

Leadership Role in Managing Knowledge to Support Operational Performance

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Abstract

Inter-shift operational performance variation persists in many mature World Class Manufacturing (WCM) environments, even when technical conditions are held constant across shift groups. However, the organizational mechanisms underlying this variation remain underexplored. This study addressed this gap by examining how shop-floor leadership behaviors shape knowledge management (KM) capabilities and processes in an FMCG bar soap department where three shifts operated with identical equipment, standards, and WCM tools but demonstrated persistent differences in Overall Equipment Effectiveness (OEE). A qualitative single-case study design was adopted, based on ten semi-structured interviews with shop-floor leaders and personnel across all three shifts. The data were analyzed using inductive thematic analysis. The analysis generated thirteen themes, which were synthesized into a dual-perspective account of leader-mediated and peer-mediated knowledge dynamics. A cross-shift analysis linked each shift's leadership profile to its observed performance trajectory. Leadership behavior emerged as a key organizational condition that activated or constrained KM capabilities, even when WCM infrastructure was nominally identical, through two interconnected pathways: a cognitive pathway, in which leadership shaped developmental opportunities that strengthened realized absorptive capacity, and a relational pathway, in which leadership presence, support, and psychological safety influenced whether tacit knowledge was shared and internalized. The study reconceptualized KM capability as an activation-dependent rather than infrastructure-dependent construct and demonstrated that the Socialization, Externalization, Combination, and Internalization (SECI) model's socialization and externalization modes were particularly prominent in mature shop-floor environments.

INTRODUCTION

Fast-moving consumer goods (FMCG) manufacturers operate under intense cost pressures, shortened product life cycles, and volatile demand conditions, making operational excellence a critical determinant of competitive sustainability (Munir et al., 2025). World Class Manufacturing (WCM) has become a dominant integrated framework through which FMCG firms pursue operational excellence by providing a structured architecture of pillars, tools, and routines that define the discipline required to sustain continuous improvement (Ebrahimi et al., 2019; Yamashina, 2000). However, growing evidence suggests that the benefits derived from WCM follow a maturation curve: significant improvements are achieved during the early stages through the elimination of chronic losses, whereas further improvements increasingly depend on organizational and human factors that determine how knowledge is created, shared, and applied on the shop floor once the technical system becomes stabilized (Łyp-Wrońska, 2016; Mehta et al., 2024).

Knowledge management (KM) within WCM environments has been widely recognized as a critical driver of competitiveness, providing the mechanisms through which organizations transform operational experience into sustained improvement (Mendes & Mattos, 2017; Gold et al., 2001). Within the KM literature, leadership behavior has been shown to exert a significant influence on the direction and effectiveness of KM activities (Nguyen & Mohamed, 2011; von Krogh et al., 2012). Knowledge-oriented leaders strengthen KM capabilities by communicating the strategic value of knowledge, supporting learning processes, and encouraging knowledge-sharing behaviors that enhance innovation and operational performance (Donate & Sánchez de Pablo, 2015; Zia, 2020). Conversely, leadership characterized by ambiguity, inconsistency, or psychological insecurity can become a significant barrier to knowledge creation, sharing, and utilization (Bryant, 2003; Politis, 2004).

Despite extensive research on the individual relationships among leadership, KM, and performance, three gaps remain and motivate this study (Atapattu & Huybers, 2022). First, limited research has examined how these relationships operate simultaneously and interactively within a single mature WCM department where technical systems have stabilized and human factors have become the primary source of remaining performance variation. Second, the tacit dimension of shop-floor competence has received insufficient qualitative attention, despite the fact that tacit knowledge cannot be fully captured through formal procedures and may represent a key differentiating factor between high-performing and average-performing teams in mature manufacturing environments (Szulanski, 1996). Third, the integration of the Socialization, Externalization, Combination, and Internalization (SECI) knowledge conversion framework (Nonaka & Takeuchi, 1995) with the operational create–store–share–use process model (Chen & Fong, 2012; Razzaque et al., 2023) remains insufficiently developed, resulting in the absence of an integrated perspective for understanding how knowledge conversion mechanisms and observable KM activities interact at the shop-floor level.

This study addressed these gaps through a qualitative single-case study of the bar soap department at PT SAMU, a large Indonesian FMCG manufacturer operating under a mature WCM framework since 2021. The empirical setting provided a valuable analytical opportunity because three shift groups operated with identical equipment, production standards, and WCM tools, yet demonstrated persistent differences in Overall Equipment Effectiveness (OEE). Since the technical system was controlled across shifts, variations in performance were attributed to organizational and human factors, particularly leadership behaviors that activated KM capabilities and the consistency with which KM processes were implemented across shift teams.

Two research questions guided this inquiry. First, how did shop-floor leaders perceive their roles in managing knowledge within the WCM framework, and how did these perceptions vary across shifts? Second, how did shop-floor personnel perceive the influence of leadership behaviors on their willingness and ability to participate in knowledge-related activities, and how did these experiences differ across shifts in relation to observed performance variations? By applying a cross-shift perspective, this study moved beyond individual perceptions of performance drivers toward a triangulated understanding of how leadership profiles corresponded with differences in operational outcomes.

This study made several contributions. First, it provided an empirically grounded explanation of how shop-floor leadership behaviors shaped KM capabilities and process outcomes in a mature FMCG manufacturing environment. Second, it advanced theoretical understanding by demonstrating how SECI knowledge conversion modes and create–store–share–use activities operated interdependently within a single organizational context, with externalization and socialization emerging as particularly influential mechanisms. Third, by analyzing cross-shift variations and examining differences between leader and personnel perspectives, this study identified two interconnected pathways—cognitive and relational—through which leadership behaviors influenced inter-shift OEE variations under equivalent technical conditions. These findings were subsequently translated into practical interventions for strengthening knowledge-driven operational improvement.

METHOD

Research Design

This study employed a qualitative exploratory design with an inductive thematic analysis approach. The research design was selected to understand the perceptions of shop-floor leaders and personnel regarding the role of leadership behavior in managing knowledge within a WCM environment. The study was conducted as a single-case study because it focused on one department within a single company, enabling an in-depth exploration of the organizational context and knowledge management practices within that setting

Informant Selection Strategy

A criterion-based, key-informant strategy was employed, selecting informants who occupy roles giving them direct, day-to-day experience of WCM activities, knowledge practices, and operational performance. Shop-floor leaders—section managers and team leaders responsible for managing production, people, and WCM routines at the line or shift level—were selected as key informants for Research Question 1 because they design and enact the behaviors that influence KM capability and processes. Shop-floor personnel—machine

operators and technicians directly involved in operating, monitoring, and maintaining equipment—were selected for Research Question 2 because they experience leadership behaviors and can describe how those behaviors shape their willingness and ability to engage in knowledge-related activities. Ten informants participated, distributed across the three shifts to ensure representation under the common technical system. Profiles are summarized in Table 1 below.

Table 1. Informant Profile

Code	Role	Shift	Tenure	Group
RL1	Section Manager	-	17 years	Leader
RL2	Production Leader	A	2 years	Leader
RL3	Production Leader	B	1 year	Leader
RL4	Production Leader	C	6 years	Leader
RP1	Technician	A	4 years	Personnel
RP2	Technician	B	3 years	Personnel
RP3	Technician	C	3 years	Personnel
RP4	Operator	A	15 years	Personnel
RP5	Operator	B	23 years	Personnel
RP6	Operator	C	24 years	Personnel

Data Collection Methods

Primary data were collected through semi-structured interviews conducted face-to-face at the factory site between March and April 2026. Two interview guides were developed—one for leaders aligned with Research Question 1, one for personnel aligned with Research Question 2—each with open-ended questions and probes organized around leadership behaviors, KM capability dimensions, and KM process activities. Crucially, both included questions designed to surface tacit knowledge dynamics, including how leaders facilitate cross-shift tacit transfer and how personnel describe operational learning occurring outside formal documentation. Interviews ranged from 30 to 45 minutes and were conducted in Bahasa Indonesia. All were audio-recorded with informed consent and transcribed verbatim.

Data Analysis Methods

The data were analyzed using the six-phase thematic analysis procedure of Braun and Clarke (2006). Phase one involved familiarization through verbatim transcription and repeated reading. Phase two consisted of initial open coding, with codes allowed to emerge inductively and theoretical concepts functioning as sensitizing concepts. Phase three grouped related codes into candidate themes answering each research question; where patterns and contrasts emerged between shift groups, these were explored explicitly to connect qualitative findings to the inter-shift performance variation documented in the introduction. Phase four reviewed themes for internal coherence and distinctiveness. Phase five defined and named the final themes with explicit attention to the underlying mechanism each captured. Phase six produced the analytic narrative including the cross-shift synthesis. Coding was performed manually with the aid of a Google spreadsheet to maintain an auditable record of code decisions and theme revisions.

RESULTS AND DISCUSSION

The Table 2 below shows the theme that inductively developed from thematic analysis from the respondent interview transcript. The pattern depicted in the Table 2 reveals which KM

phenomena are visible from the leadership vantage point, which are visible only from the personnel vantage point, and which are acknowledged by both.

Table 2. Role-stratified evidence with evidentiary status

Theme	Leaders	Personnel	Evidentiary status
The Backing Function	—	41	Cross-role confirmed *
Leadership Centrality in KM Mediation	14	1	Role-specific (leader)
Relational and Experiential Learning	—	14	Role-specific (personnel)
Horizontal Knowledge Economy	—	14	Role-specific (personnel)
Handover as Social Achievement	—	14	Cross-role confirmed **
Behavioral Consistency as OEE Link	—	13	Divergent (personnel / relational)
Documentation–Practice Gap	—	12	Cross-role confirmed ***
Psychological Safety as Social Infrastructure	11	—	Cross-role confirmed *
Knowledge Access Asymmetry	—	10	Role-specific (personnel)
Differential Absorption as OEE Explanation	9	1	Divergent (leader / cognitive)
The Externalization Gap	9	—	Cross-role confirmed ***
WCM Tools: Activation-Dependent	8	—	Role-specific (leader)
Inter-Shift Knowledge Boundary Fragility	8	—	Cross-role confirmed **
Grand Total	59	120	—

Note: *, ** and *** mark the paired constructs corroborated across the two role groups. *psychological safety / backing; ** inter-shift handover vulnerability; *** externalization / documentation gap. Convergence is claimed only for these three paired constructs.

How Shop-Floor Leaders Perceive Their KM Role

Six themes emerged from the leader interviews. Leadership Centrality in KM Mediation captures leaders' shared self-perception as the principal mediating architecture through which all team-level knowledge is organized, transmitted, and sustained—controlling direct explanation and demonstration, delegated teaching, and institutional media such as Small Group Activity sessions. The developmental dimension is explicit and accountability-laden; RL2 holds that *"a leader should fail because they cannot develop the team,"* and RL3 frames the leader as *"a pilot"* with significant impact on shift outcomes. This aligns with Nonaka et al.'s (2000) proposition that effective KM requires a knowledge-officer function—not task administration but the active construction of Ba, the relational space within which knowledge creation occurs.

The Externalization Gap documents that a substantial volume of operationally critical knowledge—troubleshooting sequences, context-dependent settings, informal corrections—remains tacit and undocumented despite leader awareness of both its existence and its cost. RL1 identifies recurrence as the failure signal *"a problem solved on one line reappears on another, "and even happens at A again"*, and acknowledges directly that *"troubleshooting is actually something important... but we still cannot capture it."* Externalization is reactive and inconsistent, mapping onto the externalization phase of SECI and onto Szulanski's (1996) stickiness, with knowledge ambiguity, limited absorptive capacity, and the absence of a motivated sender–receiver relationship all present.

Psychological Safety as Social Infrastructure shows that leaders deliberately construct low-threat environments through non-punitive first-error responses, progressive discipline,

character-aware communication, and relational investment, understanding this as a precondition for sharing rather than a secondary HR concern: *"if at the start we immediately judge, that will create fear"* (RL3). This is grounded in Edmondson's (1999, 2003) work on psychological safety as a structural precondition for the socialization through which tacit knowledge circulates. Structural Fragility at the Inter-Shift Knowledge Boundary identifies the handover as the most consistently vulnerable point; RL4 names the most intractable cause—*"each person has their own interests, while handover, for the previous shift, is a matter of loyalty"*—echoing Argote's (2013) account of transfer as vulnerable to leakage. Differential Knowledge Absorption reveals that leaders explain inter-shift OEE variation cognitively, through members' differing capacity to absorb and apply shared knowledge, responding with capability scoring and differentiated coaching (RL2), which maps onto absorptive capacity (Cohen & Levinthal, 1990; Zahra & George, 2002). Finally, WCM Tools as Activation-Dependent establishes that tools function as prompts and accountability scaffolds whose capacity to drive KM is contingent on consistent behavioral activation, consistent with implementation-depth effects (Cua et al., 2001; McKone et al., 2001).

How Shop-Floor Personnel Perceive Leadership Influence on KM Engagement

Seven themes emerged from the personnel interviews. The Backing Function—the most-evidenced theme—reveals that personnel value leaders primarily as providers of psychological backing rather than as direct sources of technical knowledge; RP1 reports becoming more courageous once a decision is backed. The most feared leadership failure is not lack of knowledge but inconsistency: *"what I fear is when in front of you it's okay, but behind you he says something different"* (RP2). Read through LMX (Graen & Uhl-Bien, 1995), backing is the relational currency of a high-quality exchange, and inconsistency is precisely what degrades that exchange and suppresses disclosure.

Relational and Experiential Learning shows that personnel acquire operational knowledge primarily through experiential, observational, need-driven processes rather than formal documentation—*"our own experience, sir... self-taught"* (RP4), and learning by observing what a colleague does even when *"he didn't teach"* (RP2)—grounded in the Socialization quadrant of SECI. The Documentation–Practice Gap reveals a structural gap between formal standards and actual practice, managed through complementary use of SOP and experience and narrowing but not closing with tenure. The Horizontal Knowledge Economy documents a substantial peer-to-peer, cross-shift exchange operating largely outside leaders' awareness; RP5 is *"more open to fellow operators"* than to the leader, an achievement-pragmatic rather than competitive stance consistent with peer-sharing predictors (Wang & Noe, 2010; Ipe, 2003).

Handover Reliability as a Social Achievement adds a phenomenological dimension: from the personnel view, handover quality depends on the will, attention, and emotional investment of the deliverer, prompting self-funded workarounds such as arriving early to share with the previous shift (RP5)—consistent with Inkpen and Tsang (2005) on transfer embedded in strong social ties. Knowledge Access Asymmetry identifies unequal access to knowledge-creation and formalization processes across hierarchical levels, with operators *"only involved when it is finished"* (RP5), undermining motivational conditions for engagement (Gold et al., 2001; Wang & Noe, 2010). Finally, Behavioral Consistency as the Personnel-Level Mechanism reveals that, where leaders explain OEE variation cognitively, personnel explain it

through motivational and behavioral consistency—different methods applied to the same task *"even though there is a centerline"* (RP4)—making consistency itself a function of the social condition leadership constructs (Liker, 2004; Senge, 1990).

Linking Leadership Profiles to OEE Outcomes

When informants are categorized by shift group rather than by role, a pattern emerges in which the relational and knowledge-enabling mechanisms are activated to materially different degrees across the three shifts, and each shift's leadership profile aligns with its observed performance trajectory. RP5 provides a comparative orientation, locating the strongest current performance in group C, group B in the middle, and group A rising as it grows more competent. The analysis reads each shift's leader and personnel accounts together against this orientation.

Shift group C is distinguished by the depth and consistency of its relational presence, corroborated from both sides of the leader–personnel relationship. Its leader, RL4, frames correction developmentally—appreciating before reproofing and refusing to shame—and orients the team toward collective accountability (*"we cannot work as individuals; work must be a team"*). Both personnel confirm the experience: RP3 reports that error is treated as a learning event so long as it does not recur and that the leader reliably guarantees the handover (*"he will make sure our inter-shift handover runs well; that is certain"*), while RP6 describes a leader who is physically present, distributes responsibility, investigates before judging, and under whom it remains safe to speak about legitimate matters. In group C, the backing function personnel most value and the social investment the inter-shift boundary requires are enacted most fully and most consistently at every tier—the profile consistent with the strongest performance.

Shift group A is distinguished less by relational presence than by the most systematic capability-development approach in the department. Its leader, RL2, maintains an explicit capability-scoring system, tailors coaching to it, and holds himself to a demanding developmental standard. The technician, RP1, experiences this as genuine backing and reports being taught rather than blamed. From the operator side, however, the relational experience is thinner: RP4 describes correction as a warning rather than a dialogue, volunteers in knowledge activity only on request, and adopts a comparatively passive orientation to his own role. The shift's rising trajectory is consistent with this profile—a strong, deliberately structured development engine and solid staff-tier backing, not yet matched by relational depth at the operator level.

Shift group B exhibits a gap between the leader's self-perception and the operator's lived experience within the same team. The leader, RL3, presents himself as relationally strong and deliberately non-judgmental. The operator, RP5, reports a relational and communicative deficit at his own tier: interaction is largely mediated through messaging with little direct presence (*"with my leader it is more via WhatsApp; in person it is lacking"*), leaving him feeling nearly invisible. RP5 names both the shift's weakness (*"we are weak in communication and cooperation... each on our own"*) and the reason its performance nonetheless holds (*"we are helped by stable machine performance"*). In group B, the relational backing personnel most value is under-delivered precisely at the tier where tacit operational knowledge resides, and performance rests on technical stability rather than on activated KM capability.

Critically, leaders and personnel do not explain the inter-shift difference in the same way, and the divergence is itself analytically significant. Leaders explain the variation cognitively, in their personnel's differing capacity to absorb knowledge—RL1 states the obstacle most directly as *"manpower; their capacity to absorb,"* which differs from person to person once knowledge is shared. Personnel explain the same variation in relational and behavioral terms, locating it in the conduct of their leaders—RP3 traces the gap to the absence of real supervision, and RP5 to a deficit of presence and communication and a culture of working in isolation. This pattern carries a recognizable risk of actor–observer attribution bias (Jones & Nisbett, 1971): actors are drawn toward explanations that preserve a favorable self-image, so leaders attribute the gap to subordinate capability rather than to their own behavior, while personnel attribute it to leadership variation rather than to their own capability. Neither single-role account can therefore be accepted at face value, and the certainty of any claim resting on one role group alone is lowered accordingly.

Resolving the divergence requires identifying the variable that unites the two accounts. The relational conditions personnel cite—presence, communication, backing, and the psychological safety on which they rest—are themselves created by leaders and so already belong to the leadership process. The absorptive capacity leaders cite is not an immovable property of the workforce either: the realized absorptive capacity of each shift is a function of the developmental opportunity that leaders determine. Leadership behavior is thus the shared upstream variable that governs the cognitive pathway, by shaping the development that builds absorptive capacity, and the relational pathway, by shaping the trust and presence that determine whether knowledge is offered and received. This triangulated reading is what licenses the governing-variable claim: it rests not on either group's self-report but on the point at which both accounts converge.

Convergences and Tensions in the KM System

The thirteen themes resolve into three convergences and three tensions. On the convergence side, both perspectives confirm that psychological safety is the decisive prerequisite for knowledge flow, that tacit knowledge dominates the operationally consequential layer while formal documentation systematically fails to capture it (an underperformed externalization phase), and that the inter-shift handover is a genuine and consistent KM vulnerability rather than an isolated failure. On the tension side, three divergences emerge. First, leaders perceive themselves primarily as knowledge transmitters and system designers, while personnel value them primarily as psychological-safety providers and decision validators—suggesting leaders may over-invest in formal system design while under-investing in relational work. Second, leaders discuss KM in exclusively vertical terms, while the personnel data reveal a parallel horizontal economy carrying significant operational knowledge the formal architecture cannot see. Third, leaders explain inter-shift variation cognitively while personnel explain it through behavioral consistency. These are complementary mechanisms with different intervention implications, and both resolve upstream into leadership behavior; an effective response must address both rather than privileging the leader-centered cognitive explanation alone.

Implication for Practice, Research, and Society

Because the analysis locates inter-shift variation in a structural absence rather than in individual leader deficiency, the practical implication is not exhortation but mechanism design.

The study proposes the Integrated Knowledge Production and Personnel Development System (IKPDS), an intervention built to act on both pathways through which leadership produces variation without reducing the leader–personnel relationship to a documentation routine. The IKPDS comprises three interdependent elements. A Leader Knowledge Worksheet System disciplines externalization as a routine leadership output and feeds capability development, addressing the cognitive pathway. A Knowledge Development Officer (KDO)—a cross-shift role carrying no supervisory or disciplinary authority, so that its presence does not reintroduce the very evaluative threat the psychological-safety finding identifies—acts as the human steward of the relational conditions for exchange and synthesizes worksheet output into targeted, equalized development across the three shifts. A Leadership Relational Practice Development strand develops the three relational behaviors the personnel data identify as decisive—consistent floor presence, framing of correction as development, and visible backing—so they become consistent across every leader and tier rather than contingent on individual disposition. Targeting the under-developed knowledge-process capability directly (Gold et al., 2001), the IKPDS is designed for phased operationalization within the existing WCM governance structure, with the KDO appointment sequenced ahead of system-wide deployment and the role's metrics embedded in the departmental KPI framework to ensure durability.

For research, the priority implications are specific rather than generic. A longitudinal pre/post design tracking the same shift teams through an IKPDS rollout would test whether targeted KM intervention produces measurable OEE convergence, supplying the temporal evidence a cross-sectional design cannot. A multi-case comparison across WCM-based FMCG departments—and into non-FMCG mature manufacturing—would test the boundary conditions of the governing-variable claim, clarifying whether the cognitive/relational two-pathway structure travels beyond this site.

For society, the findings surface a workforce-resilience concern that the case makes vivid. Much of the operationally consequential tacit knowledge resides with long-tenured operators—several with 15 to 24 years on the line—and the documented externalization gap means that knowledge is largely uncoded. In an aging or mobile workforce, this is a succession and knowledge-loss risk: the retirement or departure of a few individuals can remove capability the organization never captured. An intervention that systematically externalizes and institutionalizes tacit expertise is therefore not only a performance lever but a safeguard of organizational and human capital with clear resonance for manufacturing-sector workforce policy.

CONCLUSION

Leaders in PT SAMU's bar soap department viewed themselves as the central link through which knowledge was transferred, interpreted, and applied on the production floor. They facilitated this through hands-on instruction, demonstrations, and task delegation, treating psychological safety as a foundation for knowledge sharing rather than merely a support mechanism. Nevertheless, they acknowledged persistent externalization gaps that remained largely unaddressed, with much knowledge residing within individuals rather than documented systems. Leaders also emphasized that WCM tools functioned as practical enablers, not standalone solutions—their effectiveness depended on how consistently leaders applied and

reinforced them. Within this framework, inter-shift handovers emerged as the department's weakest point in its knowledge architecture, representing the stage most prone to information loss, distortion, or disruption.

The perspectives of personnel confirmed these findings while highlighting additional nuances. Their engagement in knowledge-related activities was shaped by the relational environment and behaviors cultivated by leaders. Operational knowledge was primarily acquired through socialization, demonstrating that knowledge circulated informally on the shop floor through social and relational conditions rather than formal documentation. Personnel also described a substantial horizontal knowledge network among peers operating independently of formal WCM structures. When explaining inter-shift variations in OEE, personnel emphasized motivation and behavior, which differed from leaders' explanations centered on cognitive absorption, though both perspectives depended on the social conditions established by leadership behavior.

The same WCM infrastructure did not guarantee uniform knowledge management capabilities across shifts. The observed gaps were driven by variations in leadership behavior across the three most prominent shifts, particularly within the relational dimension. Leaders and personnel provided different interpretations of these variations, but these divergences were ultimately mediated by leadership behaviors, which guided developmental opportunities that built absorptive capacity and fostered trust to determine whether knowledge was shared. Infrastructure provided the framework, but differences in how leaders enforced leader-member relationships determined whether that framework translated into operational performance.

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