a quantitative approach to compare the impact of the changes of leaders' behaviours on the adoption of lean and green practices, ideally over time.

## Conclusion

This longitudinal, mixed methods study highlights the significance of adding the instrumental leadership style to the more common transactional and transformational behavioural repertoire of top managers within family-owned firms. This combination of styles was quite inconspicuously cascaded down to managers of lower hierarchical ranks, as most managers lower in the hierarchy tend to mimic the behavioural patterns of their bosses.

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## Appendix 1

### Interview protocol for leaders

#### Introduction

- (1) Personal question about the weather, news about him/her in the media, etc.
- (2) Can I audio record this conversation? Everything said during this interview will be anonymised and kept confidential; the recording is only for the research.
- (3) Can you tell me briefly about your position within your organization? (*number of subordinates, responsibilities, age, job description, since when?*)
- (4) Can you tell me about the reason you started working for this firm?

### Lean and green behaviours

- (5) What is your vision with regard to the adoption of lean and green/pro-environmental practices in your company?
- (6) What have you done already to implement lean and green/pro-environmental practices in your company?  
*(if the answer is Yes)* Can you give me some practical examples?  
*(if the answer is No)* Can you tell me what the problems/obstacles are? Which department?
- (7) What was the result of these practices? To what extent did it improve company performance?
- (8) How does the adoption of lean and green/pro-environmental practices in your company affect the performance and job satisfaction of individual employees?
- (9) If you would think of lean and green/pro-environmental employee behaviours, what would those be in your view? Could you give me some examples?
- (10) How do you stimulate or motivate your employees to adopt lean and green/pro-environmental practices? Could you give me some examples?
- (11) What benefit could you or your company gain through adopting lean and environmentally-friendly practices?

## Appendix 2

### Interview protocol for truck drivers and employees

#### Introduction

- (1) Personal question: Where do you live? How do you get here?
- (2) Can I audio record this conversation? Everything said during this interview will be anonymised and kept confidential; the recording is only for the research.
- (3) Can you tell me briefly about your position within your organization? (*number of direct/close colleagues, responsibilities, age, job description, since when?*)
- (4) Can you tell me about the reason you started working for this firm?
- (5) How do you feel about working in this company?

#### Lean behaviours

- (6) Do you know about the change initiatives for creating more efficiency in your workplace?  
*(if the answer is Yes)* How differently, do you behave at work since the change initiatives?  
*(if the answer is No)* Are you willing to adopt change for process improvement at your workplace?
- (7) What are the lean tools/change initiatives and practices that have been adopted within your daily work?
- (8) How does the adoption of lean practices/change initiatives affect your work? How do you feel about that?
- (9) How did lean practices/change initiatives your own behaviour at work?
- (10) How are you involved in the lean practices/change initiatives adoption within your company?
- (11) How does your leader support you in adopting lean practices/change initiatives in your daily work? Can you give an example? And what did he/she do in order to support you?

- (12) Which practices are currently adopted in your company that show a concern toward the environment?  
*(if they do not understand about “green/pro-environmental/environmentally-friendly practices”, I will give a deeper description)*
- (13) How do you express your concern for the environment at work? What do you do to improve your work to become more environmentally-friendly?
- (14) How do you involve your colleagues at work to show concern towards the environment?
- (15) How does your leader support you in improving your work to become more environmentally-friendly?
- (16) What benefit could you or your company gain through adopting lean practices/change initiatives and environmentally-friendly practices?

**About the authors**

Nissa Syifa Puspani is currently a PhD candidate in Organisational Behaviour, Change Management and Consultancy, Faculty of Behavioural, Management and Social Sciences, University of Twente. Her PhD research topic is focusing on the relationship between leadership behaviour with lean and green adoption in Indonesian transportation and logistics companies. She holds a master's degree in Industrial Engineering from Parahyangan University, Indonesia, and did her bachelor degree in Industrial Engineering from Widyatama University, Indonesia. Nissa Syifa Puspani is the corresponding author and can be contacted at: [n.s.puspani@utwente.nl](mailto:n.s.puspani@utwente.nl)

Desirée H. Van Dun is an Assistant Professor in Organizational Behaviour, Change Management & Consultancy at the University of Twente, the Netherlands, and has been a visiting researcher at Cardiff Business School, United Kingdom. Besides having 10 years of lean management consulting experience, she has a cum laude PhD degree in Organizational Behaviour and Operations Management (2015); the thesis won various awards. She is an associate editor and member of various editorial boards. Van Dun is studying effective human behavioural dynamics for digital and green organizational transformation, including leading lean (& green), agile and Industry 4.0 technology adoption.

Celeste P. M. Wilderom is Emeritus Professor Change Management and Organizational Behavior at the University of Twente, Enschede, the Netherlands. In 1987, she obtained her PhD in psychology from the State University of New York, Buffalo (USA) and then worked in the Economics and Business Administration Faculties at both Tilburg University and the Free University in the Netherlands. She has been an associate editor of various international management journals and currently a member of various editorial boards. Her research pivots on effective leader- and followership as well as teamwork in various profit-making and non-profit work settings.

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