Top management commitment and lean team members' prosocial voice behaviour

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Abstract

Purpose

Top management commitment (TMC) and prosocial voice behaviour in Lean teams are vital for the successful Lean implementation. We wanted to investigate how TMC influences Lean team members' prosocial voice behaviour and how such changed voice behaviour affects the outcome of Lean implementations.

Design/methodology/approach

We used a qualitative research methodology to examine six dimensions of TMC (communication, involvement, support, empowerment, encouragement, and monitoring) in two ready-made garment (RMG) factories in Bangladesh. Operational performance was measured by efficiency, quality, value stream mapping, SMED, and 5S scores. Occupational Health and Safety (OHS) was assessed by acceptable head and back positions, machine safety, use of masks, and housekeeping.

Findings

The findings reveal that TMC influences Lean team members' voice behaviour positively and, thereby, company's performance. Its six dimensions are all critical for mobilizing prosocial voice, which then improves productivity, OHS and enhancing employee capacity and job satisfaction.

Research limitations/implications

This research involved two sewing lines in two RMG factories in Bangladesh. Cross-sector and large-scale international quantitative research is also needed.

Practical implications

This research shows how TMC and Lean problem-solving teams can mobilize employee voice.

Originality/value

Employee voice is a central issue in the implementation of Lean. For the first time, we show how the six dimensions of TMC influence Lean team members' voice behaviour in the workplace and thereby how prosocial voice affects team performance.

Keywords
Top management commitment, Lean team, prosocial voice behaviour, Lean production, garment industry.

1. Introduction

Scholars across academic disciplines have established that top management commitment (Amoako-Gyampah *et al.*, 2018) and prosocial voice behaviour (van Dun and Wilderom, 2012) are decisive factors for successful Lean implementation in manufacturing companies (Alnadi and McLaughlin, 2021; Basu and Dan, 2020; Scherrer-Rathje *et al.*, 2009). Lean means identifying and eliminating waste through the entire value chain of the product and requires employee involvement (Hamja *et al.*, 2019b; Shah and Ward, 2007). Lean interventions seek employee participation (voice) in the form of suggestions and opinions during waste identification and removal (van Dun and Wilderom, 2012). Prosocial employee voice includes communication aimed at improving the performance and productivity of an organization (Detert and Edmondson, 2011; Morrison, 2011; van Dyne *et al.*, 2003). Lean scholars have found that TMC influences the behaviour of individual employees and teams and is positively associated with improved performance (Amoako-Gyampah *et al.*, 2018; Niehoff *et al.*, 1990). Some also argue that prosocial voice identifying and solving problems in teams is decisive for a performance-enhancing Lean implementation (van Dun and Wilderom, 2019). Management – including top management – plays a major role in facilitating such proactive behaviour (Parker *et al.*, 2006).

Top management is defined as a person or a pool of people with authority to control and direct the organization, set goals and targets, formulate rules and policies, control resources, and implement projects (Lewis *et al.*, 2000; Amoako-Gyampah *et al.*, 2018). Top management commitment (TMC) therefore refers to the support and participation of top management through their actions and behaviour in activities (Niehoff *et al.*, 1990; Rodríguez *et al.*, 2008; Worley and Doolen, 2006). This study considers the operational level of top management involved in implementing the Lean project at the factory in question: the Head of Operations, the Head of Production, the Head of Quality, the Head of Industrial Engineering, and the Head of Human Resources.

Although scholars have identified both TMC and prosocial voice as critical for successful Lean implementation, the relationship between them has not been examined (MacDuffie, 1995a; Akmal *et al.*, 2020; Hamja *et al.*, 2021 forthcoming; Hasle and Vang, 2021 forthcoming; Hopp, 2018). Moreover, the challenges related to TMC, employee voice, and Lean implementation are going to be greater in the autocratic companies in developing countries where Lean is increasingly being rolled out (Panizzolo *et al.*, 2012).

van Dun and Wilderom (2012) call for more research on employee voice in Lean implementation, whereas Amoako-Gyampah *et al.* (2018) underscore the need for in-depth examination of TMC in Lean implementation. Numerous authors have called for more research on global suppliers from developing countries (Gomez *et al.*, 2020; Thakkar and Vinodh, 2021; Vang *et al.*, 2021; Yadav *et al.*, 2020), but this is the first empirical study to examine the dynamics of TMC influencing employee prosocial voice behaviour during the implementation of Lean in a developing country where the autocratic management style is prevalent. Bangladesh is a typical case (Miah and Bird, 2007). Some companies in Bangladesh are experimenting with new types of management (Bashar *et al.*, 2021), but the autocratic management style is still prevalent in the garment industry in Bangladesh.

Drawing on methods from socio-technical action research, the researchers collaborated closely with two case factories in Bangladesh on designing and introducing a Lean intervention aimed at improving both productivity and Occupational Health and Safety (OHS) (Hamja *et al.*, 2019; Longoni *et al.*, 2013). The researchers collected data through in-depth interviews with the top management and Lean team members, as well as by observing their behaviour and actions. Production-related data were also collected before and after the interventions.

The next section presents the theoretical framework for the model used for the empirical analysis. Section 3 introduces and justifies socio-technical action research as an appropriate research method. Section 4 presents the findings from the Lean interventions in the two factories. We discuss the findings in Section 5 and theoretical contributions and practical implications in Section 6. The last section draws conclusions and makes recommendations for further research.

2. Theoretical Framework

TMC is crucial for improving Lean performance (Kundu and Manohar, 2012; Scherrer-Rathje *et al.*, 2009). This section sets out a theoretical framework of the relationship of TMC and team member prosocial voice to successful Lean implementation. Success is defined as the sustained improvement of both production and OHS.

2.1. Top Management Commitment and Lean

The literature on Lean suggests that TMC is critical for the successful implementation of Lean (Alnadi and McLaughlin, 2021; Belhadi *et al.*, 2019; Scherrer-Rathje *et al.*, 2009; Nordin *et al.*, 2012). TMC includes communication of visions and goals, involvement and participation, support in the allocation of necessary time and resources, initiatives to empower and encourage employees, and monitoring of activities to achieve goals (Amoako-Gyampah *et al.*, 2018; Caroline *et al.*, 2016; Kundu and Manohar, 2012; Niehoff *et al.*, 1990; Tzempelikos, 2015).

2.1.1. Communication

Top management must communicate the organization's visions and goals and the plan of action to achieve them. Lean scholars argue that top management needs to foster effective communication to improve trust and commitment across functions and departments (Hellinghausen and Myers, 1998; Kundu and Manohar, 2012; Scherrer-Rathje *et al.*, 2009; Alnadi and McLaughlin, 2021; Belhadi *et al.*2019). Inclusive and efficient communication can create awareness and shared values among all stakeholders in an organization, thereby avoiding unnecessary resistance to Lean (Detert and Treviño, 2010). In developing countries, Lean is often poorly implemented with detrimental effects on employees leading to their resistance (Hasle, 2014). Worley and Doolen (2006) found that effective communication between managers and workers improves the level of acceptance of Lean. And since Lean is a system approach focusing on processes across functions, companies typically need to redesign their organizational structures and dismantle organizational silos to solve cross-departmental problems by improving cross-functional communication and cooperation (Amoako-Gyampah *et al.*, 2018; Rodríguez *et al.*, 2008; Scherrer-Rathje *et al.*, 2009).

2.1.2. Involvement

The involvement of top management is critical for the successful implementation of any project (Tzempelikos, 2015; Alnadi and McLaughlin, 2021; Belhadi *et al.*, 2019). This involvement includes its engagement in providing extensive support to implement changes (Amoako-Gyampah *et al.*, 2018; Rodríguez *et al.*, 2008; Basu and Dan, 2020; Muraliraj *et al.*, 2020; Narayanamurthy *et al.*, 2018). Lean implementation entails high degrees of uncertainty and conflicting demands, such as tensions between immediate production goals and long-term development goals (Maalouf *et al.*, 2019). While mid-level managers can contribute to short-term *kaizen* (i.e., continuous improvement), only the top management can provide long-term implementation goals and a working environment that can develop an effective relationship among all the organization's departments (Lloréns Montes *et al.*, 2004; Rodríguez *et al.*, 2008). Without a high degree of involvement from the top management, Lean is less likely to be successfully implemented (Amoako-Gyampah *et al.*, 2018; Boyle, Scherrer-Rathje, and Stuart, 2011; Njie *et al.*, 2008).

2.1.3. Support

Managerial support is another crucial component in the implementation of Lean (Scherrer-Rathje *et al.*, 2009; Young and Poon, 2013; Yusliza *et al.*, 2019; Basu and Dan, 2020; Belhadi *et al.*, 2019; Chaple *et al.*, 2018). This includes both tangible (e.g., financial) support and intangible (e.g., moral) support (Scherrer-Rathje *et al.*, 2009) as in the allocation of both resources and encouragement to teams implementing the project and overcoming bottlenecks (Elbanna, 2013;Worley and Doolen, 2006; Zwikael, 2008).

2.1.4. Empowerment

The Lean transformation process entails top management investing in the development of work-related knowledge and skills (Caroline *et al.*, 2016). Training empowers and motivates employees to participate in Lean implementation (Kappelman and Prybutok, 1995; Sorooshian *et al.*, 2017; Belhadi *et al.*, 2019; Scheller *et al.*, 2018). Employee training is also a prerequisite for the meaningful decentralization of decision rights to individual employees and teams (Caroline *et al.*, 2016; Njie *et al.*, 2008). Employees and Lean teams need some degree of decision rights concerning the implementation of a Lean project (Pheng and Teo, 2004) and therefore require training (Kundu and Manohar, 2012; Zhang *et al.*, 2017). Jun *et al.* (2006) found that the

delegation of authority to employees makes them more responsible and committed to the organization and therefore to the continuous improvement of the production processes, while training improves employees' skills and develops the problem-solving ability needed during Lean implementation (Kundu and Manohar, 2012; Sisson, 2019).

2.1.5. Encouragement

Implementing Lean in developing countries often entails transforming a company from a control-and-command system to a more trust-based system (Panizzolo *et al.*, 2012; Alnadi and McLaughlin, 2021; Coetzee *et al.*, 2019; Muraliraj *et al.*, 2020). Top management, therefore, needs to build trust by demonstrating its willingness to listen to employee voices and seek employee suggestions and opinions, so that employees experience a high degree of psychological safety and become willing to contribute their ideas, (Edmondson, 1999; Erkutlu and Chafra, 2015). This will encourage teams and employees to embrace the trust-based continuous improvement philosophy and experiment with improved and novel ways of designing their workstations, processes or products (Chowdhury *et al.*, 2007; Kundu and Manohar, 2012; Scherrer-Rathje *et al.*, 2009).

2.1.6. Monitoring and Guidance

Lean is based on a combination of continuous improvement, root-cause analysis, and a pull philosophy starting with customer values (Scherrer-Rathje *et al.*, 2009; Alnadi and McLaughlin, 2021; Ramadas and Satish, 2018). It requires the establishment of a systematic and comprehensive monitoring and evaluation system (Caroline *et al.*, 2016). Top management needs to set the direction and form of the steering committee to monitor, review, and evaluate project activities, and continuous improvement requires regular monitoring and evaluation for the successful implementation of Lean (Kundu and Manohar, 2012; Scherrer-Rathje *et al.*, 2009). And top management must help translate planned action into realized action (Scherrer-Rathje *et al.*, 2009; Waithera and Wanyoike, 2015).

2.2. Prosocial Voice and Lean Teams

Employee voice is of central importance to Lean teams. Knowledge is tacit, distributed, and embodied in individuals, so team-based problem-solving requires team members to share their

ideas, concerns, suggestions and opinions on waste and bottlenecks, and thereby contribute to continuous improvement (Fullerton and Wempe, 2009; van Dun and Wilderom, 2016; Wickramasinghe and Wickramasinghe, 2012). Womack *et al.* (1990) argue that a multi-skilled workforce with a high degree of responsibility is a prerequisite for successful Lean implementation (Fullerton and Wempe, 2009; Harley, 2014; Tortorella *et al.*, 2018). Kim *et al.* (2010) state that workers' involvement through teams directly contributes to a plant's efficiency.

2.3. Top Management and Prosocial Employee Voice

Top management plays a significant role in developing the voice climate in teams as well as in the organization. Voice climate is defined as the shared beliefs and perceptions among group members or individual employees that influence their voice behaviour (Duan *et al.*, 2019; Frazier and Bowler, 2015; Morrison *et al.*, 2011). Top management's leadership style, actions, and behaviour all influence employee voice behaviour (Detert and Treviño, 2010; Morrison *et al.*, 2011) through a "trickle-down" effect in the organization, which (if positive) encourages team members to take part in problem-solving activities through their inputs and suggestions (Detert and Treviño, 2010; Morrison and Milliken, 2000).

TMC can foster effective communication among teams, improve trust and commitment among employees with different functions, and enhance employee voice behaviour (Alefari *et al.*, 2017; Kundu and Manohar, 2012; Niehoff *et al.*, 1990; Scherrer-Rathje *et al.*, 2009). In fact, the involvement of top management is necessary to support employees in solving problems through regular meetings and discussions (Amoako-Gyampah *et al.*, 2018; Chowdhury *et al.*, 2007). Support from top management improves the level of communication between managers and team members, which results in enhanced employee voice, continuously improving team performance (Rothenberg, 2003), and higher operational performance (van Dun and Wilderom, 2012). The willingness of top management to support and listen to employees creates conditions in which employees can share their views without feeling at risk (Detert and Burris, 2007; Dutton *et al.*, 1997; Milliken *et al.*, 2003; Janssen and Gao, 2015). Similarly, encouragement in the form of incentives, rewards, and appreciation motivates employees to contribute to problem-solving activities during a Lean implementation (Chowdhury *et al.*, 2007; Niehoff *et al.*, 1990).

Monitoring from top management also influences employee behavior (Mendelson *et al.*, 2011; Nagin *et al.*, 2002).

2.4. Lean Effect on Productivity and OHS

Lean leads to improved operational and OHS performance (Longoni *et al.*, 2013; Shah and Ward, 2003). From the beginning, Lean emphasized workers' well-being, though this is often forgotten in the operations management-literature (Cardon and Bribiescas, 2015; Sugimori *et al.*, 1977). In fact, Hamja *et al.* (2019) found a positive correlation between Lean, productivity and OHS among global suppliers. Distelhorst *et al.* (2016) found a positive correlation between Lean and labour standards among Nike's global suppliers. TMC is also associated with Lean performance (Javed, 2015; Kundu and Manohar, 2012).

The above-mentioned Lean and organizational behaviour literature demonstrates the importance of TMC and leads to the comprehensive model used for the empirical analysis and presented in Figure 1.

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3. Research Method

An intervention-based action research was adopted to collect data from two case factories in Bangladesh. Action research has always been closely linked to interventions and is characterized by being research *in* action instead of research *about* action; the researchers become part of the organization, and the organization's members become co-creators in the research design (Coghlan and Brannick, 2005). Driven by the philosophy of change (Eden and Huxham, 1996; Lewin, 1946; Saunders *et al.*, 2016), action research gives the researchers privileged access to the case companies and ensures trust between the researchers and their informants. Action research focuses on real change decisions, rather than the abstract decisions of survey research. Our research focused on the influence of top management actions and behaviour on Lean team members' prosocial voice behaviour and team performance (Yin, 2014). Our access to company data, internal documents, and continuous interaction with various levels of employees ensured

highly reliable and valid data (Voss *et al.*, 2002). Our research also applied the case study strategy for collecting PhD-related data, because it offers a way of gaining an in-depth understanding of a problem or an event (Phelan, 2011).

3.1. Intervention Design

The interventions introduced selected Lean tools on the production floor to improve productivity and OHS performance. We worked closely with the local factories and form five teams to implement changes aimed at improving 5S[1], housekeeping, processes such as sewing, methods such as material handling, quality, and style change over time. The teams were multi-departmental and multi-level and comprised mid-level managers and supervisors. Contrary to our recommendations, the management decided not to include workers (operators) in the teams, except temporarily when needed. Top management was asked to form a supervisory team with three to five members, which was responsible for coordinating, guiding, and supervising team activities.

We held three-day training sessions in basic Lean tools and OHS for the mid-level managers, who then acted as coaches for other team members. Discussion and coaching activities were also regularly carried out during the intervention, which thus incorporated both hard and soft Lean components.

3.2. Data Collection and Analysis

Due to the complex nature of the phenomena under examination, we used a multiple data collection approach based on semi-structured interviews, observations, and recorded production data like value stream mapping (VSM), SMED and efficiency. Standard measures were used, e.g., SMED was measured in changeover minutes, 5S was measured on a 60-point scale, efficiency in daily averages and defects per hundred. All measurements were made before and after the intervention. Statistical analysis was done by T-test or ANOVA. To check the

1 5S refers to a tool in Lean that aims at improving the layout of the individual workstations. Lean´s 5S tool consists of five different sequences: sorting through tools and materials, setting them in order, cleaning up the workstation, standardizing the processes, and ensuring they are sustained.

sustainability of the improvements over time, we also measured efficiency six months after the intervention.

Semi-structured interviews were conducted with five members of top management from each factory, most of whom were involved in coordinating the project. Four of the interviews were audio-recorded, and notes were taken for the others. A total of 24 team members were interviewed: 13 from one factory and 11 from the other. Of these interviews, 13 were audio-recorded, and notes were taken for the others. Moreover, 12 of the team members were interviewed multiple times to obtain additional data and information. We also interviewed three operators from each factory. All informants were selected based on their functions, but the interviews covered general issues as well as specific issues related to their functions. The interviews varied from 10 minutes to one hour. We also had numerous informal discussions with team leaders and team members concerning the top management's commitment and their influence on team behaviour. All interviews and discussions were conducted in Bangla (the mother tongue of the employees and one of the authors). We transcribed the recorded interviews and translated the interview notes in English.

Since the research is based on established theories and concepts, the interviews were coded following a deductive coding approach (Miles *et al.*, 2014). We prepared the code list based on the conceptual framework of TMC, Lean team, and prosocial voice behaviour. The deduced codes had to be supplemented with inductively generated codes that emerged from the interviews. The interpretations of the interviews relied on the hermeneutic circle and included working with the data in isolation (i.e., statement by statement) and in their entirety. Based on this system of coding, pattern-matching techniques were used, and relevant themes and underlying causal mechanisms were identified (Miles *et al.*, 2014).

We observed the actions, behaviour, and activities of both top management and Lean team members in the course of approximately 30 visits to each factory. Observations focused on the prosocial voice behaviour of team members in teams and team meetings, and shop floor workers in the lines. We also observed two supervisory meetings and four team meetings in the first factory and two team meetings in the second, which had no supervisory team. More than 80

hours of close observations were accumulated in each factory. Observations were noted down in a notebook and subsequently expanded.

4. Findings

This section presents our findings from the Lean implementations. We conducted a description-based analysis of each factory followed by a discussion of the results to provide transparency in the qualitative analysis (Ayres *et al.*, 2003).

4.1. Case Factory A

Factory A is a large fully export-oriented, vertically-integrated knitting, dyeing, finishing, and garment factory, with more than 3,000 employees. It produces T-shirts, trousers, and jackets for global buyers from the EU and the US. The company is a Business Social Compliance Initiative (BSCI)[2], a Worldwide Responsible Accredited Production (WRAP)[3], and an OEKO-TEX[4] certified factory, with a well-functioning elected Worker Participatory Committee and Safety Committee. The factory has a separate industrial engineering department with a comprehensive knowledge of Lean tools (e.g., *kaizen* event, time-and-motion study, and 5S), but limited implementation experience.

4.1.1. Top Management Communication

The top management responsible for the Lean project communicated its willingness to implement the project to all relevant top-, mid-, and floor-level managers and workers, discussed the project with other top managers and Lean team members, communicating its determination

[2]BSCI (Business Social Compliance Initiative) is one of the leading supply chain management systems. It helps companies drive social compliance and improvements in their factories by implementing ILO (International Labor Organization) standards protecting workers' rights and UN guiding principles on Business and Human Rights and guidelines for multinational enterprises of the Organization for Economic Co-operation and Development (OECD). (https://www.amfori.org/content/what-we-do-0)

[3]WRAP (Worldwide Responsible Accredited Production), is an independent certification programme mainly focused on the apparel, footwear, and sewn products sectors. It is a non-profit organization of apparel manufacturers that have established and adhere to high standards for labour practices, factory conditions, and environmental responsibility. WRAP is dedicated to ethical manufacturing throughout the world (http://www.wrapcompliance.org/)

[4]OEKO-TEX is a worldwide independent certification and testing system for raw, semi-finished, and finished textile products. OEKO-TEX certifies that textile and fabrics products including ready-made garments are free of harmful chemicals and are safe for human use (https://www.oeko-tex.com/en/business/certifications_and_services/ots_100/ots_100_start.xhtml)

and plan to implement Lean in the factory, and also communicating – albeit in a limited way – with workers about project-related issues and activities whenever its members visited the shop floor.

4.1.2. Top Management Involvement

Top management displayed a high degree of involvement in the Lean teams. The factory record documented that the supervisory team held 13 meetings with team leaders to coordinate and guide their activities during the three-month intervention implementation period. Top management also actively sought suggestions and opinions from team members in meetings and during visits to the shop floor, took part in problem-solving activities with the teams and with line workers, helped the 5S team fix the position of cutting scissors, and took part in OHS exercises to encourage line workers.

4.1.3. Top Management Support

Top management demonstrated its support by establishing the supervisory team and investing the time required to hold meetings with team leaders for discussing, guiding, and coordinating team activities. They also invested in replacing the chairs of the designated line following the recommendations of the OHS team, and in baskets for collecting debris.

4.1.4. Initiatives to Empower

Top management empowered employees by allowing a total of 31 floor-level managers and line supervisors to attend a three-day formal training programme on basic Lean tools and OHS issues organized by the project, allowing team members and line workers to attend training organized by the project in the factory, and establishing Lean training programmes for both mid-level managers and workers in addition to their routine training programmes. Moreover, they contributed to discussions on technical issues about the problems identified by the different teams, and assigned specific responsibilities to some team members.

4.1.5. Initiatives to Encourage

Top management encouraged team members to raise suggestions and opinions in teams and showed appreciation for them. They visited the shop floor and collected employee opinions on

the Lean and OHS interventions. Top management's meetings with team leaders had a "trickle-down" effect on other team members, encouraging them to contribute to problem-solving activities. Top management acknowledged that they were at an early stage in creating a Lean-oriented incentive system, but they always linked performance with promotion and emphasized that those who performed better in implementing Lean would automatically receive higher performance ratings.

4.1.6. Monitoring and Guidance

Top management monitored the shop floor by visiting to enquire about Lean activities and performance. Team leaders had to present their performance and activities during meetings and in reports submitted to the top management. Meeting records showed that the top management also provided guidelines for improving Lean performance. One team member told us: "Top management holds regular meetings with us and asks about our activities and performance. They give us guidelines and suggestions for implementing the project effectively."

4.1.7. Top Management Influence on Team Behaviour

The above findings show a high level of commitment by top management in implementing Lean and promoting team members' prosocial voice behaviour in this factory. Top management created an environment conducive to employees expressing their views about work-related issues and motivated team members to work toward implementing Lean. Top management's involvement in meetings, shop floor visits, and participation in teamwork, encouraged team members to contribute more to problem-solving activities and had a direct impact on the voice behaviour of Lean team leaders and an indirect effect on the other Lean team members' voice behaviour. One member of the supervisory team told us: "In team meetings, individual team leaders stated their problems and issues and team members were asked for suggestions and opinions. The top managers listened to them, and decisions were made after listening to everyone". We noticed more interactions among team members in the later stages of the Lean interventions. Line operators also acknowledged that they interacted more with team members and line supervisors about work-related issues after the introduction of Lean.

Top management's commitment in investing time and allocating resources during the implementation of Lean clearly had a positive influence on team voice behaviour. Team members felt motivated to contribute more to Lean problem-solving activities when they found that their top management allocated resources according to their recommendations. Top management commitment to training empowered and encouraged team members to adopt a more proactive problem-solving approach to work. The coaching approach of the top management also helped other employees to learn and apply their knowledge in waste identification and elimination. Monitoring by top management also encouraged employees to work more effectively and promoted active participation in team and problem-solving activities.

4.1.8. Improvement Effect

The empirical findings show that TMC had a significant influence on team members' prosocial voice behaviour, which resulted in improved team performance. TMC encouraged and motivated team members to organize more problem-solving activities; a total of 102 team meetings, including the supervisory team, were held during the three-month intervention. The commitment of the top management translated into active employee participation in problem-solving activities through raising work and its improvement related issues in the teams, which, in turn, improved their performance

The improvement effects were calculated based on the data collected before and after the three-month intervention. The data was collected from one line with 24 operators before the intervention and 30 operators after the intervention. The change in the number of operators was due to a new style of garment. Tables 1 and 2 show the improvements resulting from the Lean intervention.

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These improvements are due to the combined effect of TMC, the introduction of Lean tools, and team members' active participation. Like a chain reaction, the TMC motivates Lean team members in problem-solving activities, which are the source of continuous improvement. Team members' prosocial voice helps to identify and remove bottlenecks through suggestions, opinions, and discussions, which lead to improved productivity and OHS. For example, training in Lean tools improved employee skills and capacities, which improved their performance and productivity. Top management's supervisory activities motivated teams to meet, discuss, and solve bottleneck problems. Table 1 shows that over the three-month intervention, the 5S score was improved by 11%, and the style changeover time was reduced by 25%, resulting in a 10.3% improvement in the overall efficiency of the line. We found a similarly significant improvement in OHS, including sitting posture, machine safety, and housekeeping (Table 2).

The management of this factory continued its commitment to implement Lean by expanding the programme from one sewing line to 12 lines over the six months following the project, and they started to provide Lean-specific training for mid-level managers and workers, and a new motivational programme including activities such as a Lean quiz for workers. As a result, factory efficiency has improved from 41% to 74% in one year.

4.2. Case Factory B

This factory is a large export-oriented, state-of-the-art knitting, dyeing, finishing, and garment factory, with more than 6,000 employees. The factory produces a variety of knitwear products, such as T-shirts, tank tops, and polo shirts, for the EU and the US. It is a BSCI- and WRAP-certified factory with an elected Worker Participatory Committee and Safety Committee. There is a separate industrial engineering department with several qualified industrial engineers who have comprehensive knowledge and training in Lean tools (*kaizen* event, time-and-motion study, and 5S), but little experience in their implementation.

4.2.1. Top Management Communication

The top management declared their commitment to implement Lean in the factory at the initial meeting with our research group, but they did not clearly communicate this commitment to the relevant stakeholders in the factory (even the Lean teams). Nor did they formally meet with other relevant managers, with teams, or with workers. And they did not meet regularly with team leaders to discuss activities during the Lean implementation. There was therefore no "trickle-down" effect from top management to team members in communication about the importance of the Lean project and top management's intention to implement it.

4.2.2. Top Management Involvement

Top management did take isolated initiatives, but there was no coordinated or planned effort to implement the Lean and OHS interventions. One top manager had occasional informal discussions with selected team members about the project or team activities. A team member told us: "The manager asked about the Lean project when we met him, but he did not visit the line or call us for meetings about the activities of the project." Other members of top management seemed unaware of the existence of the project.

4.2.3. Top Management Support

Top management offered practically no support. They did allocate resources for implementing 5S housekeeping, but no other support initiatives were observed. It seemed that top management and the other team members regarded this Lean project as a burden; the project was solicited by a global buyer and did not originate from an internally experienced need.

4.2.4. Initiatives to Empower

Top management took no empowerment initiatives beyond allowing 15 team members and line workers to participate in the project's (externally sponsored) training programmes. They were not interested in organizing any Lean-specific training or awareness-building programmes themselves.

4.2.5. Initiatives to Encourage

Top management did not offer any encouragement to team members or workers by seeking suggestions and opinions or even showing appreciation for improved performance. They just told

them to work on the project because one of the global buyers wanted it. A team member explained that this was not the first project of its kind and he knew that it would not work without the support of the research team.

4.2.6. Monitoring and Guidance

Top management formed no supervisory team and neither guided nor even monitored the Lean intervention activities. The lack of monitoring resulted in a lack of interest and ownership among team members.

4.2.7. Top Management Influence on Team Behaviour

The above findings for factory B show that the top management had no real commitment to implementing Lean. The lack of TMC adversely affected the level of team members' involvement in Lean problem-solving activities. Top management did not communicate any intention or willingness to implement this Lean project and did not try to create awareness and preparedness among team members at the beginning of the project. Due to the lack of involvement from top management, the team leaders and members did not feel encouraged to engage in Lean problem-solving activities. One team leader told us: "Team leaders and team members did not feel motivated or obliged to involve themselves in problem-solving activities due to the lack of top management involvement."

The top management did not provide the necessary support to create enthusiasm among team members to work on the project. There was no initiative to improve Lean-related knowledge and skills through organizing in-house training and coaching for the team members and workers. There were no monitoring and guiding activities by the top management. Therefore, the team members neither feel encouraged nor motivated to work proactively in problem-solving nor did not feel obliged to voice their suggestions to improve organizational performance.

4.2.8. Improvement Effects

The effect of the top management's lack of commitment was evident in the performance indicators for this factory, as shown in Tables 3 and 4. Lean intervention was carried out for a

duration of three months with 27 operators working on the line during the data collection process.

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Due to a lack of TMC, the Lean initiative did not result in the improvements seen in Factory A. Without support or encouragement, team members were not adequately motivated to contribute to problem-solving activities. As a result, we found only small improvements in production and OHS variables. There was a 6% improvement in the 5S audit score and an 8% reduction in changeover time (Table 3), and the overall improvement in line efficiency after the three-month intervention was only 3.1%. Similarly, there was very little improvement in OHS variables (Table 4). Top management terminated the Lean activities after the intervention had finished, and six months later factory efficiency exhibited a downward tendency toward its initial stage before the intervention.

5. Discussion

Lean is a micro-level problem-solving and micro-incremental improvement activity that requires team members to identify, voice, and solve bottlenecks and problems to generate improvements. The challenge of Lean therefore is to keep its team members proactive in problem-solving. This requires management – including top management – to motivate and encourage team members and workers to achieve the goals recognized by Lean. This study aimed to identify how TMC influences Lean team members' prosocial voice behaviour and establish a link between prosocial voice behaviour, productivity, and OHS during a Lean intervention in a developing country. The findings show that employee voice behaviour is contingent on the commitment of the company leadership to the Lean implementation. TMC is positively associated with prosocial voice, while a lack of TMC is negatively associated with prosocial voice. The findings also show that the

level of prosocial voice behaviour affects the results of the Lean intervention captured by productivity, OHS, and sustainability measures. The findings suggest that top management commitment to the Lean implementation increased both the capacity and the well-being of the employees.

Although employee prosocial voice behaviour concerns micro-incremental changes, these nevertheless translate into continuous critical improvements in both productivity and OHS performance. Moreover, the differences between case factories A and B were amplified over time, leading to respectively a sustainable and an unsustainable result. The two case companies are comparable for most background variables, and the differences are therefore not likely to be the effect of an unobserved variable. The findings also indicate that the theoretical model captures critical factors in explaining performance differences in relation to Lean implementations in developing countries.

We focused on the garment industry in Bangladesh, which is a very hierarchical country in the sense of scoring high on Hofstede's power distance scale (Bashar *et al.*, 2021), but the findings of this study resonate with more generic findings in the top management literature. Niehoff *et al.*, (1990), for example, identified how top management actions and practices change the attitudes of employees and influence their commitment positively toward organizational performance, and Alefari *et al.* (2017) and Scherrer-Rathje *et al.* (2009) demonstrated the influence of leadership on Lean performance.

The paper also contributes to recent streams of research that focus on leadership and Lean in the context of developing countries, where Maalouf *et al.* (2019) indicate the importance of managing paradoxes, but provide no insights on the impact of employee voice in implementing lean, and Hasle and Vang (2021) indicate the need to pay attention to institutional logics in the context of the implementation of Lean in developing countries, but do not show how employee prosocial voice plays into this. Some authors stress the ambiguous impact of Lean on OHS in developing countries (Hamja *et al.*, 2019) but fail to introduce the importance of voice for assessing how Lean could be beneficial to employees. Other papers pay attention to various performance factors, including human dimensions related to Lean implementation, but ignore

OHS and prosocial employee voice in this context (Ramadas and Satish, 2018). Detert and Treviño (2010) found that when top management made employees feel encouraged, they responded positively, contributing to prosocial voice and therefore problem-solving. This finding also corresponds with insights stemming from the psychological safety literature (Edmondson, 1999) and the implicit voice theories literature, which holds that employees only speak up when they have solid knowledge (Detert and Edmondson, 2011).

More specifically, the findings echo results in the Lean literature, such as those of Bateman and Rich (2003), who showed that communication is crucial for successful Lean interventions (Kundu and Manohar, 2012; Lantz *et al.*, 2015; van Dun and Wilderom, 2012). Likewise, several Lean scholars have documented that employee involvement is a central parameter for a successful Lean implementation (MacDuffie, 1995b; Shah and Ward, 2003; van Dun and Wilderom, 2012; van Dun and Wilderom, 2016). The two case studies show the positive effect of top management's monitoring of team performance on employees' prosocial voice behaviour. Monitoring influences employee behaviour (Beatty and Zajac, 1994; Kundu and Manohar, 2012). The findings of this research have therefore successfully established the positive relationship between TMC and team voice behaviour that leads to improved operational performance, including OHS.

6. Theoretical contributions and practical implications

This study is the first empirical study on the influence of TMC on voice behaviour in the context of Lean implementation in a developing country. This research contributes theoretically by bridging the gap between TMC and Lean team members' voice behaviour, taking insights from the field of organizational behaviour into the Lean literature. This research contributes to the operation management field by introducing voice research.

This research has practical implications too. The first implication is that TMC has a positive impact on the barriers preventing employees from speaking up: culture is not an absolute barrier, and prosocial voice contributes to improved operational performance. Top management can demonstrate its commitment by means of communication, involvement in implementation

processes, support to teams, increased empowerment and encouragement, as well as by systematic monitoring activities.

7. Conclusions and Further Research

In this paper, we aimed to help close the research gap regarding the importance of TMC and employee voice behaviour in teams during Lean implementations at suppliers in developing countries. We developed a model to operationalize the concept of TMC in the context of developing countries.

When the two case companies are compared, it becomes clear that one should be hesitant to generalize across suppliers in developing countries. In this paper, we relied on data from two suppliers within the same segment of the industry and located in the same country, within 20 kilometres of each other. The two companies nevertheless displayed significant differences in TMC and therefore also in team behaviour and performance (including long-term performance). Considering the differences between the two case companies, this paper provides evidence for the importance of both TMC and prosocial voice to the performance of Lean projects. The paper thereby feeds into contemporary Lean research that has underscored soft factors (Netland *et al.*, 2015) and behavioural components, including employee voice, in the context of Lean implementation. To the best of our knowledge, this paper is the first to contribute to addressing these new research themes with insights from suppliers in developing countries. The paper also suggests that TMC is at least as important for Lean implementation in a developing country as it is in developed countries.

Having drawn on data collected through in-depth action research, we would claim that this data is robust and linked to the underlying causal mechanisms surrounding the role of top management. This claim is supported by the positive association between our findings and generic findings on prosocial voice behaviour and critical success factors in the Lean implementation literature.

One potential weakness in the findings is that they stem from only two cases in the same sector. To support the findings, there is a need for additional studies in different developing countries

(and in different sectors). Currently, the data quality in developing countries is often poor, but when this data quality improves, our findings would benefit from being assessed based on quantitative longitudinal data. Moreover, the project design allowed us to find data on sustainability for only one variable, which meant that we could not document whether other components of the intervention were sustained. This calls for more research on the link between TMC and Lean implementation and whether TMC plays the same role in sustaining OHS and efficiency gains. This paper attempts to identify the practical implications of how top management can demonstrate its commitment and of how crucial the visualization of its dimensions is in this respect. The practical implications would benefit from complementary studies focusing on barriers to implementing TMC and perhaps paying special attention to the role of mid-level managers. Nevertheless, this paper provides the first in-depth findings on the link between TMC and operational performance as an outcome of Lean intervention.

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Figure 1. Analytical Model of Top Management Commitment

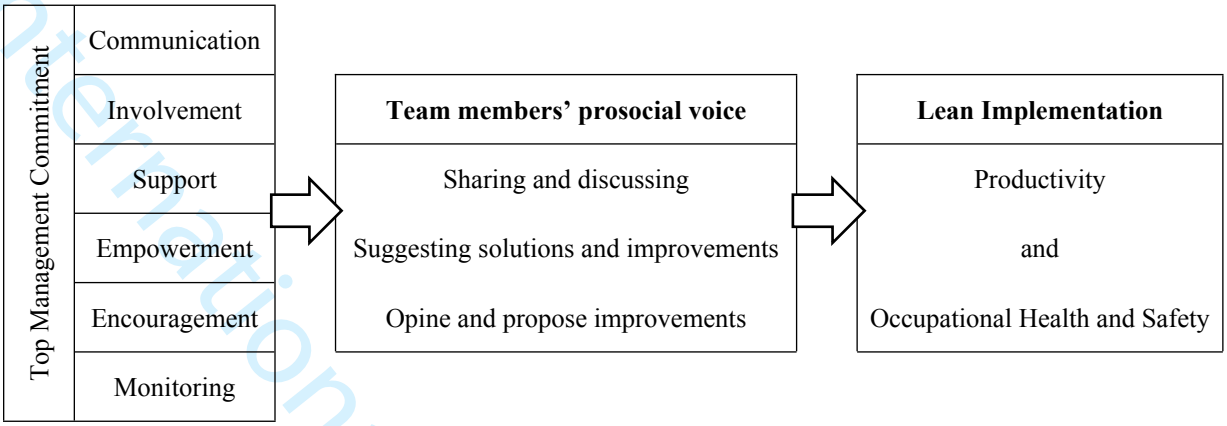

Table 1. Improvement in Production Variables for Factory A

Productivity Variable	Before Intervention (%)	After Intervention (%)	Change (percentage points)
Efficiency[b,e]	50.5 (n=23)	60.8 (n=25)	10.3[h]
Quality[b]	4.9 (n=23)	4.06 (n=25)	-0.84[g]
VSM[b.d]	3	4	+1%*
SMED[b,c]	480	360	-25%*
5S Score[a,f]	33	40	+11%

[a] T-test, [b] Anova with direction, [c] Minutes, [d] Value added,
[e] Percentage, [f] 1–5 scores measured for 12 parameters of 5S set by the project team,
[g] $0.05 > x > 0.10$, [h] $0.01 > x > 0.05$, [k] $0.00 > x > 0.01$
* not possible to calculate significance levels

Table 2. Improvement in OHS Variables for Factory A

OHS Variable	Before Intervention (%, n=24)	After Intervention (%, n=30)	Change (percentage points)
Acceptable Head Position[a]	17	50	+33[h]
Acceptable Back Position[a]	13	47	+34[h]
Machine Safety[b]	92	99	+7[k]
Use of Mask[a]	87	87	0
Housekeeping[b]	63	77	+14

[a] T-test, [b] Anova with direction,
[g] 0.05 > x > 0.10, [h] 0.01 > x > 0.05, [k] 0.00 > x > 0.01

Table 3. Improvement in Production Variables for Factory B

Productivity Variable	Before Intervention (%)	After Intervention (%)	Change (percentage points)
Efficiency[b]	60.9 (n=22)	64 (n=17)	+3.1
DHU/Quality[b]	9.0 (n=22)	6.8 (n=17)	-2.2
VSM[b,d]	2	3	+1*
SMED[b,c]	120	110	-8*
5S Score[a]	41	45	+6

[a] T-test, [b] Anova with direction, [c] Minutes, [d] Value added
* not possible to calculate significance levels

Table 4. Improvement in OHS Variables for Factory B

OHS Variable	Before Intervention (%, n=27)	After Intervention (%, n=27)	Change (percentage points)
Acceptable Head Position[a]	26	33	+7
Acceptable Back Position[a]	11	26	+15
Machine Safety[b]	87	90	+3
Use of Mask[a]	73	73	0
Housekeeping[b]	61	67	+6[k]

[a] T-test, [b] Anova with direction
[g] 0.05 > x > 0.10, [h] 0.01 > x > 0.05, [k] 0.00 > x > 0.01