When Do Supply Chain Employees Feel Responsible for Proactively Engaging in Greening Behaviours?

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Manuscript number: BJM-23-1056.R3

British Journal of Management

Citation: Verma, S., Wong, C.Y., Unsworth, K. (2025), When Do Supply Chain Employees Feel Responsible for Proactively Engaging in Greening Behaviours? British Journal of Management, BJM-23-1056.R3 (*accepted 19 September 2025*).

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Abstract

Employees in supply chain (SC) functions are increasingly assigned sustainability-related responsibilities and expected to engage in green behaviours. While prior research distinguishes voluntary from required green behaviours, the SC context suggests that employees perceive varying degrees of voluntariness and obligation. This study investigates why some SC employees engage more proactively than others, particularly in required green behaviours, and how they influence peers. Using semi-structured interviews with managers in SC and sustainability roles across five companies, we adopt a multi-level case study approach to examine proactive employee green behaviours (EGBs). We identify three levels of engagement—proactive, active compliance, and passive—and interpret them through self-determination and proactivity theories. Findings indicate that employees with broader role breadth and a combination of internalized and externalized felt responsibility are more likely to engage proactively and influence colleagues. We develop a multi-level theoretical framework depicting how EGBs are co-shaped by individual-level factors (e.g., role breadth, felt responsibility) and external influences from peers and supervisors (external felt responsibility). By adopting a role- and responsibility-based perspective, we provide practical guidance for job design and establish a foundation for future research on the dynamic, multi-level interplay between individual and organizational factors in shaping EGBs.

Keywords: Employee green behaviours, Felt responsibility, Proactivity, Role perceptions, Supply chain sustainability, Self-determination theory

1. Introduction

Environmental management has long been recognized as a supply chain (SC) issue (Lamming and Hampson, 1996), and SC employees are increasingly tasked with sustainability-related

activities such as vendor risk assessments (Roehrich *et al.*, 2017), green procurement (Tate *et al.*, 2013), reverse logistics (Wu and Pagell, 2011), product stewardship (Lamming and Hampson, 1996) and environmental collaboration (Eriksson and Svensson, 2016). Consequently, SC employees' behaviours play a critical role in implementing environmental policies and promoting sustainable practices (Ren *et al.*, 2023; Preuss and Fearne, 2021).

However, much of our knowledge of *employee green behaviours* (EGBs)—defined as "scalable actions that contribute to or detract from environmental sustainability" (Ones and Dilchert 2012a, p. 87), cannot be directly applied to these SC employees. This is because the EGB literature tends to demarcate voluntary green behaviours (VGBs) from required ones (RGBs) (see Unsworth *et al.*, 2021; Yuriev *et al.*, 2018) but this distinction is not appropriate in the SC context.

Instead, because sustainability expectations in SC roles are becoming increasingly institutionalized (Khan *et al.,* 2025), employee engagement with sustainability is no longer just voluntary (e.g., Cantor *et al.,* 2012; Rasheed *et al.,* 2021) but nor is it solely mandated. SC employees can proactively choose to engage in mandated roles with more effort than required. For example, sustainability championing and influencing other employees is common within SC roles and includes both required and proactive elements (Gattiker *et al.*, 2014). Thus, engagement in EGBs in the SC context depends not only on an individual's *motivation* or the formal assignment of sustainability *responsibilities* but also how employees perceive their *roles*. Rather than imposing an artificial segregation of RGBs and VGBs, we need to understand when and why employees engage in EGBs that may have both required and voluntary elements to them.

Voluntary green behaviours (VGBs) (Ren *et al.*, 2023) are defined as discretionary, extra-role behaviours beyond formal job duties (Ramus and Killmer, 2007; Boiral and Paillé, 2012; Norton *et al.,* 2015). On the other hand, *required green behaviours* (RGBs) refer to

sustainability tasks formally embedded within job roles (extrinsic motivation) and performance evaluations (Ones and Dilchert, 2012a; Norton *et al.,* 2014). The SC context is particularly relevant for examining both RGBs and VGBs, as cost efficiency is often prioritized over sustainability (Preuss and Fearne, 2021), making both voluntary and mandated behaviours more complex. For example, SC employees may prioritize cost efficiency and engage in RGBs at the mandated level (e.g., following sustainability procedures) or they may perceive their role differently, downplay that prioritization, and proactively engage in a more effortful form of the RGB (e.g., publicly following procedures in order to influence others). Thus, examining these more complex arrangements of EGBs within the SC context contributes to our knowledge of environmental management.

To date, those studies that have taken a more nuanced approach to RGBs and VGBs have often focused on the degree to which the behaviours align with personal values (e.g., Islam, *et al.,* 2020) or otherwise satisfy psychological needs for autonomy, competence, and relatedness (e.g., Davis, *et al.,* 2020; Guo, *et al.,* 2024). Thus, *self-determination theory* (SDT; Ryan and Deci, 2000) has been used to view both types of EGBs as self-motivated behaviours: VGBs are predominantly driven by intrinsic motivation while RGBs are driven by extrinsic motivation (Guo *et al.*, 2024). However, because of the complex interplay between requirements and voluntariness in the SC context, we suggest that we also need to consider the employee's perceptions of their role and the perceived requirements. We therefore draw on the proactivity literature and use the concepts of felt responsibility (i.e., a personal sense of accountability for work outcomes, e.g., Fuller *et al*., 2006) and role breadth (e.g., Morrison, 1994; McAllister *et al*., 2007). These literatures suggest that employees with broader role breadth and felt responsibility may embed sustainability in their roles (Fuller *et al*., 2006) and proactively influence others (Parker, 2000; Gattiker *et al.,* 2014).

This study therefore asks: Why do employees in SC functions engage in EGBs that range in requirement and voluntariness, and how does the perceived role and responsibilities affect their motivation and levels of proactivity? The primary contribution of this research is that it considers both requirements and motivation together in EGB, thus complementing the needs-based perspective of SDT. Using a role and responsibility lens, we explain both proactive behaviours such as green championing (Gattiker *et al.,* 2014) and less proactive responses like minimal compliance or resistance to sustainability tasks (Preuss and Fearne, 2021).

Second, through the inductive nature of the research, we identified the importance within the SC context of influencing others. Recent studies argue that managers and peers shape how employees interpret organizational practices (Kutaula *et al*., 2025). However, the literature lacks holistic insights into how proactive employees influence their peers and shape shared norms, i.e., the multi-level dynamics between individual behaviours and organizational contexts around role and responsibility perceptions. Moreover, past research tends to examine organizational and individual factors separately. For example, supervisor support (Ramus and Steger, 2000; Cantor *et al.*, 2012) may encourage green behaviours aimed at protecting organization reputation (Shou *et al*., 2022); yet, how peer influence shapes sustainability responsibilities and the dynamics of such processes remains less understood. We develop a multi-level framework that illustrates how EGBs influence others' felt responsibility and role breadth. We focus on employees from SC and sustainability functions—collectively referred to as "employees" to reflect the cross-functional nature of sustainability decision-making (Foerstl *et al.,* 2013)—across five firms with varying levels of sustainability maturity. This extends previous research on individual influencing behaviours (Gattiker *et al.,* 2014) by showing how both individual and organizational level factors shape EGBs.

Third, our framework identifies six mechanisms through which felt responsibility and role breadth are shaped, offering practical insights for job design. We show that less proactive

employees can become more engaged through interaction with proactive peers, sustainability-related task assignment, or the gradual assumption of such responsibilities. Our findings suggest practical strategies such as redesigning SC roles to enhance peer influence, recruiting individuals open to broader responsibilities, and supporting bottom-up sustainability initiatives. We highlight the importance for SC managers to understand how employees perceive their roles and how managerial actions can influence EGBs.

2. Literature review

2.1 EGBs among employees in SC functions

Management literature traditionally focuses on EGBs that are discretionary and voluntary (Boiral, 2009; Ren *et al.,* 2023). Many scholars have linked EGBs to OCBs (Ones and Dilchert, 2012a). OCBs, which are defined as "individual behaviour that is discretionary, not directly or explicitly recognized by the formal reward system, and that in aggregate promotes the effective functioning of the organization" (Organ, 1988, p.4). Like OCBs, EGBs such as helping, sportsmanship, organizational loyalty, organizational compliance, individual initiative, and self-development–are critical for advancing corporate greening efforts (Boiral, 2009).

However, some green tasks have become formalized as performance expectations, especially in roles like sustainability managers where green responsibilities align with formal job metrics, representing *required green behaviours* (RGBs) (Norton *et al.,* 2014). In supply chain (SC) functions, employees increasingly engage in sustainability by selecting sustainable alternatives, developing sustainable products and processes, integrating sustainability criteria into purchasing and logistics, and driving supplier sustainability initiatives (Jia *et al*., 2021; Lamming and Hampson, 1996; Roehrich *et al.,* 2017). These formally mandated activities fall under task performance (Ones and Dilchert, 2012b). The rise of RGBs challenges the

traditional view of voluntariness of EGBs, raising questions about how employees perceive their roles and responsibilities in sustainability engagement.

2.2 Self-Determination Theory

Self-determination theory (SDT) is widely applied to explain psychological mechanisms underlying OCBs and VGBs, and it has been used to examine the relationship between VGBs and RGBs (e.g., Guo *et al.*, 2024). SDT emphasizes motivational processes that support psychological functioning and personal growth (Patterson and Joseph, 2007) and posits three innate psychological needs: autonomy (self-endorsed behaviour), competence (demonstrating and improving one's abilities), and relatedness (feeling connected) (Ryan and Deci, 2000). Engagement in OCBs or VGBs often fulfills these needs (Ryan and Deci, 2000; Maco and Kwon, 2025).

Norton *et al*. (2015) highlight that *autonomous motivation* is central to VGBs, whereas RGBs are more often driven by *controlled motivation*, shaped by external pressures such as job requirements, rewards, or sanctions (Deci and Ryan, 2000). SDT further describes *internalization* as the process by which individuals transform socially mandated behaviours into personally endorsed values (Deci and Ryan, 2000, p. 235). Building on SDT theorizing (Deci *et al*., 1994; Gagné and Deci, 2005), when sustainability aligns with personal identity, externally mandated RGB may be internalized and enacted as VGBs.

In SC functions, sustainability-related tasks may be motivated either autonomously or in a controlled manner, depending on employees' perceptions (Murphy *et al*., 2020; Wu and Pagell, 2011). Indeed, Wu and Pagell (2011) highlight how SC employees often struggle to define sustainability responsibilities, blurring lines between voluntary and required behaviours. Therefore, although SDT can explain behaviours through the satisfaction of psychological

needs, it does not adequately capture how employees perceive their role boundaries in relation to sustainability.

Moreover, the role of controlled motivation in the workplace is proving to be more complex than originally conceived (e.g., Howard, *et al.*, 2016, 2021) and there is evidence that it can also drive proactive behaviours (Strauss and Parker, 2014). Yet, SDT does not fully address how the formal assignment and normalization of sustainability tasks reshape role perceptions and influence engagement. Moreover, a key distinction exists between complying with sustainability policies and personally feeling responsible for driving change–a level of proactivity that SDT alone cannot fully explain (Fuller *et al*., 2006). Thus, to explain EGBs in the SC context, we integrate complementary theories that account for role perceptions and proactive motivation.

2.3 Proactivity

Proactivity involves personal initiative to create or drive change in the work environment. Proactive individuals set goals, persistently pursue them and seize opportunities and challenges (Parker, 2000). Environmental challenges often demand such proactivity (Chiaburu and Baker, 2006; Bissing-Olson *et al*., 2013). Examples include interpreting complex environmental data, guiding supply chain partners toward sustainable practices and enhancing collaborative problem-solving (Boiral and Paillé, 2012; Jia *et al*., 2021). Sustainability managers may influence SC personnel to select sustainable suppliers and diffuse green practices throughout the supply network (Roehrich *et al.*, 2017; Tate *et al.,* 2013; Gattiker *et al*., 2014).

Proactivity provides a lens to consider the range of VGBs and RGBs. The most *proactive EGBs* would reflect high initiative addressing complex environmental issues, often challenging the status quo or confronting unsustainable practices (McAllister *et al*., 2007; Morrison and

Phelps, 1999). Research suggests that proactive behaviours are more likely when employees have strong self-efficacy, motivation, supportive work contexts (Parker, 2000), or a strong felt responsibility for change (Fuller *et al,* 2006). *Active-compliance EGBs reflect adherence to policies or regulations,* signalling *compliance but limited initiative (Wu and Pagell, 2011).* In contrast, *passive responses to sustainability* represent engagement that occurs with minimal effort and low awareness rather than deliberate compliance. These responses are typically incidental or routine–arising from convenience and reflecting surface level engagement with sustainability requirements (Ones and Dilchert, 2012b). Employees may also disengage due to limited resources, resistance (Murillo-Luna *et al*., 2011), moral decoupling (i.e., justifying unethical actions by detaching them from moral standards) (Eriksson and Svensson, 2016) or difficulties in aligning accountability with sustainability goals (Chinander, 2001). Table 5 summarizes examples of these behaviours from the literature. This categorization reveals variation in engagement levels and underscores the importance of identifying the factors that drive proactivity towards sustainability beyond compliance.

2.4 Felt responsibility

Among many drivers, role ambiguity is a significant job characteristic influencing proactivity (Parker, 2000), highlighting the importance of employee's role perceptions and job characteristics. Job Characteristics Theory (JCT) (Hackman and Oldham,1976, 1980) explains how five core job attributes—skill variety, task identity, task significance, autonomy, and feedback—shape three critical psychological states: experienced meaningfulness, *felt responsibility for outcomes*, and knowledge of results. Task identity and task significance are particularly relevant for fostering employees' sense of responsibility.

Felt responsibility, central to JCT, refers to how personally accountable individuals feel for work outcomes (Hackman and Oldham, 1976, 1980). This complements SDT by integrating role perceptions, which vary across SC positions–where some employees focus primarily on cost or service outcomes while excluding sustainability from their remit. Fuller *et al*. (2006, p. 1092) describe felt responsibility as voluntarily holding oneself accountable while Morrison and Phelps (1999) emphasize its "future-oriented" nature, involving willingness to be accountable for future outcomes.

In the context of RGBs, felt responsibility pertains to task-specific accountability. By contrast, proactive EGBs stem from felt responsibility for constructive change and proactive motivation–the willingness to exert effort in a flexible, forward-looking manner (Parker, 2000). Felt responsibility may be shaped by ethical or environmental awareness (Ones and Dilchert, 2012a; Norton *et al*., 2015) yet can be hindered by role ambiguity (Yuriev *et al.,* 2018).

Felt responsibility can be internally or externally regulated. Employees may engage in EGBs voluntarily, without explicit mandates (*internal regulation)*, whereas RGBs are typically *externally regulated*, influenced by supervisory support, organizational policies, empowerment and communication (Ramus and Steger, 2000); Norton *et al*., 2014; Daily *et al*., 2012; Graham *et al*., 2022). Over time, externally regulated behaviours may become internalized as employees adopt a self-directed orientation (Deci *et al*., 1994). For instance, a previously disengaged employee may gradually assume sustainability responsibilities. In practice, internal and external regulation often coexist, with organizational support and intrinsic motivation jointly shaping sustainability engagement (Swaim *et al*., 2016; Cantor *et al.,* 2012).

2.5 Role breadth

Employees in SC roles often face ambiguity regarding sustainability responsibilities (Chinander, 2001; Murphy *et al*., 2020). Unclear expectations impede accountability and psychological ownership–the personal sense of responsibility and investment in one's role (Van Dyne and Pierce, 2004). The existence of dedicated sustainability departments may also unintentionally signal that sustainability lies outside the SC remit, limiting broader engagement (Gattiker *et al.,* 2014). This reflects a job design issue: vague role definitions influence how employees prioritize goals and assume responsibility for sustainability outcomes (Hackman and Oldham, 1976). Understanding how broadly employees interpret their roles is therefore critical for fostering ownership and proactive engagement (McAllister *et al*., 2007).

Role breadth describes whether employees define their responsibilities narrowly or expansively (Morrison, 1994). Narrow role breadth focuses on core SC duties, treating sustainability as an "extra-role" or voluntary task; broad role breadth views sustainability as "in-role" regardless of mandates. For example, a production worker may see manufacturing as their core duty while considering waste reduction as outside their formal role.

Goal prioritization further shapes role breadth (Unsworth *et al*., 2013). Individuals rank tasks based on personal and organizational priorities. In SC decision-making, cognitive framing influences how managers balance sustainability and business goals, thereby shaping environmental engagement (Preuss and Fearne, 2022; Wu and Pagell, 2011, Bendoly *et al*., 2006). Employees operate within personal goal hierarchies that influence bith the type and intensity of EGBs (Unsworth *et al.,* 2013).

2.6 A dynamic multi-level perspective

Literature often examines EGBs at organizational or individual levels separately, overlooking their dynamic interplay. Both organizational interventions and peer influences shape SC employees' environmental behaviours (Pagell and Gobeli, 2009; Cantor *et al*., 2012). While individual motivations are often explained by SDT (such as need for psychological fulfilment), constructs like felt responsibility and role breadth do not arise in isolation. Clear role definitions promote proactive engagement in sustainability by enhancing psychological ownership.

Colleagues championing sustainability influence peers, gradually shifting externally regulated behaviours toward internalization (Gattiker and Carter, 2010; Gattiker *et al*., 2014). Employees influenced by proactive peers may change from passive to active compliance–or even become proactive. Social interactions with supervisors and coworkers reinforce felt responsibility (Reuter *et al*., 2012; Fuller *et al*., 2006). As employees expand role breadth to include sustainability, they foster an environment encouraging similar engagement among peers.

Thus, role breadth and felt responsibility evolve dynamically over time, shaped by both individual perceptions and social influences–particularly as sustainability tasks become increasingly embedded within SC functions.

3. Methodology

3.1 Case study design

This qualitative study aimed to explore the underlying motivational mechanisms of employees' green behaviours (EGBs). A multiple case study design at the individual level was adopted to examine how and why employees engage in EGBs within SC contexts (Stake, 2006; Stuart *et*

al., 2002). While observation is often considered an ideal, bias-free method, it was not feasible to track decisions and behaviours over time. Instead, we relied on participants' retrospective accounts of their involvement in EGBs during past projects (Partington, 2000). Such reflections provide valuable insights into the reasoning behind prior choices (Wright *et al.*, 2016).

To reduce socially desirable responses, participants were asked to describe actual situations they had experienced, rather than respond to hypothetical scenarios (Partington, 2000; Nicholson and Imaizumi, 1993). To minimize memory bias, participants were prompted to reflect on their most recent projects and to narrate specific incidents, including both their actions and the surrounding context. We triangulated accounts across participants to enhance credibility. These narratives enabled interpretive sensemaking, helping us understand how motivations were formed and expressed in practice (Welch *et al.*, 2011; Narayanan *et al.*, 2009).

3.2 Research context and Sampling

This study investigated the EGBs of employees in SC functions across diverse organizational settings in both manufacturing and service industries, and in countries with differing environmental regulatory frameworks. We anticipated that variations in context, functional roles, hierarchical levels, and demographics would influence individual EGBs.

To capture this diversity, we employed a two-level purposive sampling strategy at both the organizational and individual levels, with employees as the primary unit of analysis. Case selection was guided by a theoretical sampling approach to ensure breadth and relevance (Miles *et al*., 2014). Eight organizations from the UK and India were initially identified using public sources (e.g., sustainability reports, certifications, etc.) to ensure variation in sustainability maturity and context.

Preliminary interviews with sustainability managers (SM) or SC directors were conducted in each organization to assess alignment with our research aims and confirm participation following. Snowball sampling was then used to identify further participants (Teddlie and Yu, 2007). Triangulation was possible where multiple participants described distinct but related experiences from the same project, revealing different types of EGBs.

To minimize self-selection bias—common in survey-based studies—we avoided open invitations to all employees. Instead, initial contacts were asked to recommend participants from varied roles and levels, not only those with a known interest in sustainability. We also requested the inclusion of staff involved in projects with sustainability goals—whether as intended outcomes or emergent by-products—so as not to overrepresent highly engaged individuals.

A small number of non-responses occurred, mainly due to scheduling conflicts, but these were not considered a serious bias given our purposive approach. Three organizations were excluded due to low participation, which limited our ability to examine multi-level dynamics. This left us with five purposefully varied cases that provided rich, context-specific insights into EGBs.

3.3 Background to the cases

Organizations were selected based on size, environmental maturity, and national context. The UK and India represent distinct environmental policy landscapes: the UK has enacted ambitious carbon reduction targets, whereas India's environmental regulations remain comparatively less stringent (Lee and Klassen, 2008; Jayaraman *et al*., 2012).

Our final sample included two UK-based mid-sized service organizations and three large Indian manufacturing firms in resource-intensive sectors—cement, steel, and farm

machinery—each facing different sustainability challenges (Kitzmueller and Shimshack, 2012; Preuss and Fearne, 2022; Zhu *et al*., 2012).

The five organizations varied in sustainability maturity, EMS adoption and ISO 14001 certification (Antonioli *et al.*, 2013). For example, the UK university (Alpha) had only recently adopted an EMS, while the UK utility company (Beta) had a more established system. The Indian firms—Gamma (farm machinery), Omega (cement), and Delta (steel)—implemented EMSs between 2004 and 2014. These variations enriched our understanding of how EGBs unfold under diverse institutional and organizational conditions.

3.4 Interviewee profiles and data collection

Interviewees were selected based on their SC roles and experience with environmentally related tasks, ensuring diversity in age, tenure and gender. One SM from each organization was included, some with dual SC responsibilities. SMs played a role in facilitating sustainability outcomes (i.e., required EGBs), overseeing other employees' performance in green tasks and offering support (i.e., exerting influence).

Semi-structured interviews were conducted using a protocol developed from the literature on EGBs and related theories (e.g., Norton *et al.,* 2015; Ren *et al.,* 2023). The guide covered three areas: (1) types of green behaviours, (2) motivations and challenges, and (3) organizational support mechanisms. Two pilot interviews were used to refine question wording and sequencing; these were excluded from the analysis.

Participants were asked to describe a specific project they had been involved in (e.g., sustainable procurement, packaging redesign, or logistics improvement). Interviewees represented functions such as purchasing, operations, manufacturing, quality, logistics and

spare parts. SMs were drawn from environmental, health and safety or corporate social responsibility departments.

Our aim was to understand differences between employees with and without formal green responsibilities, rather than compare departments. In total, 24 interviews were conducted: five SMs (SM1–SM5) and 19 SC employees across five organizations. Participants details—including demographics and the projects discussed—are summarized in Table 1 and anonymized as Alpha_1, Beta_1, etc., according to their organization.

<Table 1>

Data were collected between 2017 and 2018 via face-to-face or phone interviews. All interviews were audio-recorded with consent and transcribed verbatim to preserve richness and accuracy. Detailed notes were taken during and after interviews to capture non-verbal cues, contextual observations and emerging themes, which helped guide subsequent interviews.

Since our unit of analysis was individual behaviours, we did not sample entire case organizations. Data collection continued until theoretical saturation was reached—defined as the point at which no new themes or properties related to EGBs emerged (Saunders *et al.,* 2018). The final two interviews (Gamma_5 and Delta_4) reinforced existing themes across cases without introducing novel insights. At this stage, the data provided sufficient depth to address the research questions, and further collection was unlikely to yield additional understanding (Eisenhardt, 1989; Huq and Stevenson, 2020). Our goal was conceptual richness and variation across individuals rather than generalization about organizations, consistent with qualitative research aims (Miles *et al*., 2014).

3.5 Data Triangulation

To strengthen the credibility of retrospective data, we triangulated interview responses with sustainability reports, tender and policy documents, email communications, and internal presentations. Site visits further contextualized participants' narratives and allowed us to validate accounts where possible (Yin, 2018; Chakkol *et al*., 2018). Footnotes under Table 1 indicate where secondary data supported primary accounts.

To reduce self-presentation bias (e.g., socially desirable responses), the interview guide relied on open-ended questions. Participants were prompted to walk through project timelines, describe actions and reflect on influencing factors. Notes on tone and verbal cues added interpretive richness. Follow-up questions were actively used to probe underlying motivations (e.g., *"What made you act in that way?")*, ensuring consistency between narratives and actions. For instance, one participant initially described their involvement in a packaging redesign project as "just part of the job," but later revealed a personal commitment to waste reduction that influenced their decisions—insights unlikely to surface in non-retrospective accounts.

3.6 Data analysis

Analysis began with repeated readings of transcripts to immerse ourselves in the data. We first conducted within-case analysis, followed by cross-case comparisons to identify patterns (Eisenhardt and Graebner, 2007). Coding was primarily data driven but informed by literature on EGBs, role breadth and felt responsibility (Ketokivi and Choi, 2014).

Using NVivo, the first author generated 96 open codes in the first cycle, drawing heavily on participants' own terms (Gehman *et al.,* 2018). These codes were iteratively reviewed by co-authors to identify overlap and thematic similarity. Initial disagreements, often reflecting different analytical lenses, were resolved through discussion and consensus. Dominant

perspectives were established by following the data (e.g., proactivity and role perceptions). Through constant comparison, conceptually related codes were grouped and infrequent or redundant ones removed, resulting in 34 refined codes that more accurately reflected emerging patterns.

These codes were then organized into aggregated theoretical themes by identifying converging patterns and aligning them with relevant literature, with particular focus on mechanisms driving EGBs. The themes were synthesized into five overarching theoretical dimensions, as presented in Figure 1.

<Figure 1>

To ensure rigor and trustworthiness, we applied Yin's (2018) four quality criteria, summarized in Table 2. Recognizing that our own backgrounds in sustainability research could introduce bias (e.g., initially assuming SMs would naturally view sustainability tasks as part of their job), we took steps to interpret responses cautiously. To mitigate bias, we relied on multiple data sources, maintained reflexive memos, discussed divergent interpretations, and questioned each other's assumptions. Internal cross checks were conducted throughout the research process.

Team diversity (UK and India) further reduced cultural bias, particularly regarding implicit role expectations. Reflexivity across design and analysis stages enhanced methodological robustness and cross-case comparisons supported internal validity (Yin, 2018).

<Table 2>

4. Findings

The following subsections outline the findings, structured around the theoretical dimensions. For each theme, the evidence is presented according to the aggregate theoretical themes. Tables 3–4 include the most illustrative quotes that emerged during the fieldwork.

<Table 3>

<Table 4>

4.1 Proactivity in EGBs

As observed in Table 3, three types of EGBs emerged from our data to represent different levels of proactivity. The first four EGBs (1–4) comprise challenging or change-oriented behaviours that are forward looking, for example, assuming additional roles, taking charge, initiating policy reforms, and influencing others. These are labelled as *proactive green behaviours*. The fifth (5), sixth (6) and seventh (7) EGBs are labelled as *active-compliance green behaviours*, as they focus on complying with sustainability policies, SC practices, and regulatory requirements in response to organizational mandates but still involve intentional effort and cooperation. The eighth behaviour (8), which placed lower priority on environmental issues, is labelled as *passive behaviour*. In all five case organizations, we identified proactive employees who attempted to influence others, as well as employees demonstrating active compliance. However, passive employees were observed in two organizations (Alpha and Gamma).

Proactive green behaviours. Across all cases, 15 employees from SC functions and most SMs (except SM3 in Gamma) demonstrated proactive behaviours, going beyond compliance to address environmental issues. Many initiatives were self-driven, innovative and forward

thinking. Proactive employees were motivated by personal factors such as environmental intentions, knowledge, and experience, as well as external influences from colleagues, supervisors, and organizational policies. They viewed sustainability as integral to their roles, reflecting a broader sense of responsibility.

At Alpha, three of six senior buyers demonstrated proactive behaviours. For instance, Alpha_2 revised the travel policy to reduce Scope 3 emissions, describing it as “an obligation to reduce our environmental footprint” aligned with the organization's ethics. They also integrated sustainability criteria into evaluations, collaborating with SMs, suppliers, and IT teams. Similarly, Alpha_4 updated tender documents to include robust sustainability criteria for supplier selection, while Alpha_3, the procurement head, prioritized whole-life costing over unit cost price and introduced emissions reduction targets within procurement. These initiatives fostered a sense of responsibility among buyers at Alpha.

External influences, such as supervisor expectations and SM support, also spurred proactivity. Employees like Alpha_4, Beta_4, and Gamma_3 leveraged their expertise and opportunities to contribute towards sustainability. As, Beta_4 noted, “I was asked to do the project … because that has the sustainability kind of involvement.” These individuals aligned internal motivations with external encouragement, expanding their roles to address sustainability challenges.

In Gamma, three of four employees demonstrated proactive behaviours driven by a desire for competence and impact. Gamma_1, the logistics head, improved packaging by standardizing box sizes and using eco-friendly materials, seeking external expertise to improve outcomes. Gamma_3 focused on recyclable packaging and LED lighting, actively exchanging green ideas with colleagues and networks. Gamma_4 integrated environmental compliance into a role that also covered health and safety, viewing sustainability as part of their job, reinforced by the company's safety culture.

Active compliance. Active-compliance employees acknowledged sustainability's importance but did not see it as core to their responsibilities. For example, Alpha_5 and Alpha_6 undertook environmental tasks assigned to them but lacked internal motivation. Though willing to initiate sustainability action when prompted, they didn't take independent initiative. Both treated sustainability as secondary to cost-saving. Alpha_5 attempted to procure energy-efficient lab equipment but abandoned the effort due to supplier limitations and time constraints, noting that top management prioritized cost. Alpha_6 cited communication gaps between sustainability and procurement teams as a reason for project failure, highlighting ambiguity in sustainability priorities. Still, both complied with norms such as investing in energy-efficient equipment to reduce whole-life costs, encouraged by Alpha_3.

Interestingly, Gamma_5, the environmental manager overseeing quality, environment, health, and safety, also exhibited active compliance. Despite their role inherently involving sustainability, they focused on meeting formal requirements and showed little internal motivation to exceed them.

In Omega (cement), sustainability actions were shaped by external pressures, such as strict regulations and customer demands. Omega_3 complied only when required by customer expectations, stating, "It [sustainability] is not my thing … but from [the] company's side it is." In contrast, Omega_4 ensured active compliance with environmental regulations and audits, demonstrating stronger alignment with sustainability values.

In Delta (steel), employees (Delta_1, Delta_2, Delta_3) exhibited active-compliance behaviours while ranking sustainability as a low priority. They described environmental performance as a "second- or third-ranked preference" compared to cost-saving and efficiency improvements. For instance, Delta_1 emphasized digitization projects for cost reduction and technical efficiency, with incidental sustainability benefits like reduced paper use and carbon footprint. Delta_2 switched to recyclable packaging to cut costs, while Delta_3 addressed

supplier pollution primarily to prevent disruptions and reduce fuel expenses, focussing more on risk mitigation than environmental goals.

Passive. Two passive employees, Alpha_7 and Gamma_2, disengaged from sustainability efforts, prioritizing commercial targets over environmental considerations. While their colleagues engaged in active-compliance or proactive behaviours, these employees focused on operational efficiency, cost savings and timely delivery of their projects. Gamma_2, rejected responsibility for sustainability goals, focusing solely on customer satisfaction by ensuring parts availability. When asked about sustainability, Gamma_2 responded with complaints, citing lack of time and budget.

Alpha_7, a senior buyer (university) involved in a high-risk building refurbishment project, showed the minimum level of engagement with sustainability prioritizing cost reduction due to pressure from top management. Despite policy requirements, Alpha_7 cited the absence of direct accountability: “We are aware of it, but it’s not been cascaded down…that we need to incorporate it.” This diffusion of responsibility was reinforced by the presence of a separate sustainability department perceived as solely responsible for such matters. Table 5 presents the manifestation of each EGB type identified in prior research, contextualized for employees working on SC sustainability in this study.

<Table 5>

4.2 Felt responsibilities and role perceptions

In their pursuit of sustainability, the interviewees highlighted several themes related to felt responsibility and role breadth perceptions (see Table 4). They emphasized that implementing sustainability initiatives demands considerable time, financial investment and effort. This involves identifying suitable materials and suppliers to effectively reduce the carbon footprint across various stages of the supply chain, including production, logistics, and distribution. These activities required differing degrees of felt responsibility and different interpretations of role perceptions.

Types of felt responsibility. Interviewees highlighted two distinct dimensions of felt responsibility in relation to integrating sustainability into their projects:

- *Internal felt responsibility*: This type of responsibility was self-driven, arising from internal regulations and a personal commitment. Employees expressed a genuine interest in sustainable practices and a strong internal desire—described as "wanting to"—to engage in environmentally responsible actions.
- *External felt responsibility*: This dimension emerged from extrinsic motivators, where employees engaged in sustainability practices out of obligation—described as "having to." This was often observed in routine SC tasks that involved meeting externally imposed sustainability requirements, such as criteria in awarding tenders.

Degree of role breadth. Role breadth was categorized into three levels: narrow, slightly broad, and broad as shown in Table 4:

- *Narrow role breadth*: Interviewees in this category viewed sustainability as beyond the scope of their roles, perceiving it as the responsibility of other departments (e.g., a

sustainability team). They saw environmental efforts as unrelated to the core functions of a SC manager.

- *Slightly broad role breadth*: These individuals recognized the importance of sustainability and complied with related requirements as part of their roles. They exemplified active compliance by not only fulfilling sustainability obligations but also demonstrating a willingness to engage when opportunities arose, thereby showing readiness to broaden their roles.
- *Broad role breadth*: Interviewees in this group viewed sustainability as integral to their roles. They regularly engaged in proactive green behaviours, going beyond standard expectations. They seamlessly integrated sustainability into their core activities and even influenced others to adopt sustainable practices. For them, sustainability was seen as an extension of their role as supply chain personnel. For example, Alpha_3 expressed, "it's down to people like me to ensure that things like the sustainability aspects of the procurement, are as high as you can get.

Next, we plot these three levels of proactivity into a matrix combining felt responsibility and role breadth (see Table 6), revealing patterns of employee engagement.

<Table 6>

Proactive employees typically displayed a combination of both internal ("want to) and external ("have to") felt responsibilities, along with the broadest role breadth towards sustainability implementation. These individuals initiated procedural changes, influenced their peers, and contributed to meaningful environmental improvements across the supply chain.

In contrast, employees displaying active-compliance green behaviours showed slightly broader role breadth, driven by either external or internal felt responsibility. Those motivated

by external responsibility focused on meeting formal sustainability targets, adhering to policies, regulations, and social norms, with limited engagement beyond mandated tasks. In comparison, those with internal felt responsibility engaged out of perceived organizational benefits, such as cost savings or reduced carbon footprint. They both viewed interpersonal actions—like collaborating with sustainability teams or coordinating with suppliers—as necessary to meet predefined sustainability criteria.

At the other end of the spectrum, *passive employees* were characterized by a narrow role breadth and a lack of felt responsibility. These individuals did not view sustainability as part of their job and refrained from engaging in any related initiatives.

4.3 Towards a multi-level framework of EGBs

Finally, we analyze the multi-level dynamics of behavioural influence—specifically, how interactions between employees and organizational policies shape peer engagement in EGBs. Drawing on interview data, we show how participants engaged with both colleagues and institutional structures to influence behaviours. Figure 2 illustrates the mechanisms through which these interpersonal interactions and structural interactions drive peer engagement in EGBs.

<Figure 2>

The top portion of Figure 2 presents organizational-level influences. Policy emerged as a key driver. For example, under Alpha's “10% sustainability inclusion” policy, behaviours ranged from active compliance to proactivity, reflecting differences in perceived role breadth

and sustainability prioritization. This suggests that variations in EGBs are shaped by organizational factors, although individual-level factors also play a role.

The left and right sides of Figure 2 highlight *individual* motivational processes. According to SDT (Deci and Ryan, 2000), voluntary EGBs are driven by *internal regulation* ("want to"), whereas required EGBs stem from *external regulation* ("have to"). Initial engagement in sustainability initiatives often depended on an individual's dominant form of felt responsibility and perceived role breadth, leading them to view tasks as either RGBs (left side) or VGBs (right side). Proactive employees engaging in VGBs often influenced colleagues whose behaviour were initially shaped by RGBs, encouraging the internalization of sustainability responsibility.

Our analysis reveals that employees with RGBs frequently demonstrated passive engagement or active compliance when externally obligated to perform environmental tasks. However, EGBs were not static or strictly confined to either required or voluntary behaviours throughout a project's duration. Felt responsibility and role breadth evolved over time through social and organizational interactions—employees influenced, and were influenced by, others. For instance, participants Alpha_2, Gamma_1, Gamma_3 and Beta_4 became more proactive as they developed personal interest in their projects, representing the *internalization* of felt responsibility. Similarly, Alpha_3, Alpha_4, Beta_2, Beta_3, Gamma_4, Omega_1 and Omega_2 transitioned from active compliance to proactivity as they experienced both *internal* and *external* sources of *felt responsibility*. In both Alpha and Omega, employees with broad role breadth (e.g., Alpha_3, Omega_2) engaged in similar forms of proactive VGBs, despite different organizational structures."

The middle section of Figure 2 maps six mechanisms of *internalized* and/or *externalized felt responsibility* (Arrows [1]—[6]) that illustrate these dynamic interactions.

Internalized felt responsibility through broadening role breadth: Arrows [1] and [2] show how employees internalized sustainability by expanding their perceived roles. Those with broader role perceptions [1] saw sustainability as integral to their jobs. This illustrates how job satisfaction (Beta_2), business commitment (Delta_2, Gamma_3), and organizational commitment (Gamma_4). can deepen perceived role breadth, reinforcing internalization.

Some expressed both "I want" and "I should" mindsets, integrating environmental responsibility into their roles. For instance, Alpha_3 stated, "I enjoy doing it" while Omega_2 took initiative upon realizing no department was addressing sustainability (OCB/VGB). These employees engaged in VGBs out of internal responsibility, fuelling proactivity, enabling them to overcome challenges (Omega_1) and build knowledge (Gamma_3).

Externalized felt responsibility: Two key mechanisms explain externalization. Some employees complied with environmental regulations [3] due to customer demands (Omega_3); others responded to normative pressures [4]. For example, Alpha_6 adhered to policies (organizational influences) such as whole-life costing after observing peers' behaviour. This "have to" mindset encouraged employees to slightly broaden their roles as regulatory and customer demands became embedded (Omega_3). Anticipated compliance risks also motivated SC managers (Omega_4).

Externalized felt responsibility becoming "internalized" [5] Workplace socialization helped internalize externally driven responsibility. Beta_4 and Gamma_3 initially complied out of obligation, but internalized sustainability values through peer influence. Proactive colleagues played a key role—Gamma_3, for instance, moved from seeing sustainability as a target to embracing it as personal value (expansion in role breadth).

Internalized responsibility becoming "externalized" [6]: Conversely, some employees with strong personal interest but narrow role breadth waited for sustainability tasks to be assigned. They remained in active compliance unless offered leadership opportunities, which fostered

proactivity (Omega_2). In such cases, clearly defined accountability served as an externalizing mechanism [6], motivating employees already inclined toward broader roles to take initiative.

5. Discussion

5.1 Discussion of findings

Our findings extend the understanding of EGBs in SC contexts by moving beyond the artificial separation of RGBs and VGBs. We reveal new forms of proactive behaviours such as taking charge, assuming additional responsibilities, influencing others, and engaging in cross-functional liaison (see Table 5). These behaviours demonstrate how sustainability is advanced proactively within complex, interdependent SC environments. Liaison activities were particularly frequent, reflecting the inherently collaborative nature of SC work (Eriksson and Svensson, 2016). Such behaviours—often difficult, risky, and resource-intensive—require a heightened proactivity (Parker, 2000), highlighting the importance of felt responsibility for constructive change (Fuller *et al.,* 2006) as a critical enabling factor. Employees also influenced peers across teams, showing how EGBs diffuse across functional boundaries (Tate *et al*., 2013).

While the needs of autonomy, competence, and relatedness from SDT were evident, employees often interpreted sustainability as RGBs rather than VGBs or OCBs, depending on their perceived role breadth and felt responsibility. Some internalized these responsibilities, while others exhibit both VGBs and RGBs, reflecting a combination of intrinsic and extrinsic motivations. Employees with this dual sense of responsibility tended to act more proactively. Those who took on challenging tasks—such as questioning the status quo—often did so from a strong sense of legitimacy and personal responsibility for sustainability (Chiaburu and Baker, 2006). This reframes how EGBs emerge and diffuse within SC functions, highlighting a shift from compliance to proactivity.

Proactive behaviours were evident across all hierarchical levels, including the intern and middle managers, challenging the assumption that sustainability leadership is primarily top-down (Robertson and Barling, 2012). Conversely, some leaders prioritized commercial goals and remained passive towards sustainability (e.g., Gamma_2), countering the notion that leaders are always the key drivers of sustainability (Keil *et al.,* 2025). Our findings suggest that peers at similar or even lower hierarchical levels can also exert proactive influence, encouraging others to act sustainably.

Role breadth and felt responsibility emerged as key drivers of proactivity (see Table 4). Employees with broad role perceptions were more likely to engage with sustainability tasks—even those framed as compliance-based—regardless of whether their felt responsibility was internally or externally driven. However, when only one form of responsibility (internal or external) was present, engagement often remained limited to compliance. In contrast, when sustainability was embedded into role identity, employees combined personal values with external expectations (e.g., organizational norms or leadership), fostering more proactive engagement (Grant and Ashford, 2008).

At the same time, institutionalizing sustainability in SC roles can generate risks such as "green fatigue", especially where resources are inadequate or priorities conflict. This was evident in participants' frustration over budget constraints and the lack of greener alternatives—pressures that amplified already demanding operational roles. These findings highlight the importance of role clarity, leadership support and alignment with personal values to sustain in high-pressure SC contexts.

Contrary to SDT's emphasis on autonomous motivation as the main driver of proactivity (Deci and Ryan, 2000), our study shows that RGBs can also catalyze proactive sustainability efforts—when employees perceive them as legitimate and aligned with personal values. This

extends Parker's (2000) notion of "supportive environments" and challenges the assumption that EGBs are primarily rooted in voluntary engagement. In SC functions, VGBs do not always result in proactive or innovative environmental actions (Cantor *et al*., 2012). Yet, our findings demonstrate that mandated tasks can be internalized and enacted proactively. Therefore, rather than relying solely on promoting OCBs (Boiral, 2009; Ren *et al.,* 2023; Maco and Kwon, 2025), embedding sustainability into formal job roles may be more effective for fostering proactive EGBs in SC contexts.

Building on Gattiker *et al.* (2014) and Kutaula *et al*., (2025), we show that employees with strong felt responsibility can influence peers to internalize sustainability norms, creating a "halo effect". Our findings extend this by demonstrating that such influence is shaped by broader role perceptions. These employees often modeled sustainable behaviours or engaged in informal socialization, helping establish new norms within their teams. In this way, RGBs can indirectly foster proactive engagement in others by reshaping their felt responsibility. This supports recent calls to link individual behaviours with wider organizational and social processes to achieve sustained environmental change (Ren *et al*., 2023; Colucci and Vecchi, 2024).

Although our study spanned both the UK and India, our focus was not on cross-cultural comparison but on identifying patterns of EGBs across institutional contexts. Interestingly, we found more convergence than divergence in how SC employees enacted sustainability. This suggests that role design, operational pressures, and organizational sustainability mandates may exert greater influence than national culture in shaping behaviours. Some contextual differences emerged—such as stronger hierarchical dynamics in Indian firms and greater informal collaboration in UK settings—but these did not significantly alter the core behavioural mechanisms identified.

Extending Rasheed *et al.* (2021), our multi-level framework (Figure 2) illustrates how subjective norms and sustainability behaviours co-evolve through six influence mechanisms, enabling the diffusion of proactive EGBs across SC networks (Grant and Hofmann, 2011; Tate *et al.*, 2013). These insights offer practical guidance for managers seeking to embed sustainability more deeply into SC operations.

5.2 Theoretical implications

This study advances the conceptualization of VGBs and RGBs by challenging their typical binary framing (Norton *et al*., 2015; Maco and Kwan, 2025; Ren *et al.,* 2023). We propose a nuanced three-level typology—passive, active compliance, and proactive–that better captures the diversity of employee engagement. Existing studies often frame EGBs as either entirely voluntary (e.g., Cantor *et al.,* 2012; Ren *et al.,* 2023) or inherently demotivating when mandated (Saifulina and Carballo-Penela, 2017; Rasheed *et al.,* 2021), thereby oversimplifying how employees experience these behaviours. In practice, some employees perceive VGBs as RGBs, and RGBs are not necessarily less proactive than VGBs. Building on Bissing-Olson *et al.,* (2013), we argue that classifying EGBs by proactivity levels offers a more nuanced framework.

Building on SDT and JCT, our work highlights how role breadth and felt responsibility—jointly affect motivation and job design to explain proactive EGBs, especially where sustainability is institutionalized in SC roles (e.g., Norton *et al.,* 2015, 2000; Katz *et al.,* 2022. Extending 'felt responsibility for constructive change' (Fuller *et al*., 2006) to sustainability tasks invites new research on how job characteristics foster ownership beyond commercial goals.

Our multi-level framework (Figure 2) integrates individual, peer/supervisory, and organizational influences, moving beyond normative assumptions and advancing a socially embedded understanding of EGBs.

5.3 Practical implications

Our findings suggest that organizational strategies should move beyond motivation-centric approaches that rely primarly on voluntary EGBs. Instead, embedding sustainability responsibilities into job design—through formal role definitions, peer influence mechanisms and clear communication—is essential in SC contexts often marked by role ambiguity (Li *et al*., 2020; Graham *et al*., 2022; Chinander, 2001). Assigning sustainability tasks with clear expectations can foster proactive behaviours, particularly among employees who may not initially see sustainability as part of their role (Preuss and Fearne, 2022) and is particularly critical in SC settings vulnerable to moral disengagement (Eriksson and Svensson, 2016).

Managers can also broaden role breadth and reinforce sustainability through recruitment, onboarding, and performance management. The six influence mechanisms (Figure 2) serve as diagnostic tools to identify gaps and strengthen sustainability-oriented job design. Practical measures include appointing peer champions to socialize new employees into sustainability norms and leveraging internal communications to legitimize green responsibilities.

Supporting mechanisms that align personal values with external mandates are equally important, as they reduce perceptions of sustainability tasks as tokenistic or burdensome. Identifying and empowering employees with broad role orientations or change-oriented mindsets can further amplify the diffusion of proactive green behaviours, shape peer norms and help cultivate a green climate (Shou *et al*., 2022; Katz *et al*., 2022).

6. Conclusions

This study advances understanding of EGBs in supply chain functions, where role ambiguity is often prevalent. By integrating role breadth and felt responsibility from JCT, we complement SDT and move beyond purely internal explanations of EGBs. Our findings reveal that mandated sustainability tasks can foster proactive behaviours when roles are clearly defined and organizationally supported. From a multi-level perspective, we demonstrate how proactive employees influence peers by expanding role breadth and felt responsibility, contributing to a job environment that fosters engagement in sustainability.

We identified six mechanisms shaping internal and external felt responsibility. Challenging the view that mandates demotivate, we find well-designed, organizationally supported requirements can empower employees to drive change. These insights highlight the value of job designs that clarify sustainability responsibilities and encourage proactivity.

This study has some limitations and issues that can be addressed in future research. First, while interviews provided rich insights, the use of purposive and snowball sampling limits generalizability. Future research could employ probabilistic sampling or large-scale surveys ton test the transferability of our framework. Second, although we identified multiple drivers of green behaviours, we did not explicitly ask about motivations, which may have led to unacknowledged responses. Third, the study spanned two distinct national contexts (UK and India) yet did not aim to analyze cultural differences directly. Future comparative research could examine how national or cultural contexts influence the emergence of various EGBs. Fourth, the cross-sectional nature of our data prevents us from evaluating the temporal stability of behaviors and mechanisms. Longitudinal studies could explore how employee motivations and role perceptions evolve over time. Lastly, while gender and hierarchical position were recorded, our sample does not include sufficient representation to explore gender-based variations in EGBs; future research could investigate this dimension in more depth.

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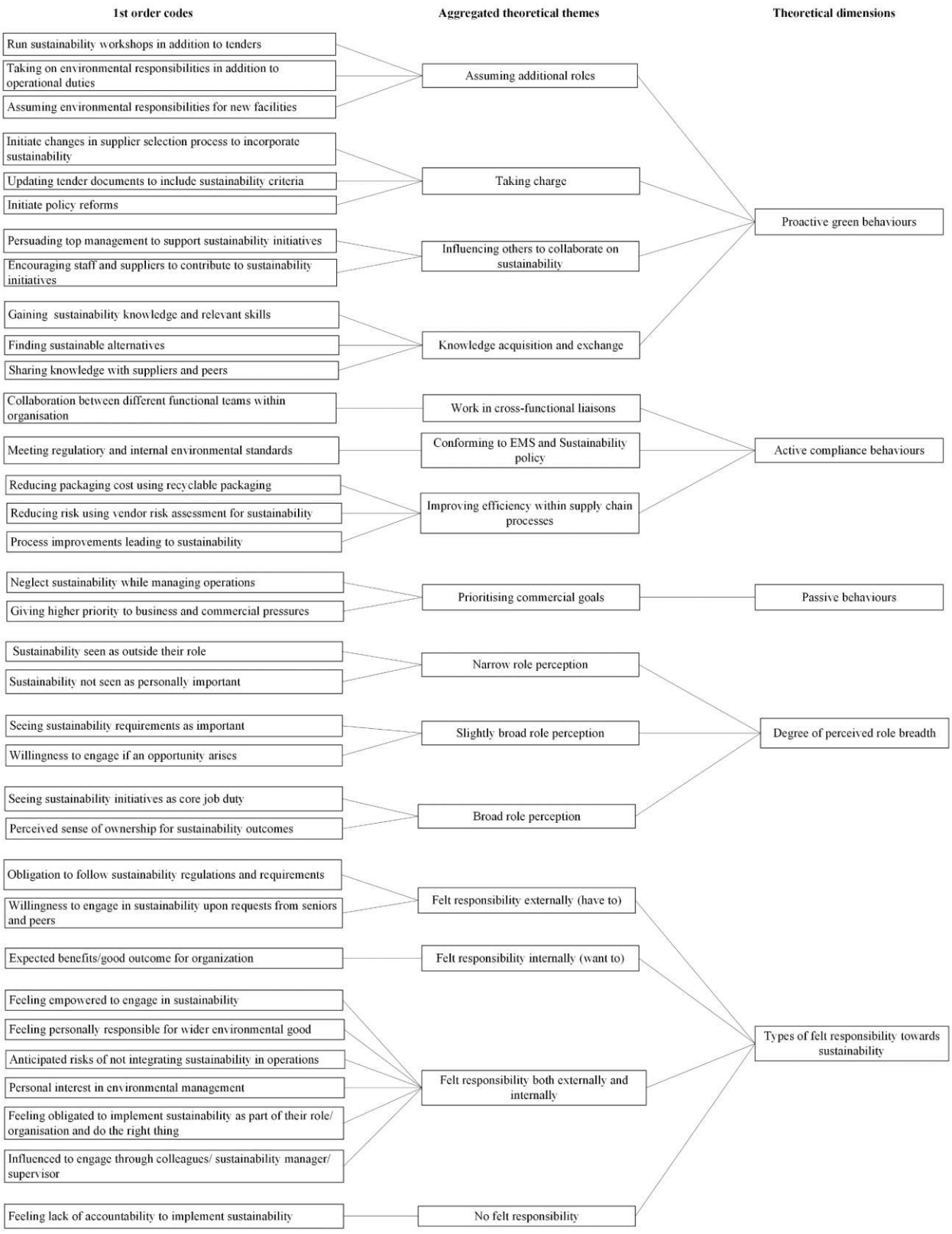

Figure 1. Coding structure

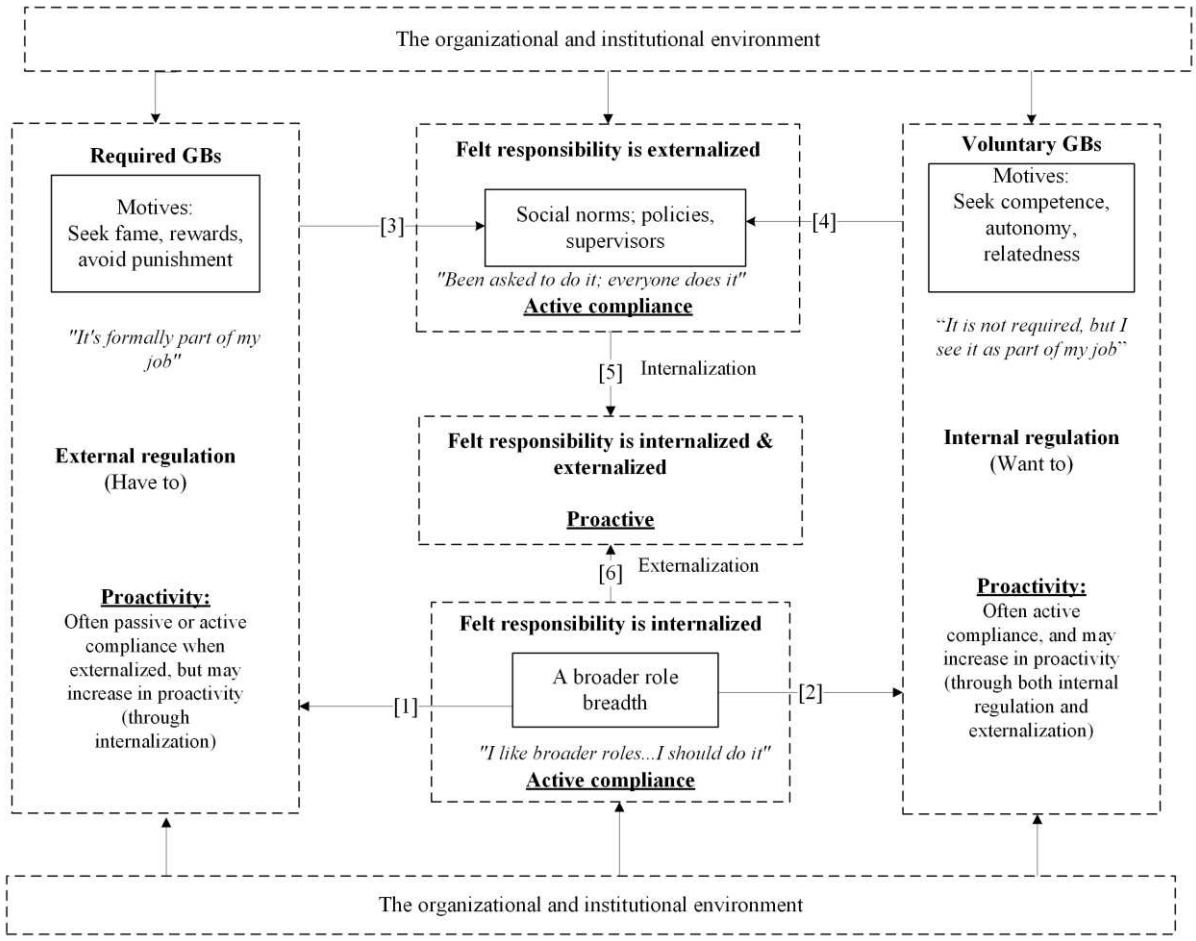

Figure 2. Multi-level theoretical framework for proactivity in EGBs

Table 1. Case study companies, Interviewee profiles and Chosen projects

Company characteristics and Secondary material	**Interviewee**	**Position**	**Chosen Project**	**Tenure in current role (Years/months)**	**Age Range [1<30; 2=30-50; 3>50]**	**Gender**	**Date and Duration (Minutes)**
Alpha Sector: Education Country: UK Industry: Education Year founded: 1904 Employees: 8000 ISO 14000: 2015	Alpha_1 (SM1)	Sustainability Manager	Construction	1/5	2	M	05/04/2017 (70 mins)
	Alpha_2	Purchasing Manager	Travel Policy update	0/0.5	2	F	05/04/2017 (30 mins)
	Alpha_3	Purchasing Head	Energy-efficient Equipment purchase	1/3	2	F	07/04/2017 (87 mins)

Webpage, purchasing tender documents, emails with suppliers	Alpha_4	Purchasing Manager	Update Tender Questionnaire	1/3	3	M	07/04/2017 (35 mins)
	Alpha_5	Purchasing Manager	Energy-efficient Equipment purchase	3/10	2	M	11/04/2017 (30 mins)
	Alpha_6	Purchasing Manager	Clinical Lab equipment purchase	3	3	F	11/04/2017 (26 mins)
	Alpha_7	Purchasing Manager	Construction-Building refurbishment	0/9	1	F	25/04/2017 (47 mins)
Beta Sector: Utility	Beta_1 (SM2)	Sustainability Manager	Sustainability policy update	10	2	F	25/04/2017 (62 mins)

Country: UK Industry: Utility Year founded: 1973 Employees: 2500 ISO 14000: 2004 Sustainability report, webpage, BITC project report	Beta_2	Purchasing Head	Sustainability Policy Update	12	2	M	01/06/2017 (59 mins)
	Beta_3	Purchasing Manager	Waste Management	2	3	M	16/06/2017 (28 mins)
	Beta_4	Purchasing Manager	Chemical Project	3	2	M	31/10/2017 (59 mins)
Gamma Sector: Farm machinery manufacturer Country: India	Gamma_1	Spare Parts Manager	Packaging project	4	2	M	23/07/2017 (40 mins)
	Gamma_2	Spare Parts Head	Packaging	2	2	M	23/07/2017 (34 mins)

Industry: Agricultural machinery Year founded: 1999 Employees: 1000 ISO 14001: 2007 Webpage, PowerPoint slides for presenting world-class manufacturing frameworks with sustainability objectives	Gamma_3	Purchasing Manager	Packaging and LED Lighting	18	3	M	26/07/2017 (61 mins)
	Gamma_4	Quality/Safety Head	Packaging and others	6	3	M	26/07/2017 (54 mins)
	Gamma_5 (SM3)	Environmental Manager	Sustainability reporting	2	2	M	26/07/2017 (27 mins)
Omega Sector: Cement manufacturer	Omega_1	Production Head	Emission Reduction	2	2	M	20/04/2017 (26 mins)

Country: India Industry: Cement Year founded: 1982 Employees: 10000 ISO 14000: 2014 Webpage, sustainability report	Omega_2 (SM4)	Quality/Sustainability Manager	Reducing hazardous waste	4	2	M	21/04/2017 (42 mins)
	Omega_3	Logistics Manager	Logistics Improvements	3	2	M	21/04/2017 (40 mins)
	Omega_4	Procurement Manager	Energy-efficient Equipment purchase	0/8	2	M	15/06/2017 (46 mins)
Delta Sector: Steel manufacturer Country: India Industry: Steel (manufacturing) Year founded: 1939	Delta_1	Logistics Manager	Digitization	2	2	M	14/05/2017 (42 mins)
	Delta_2	Purchasing Manager	Packaging Change	3	3	M	15/04/2017 (52 mins)

Employees: 32,000 ISO 14000: 2001 Webpage, sustainability report	Delta_3	Purchasing Manager	Tackling Polluting Suppliers	7	2	M	19/04/2017 (33 mins)
	Delta_4 (SM5)	CSR Manager	GreenCo Rating	2	2	M	07/09/2018 (28 mins)

Notes: [1]SM refers to sustainability manager

[2]The tender questionnaire used for purchasing in Alpha was checked to confirm whether the 10% sustainability criterion was present.

[3]When being interviewed Alpha_6 referred to the email exchange with suppliers while sourcing the energy-efficient equipment for setting up a lab, which was referenced to get a comprehensive understanding of the failed project.

[4]When being interviewed, the purchasing head of Beta referred to their website for sustainability commitment and an interview blog on him, which were used to gather information on changes in supplier selection policy, sustainability-related communication to stakeholders in their supply chain.

[5]Beta's purchasing manager referred to a business in the community (BITC) workshop on sustainability that was used as a supporting information to understand staff involvement.

[6]*Gamma's quality and safety head referred to an internal presentation that was used to compare the practices mentioned by interviewees against the world-class manufacturing framework in place.*

Table 2. Methodological rigour

Rigour criteria	Research phase Design	Data collection	Data analysis
Construct validity (*Suitable measures for the concepts being studied)*	– Examine each project through multiple sources of data – Reflexive consideration of researchers' assumptions in the design	– Use multiple sources of data (interview data, observations and secondary data) – Engage in frequent and meaningful conversations with experts – Pre-test the interview protocol with academics and experts – Recognize and reflect on how researcher positioning may shape interpretation	– Triangulate data from multiple sources – Use an inductive data coding process to allow for emerging topics – Establish clear data coding and data analysis procedures – Case study report validated by informants to avoid researchers' bias – Reflexive memos and team discussion to potential bias

Internal validity (*causal relationships between variables and results)*	– Develop a framework based on well-established concepts from EGB literature	– Select the most knowledgeable informants as interviewees – Interviews fully transcribed and sent to interviewees for checking – Keep memos that focus on the perceptions and decision-making process of informants	– Record alternative explanations – Triangulate theories for interpretation – Travel back and forth between the data and literature to avoid researcher bias – Check coding with co-authors and reflexive dialogue during interpretation
External validity *(generalization of findings)*	– Selected multiple relevant industry contexts with major environmental risks – Multiple case study design	– Clearly describe the case context and situation – Conduct interviews with key informants – Keep memos of the interactions between, and	– Pattern matching for analytical generalisation to the EGB, and OB literature

		behaviours undertaken by the interviewees	
Reliability *(replicability of the research design and result)*	– Develop a consistent and clear case study protocol	– Develop a semi-structured Interview schedule, and record all interviews – Keep a written record of the observation notes and the documents reviewed	– Use NVivo 10 for data analysis and keep a record of the coding process – Discuss interim results between researchers – Document decisions made during analysis and keep reflexive notes

Table 3. Coding for Employee green behaviours: Proactive (1–4), Active-compliance (5–7) and (8) Passive behaviours

Aggregate theoretical theme – Proactive green behaviour	**First-order codes**	**Sample evidence from interviews**
(1) Assuming additional roles	Run sustainability workshops in addition to tenders	"I had been trying to run the tenders and also run the sustainability workshops." (Beta_4)
	Taking on environmental responsibilities in addition to operational duties	"There is no sustainability department; I am taking care of energy, operational improvement, alternative fuels, sustainability report." (Omega_1)
(2) Taking charge	Initiate changes in supplier selection process to incorporate sustainability	"when we started, we looked at the [tender] documents and said actually these aren't fit for purpose. … So, then we decided to stop complaining about it and make some new ones." (Alpha_4)
	Updating tender documents to include sustainability criteria	"when we started [a] few years back, I was also in charge [of] environment regulations for the organisation. That time, I started all these things." (Omega_2)
	Initiate policy reforms	

(3) Influencing others to collaborate on sustainability	Persuading top management to support sustainability initiatives	"So, I was encouraging procurement staff to take the full spirit of the 14001 standards." (Beta_3)
	Encouraging staff and suppliers to contribute to sustainability initiatives	"First, you have to convince the supplier that you want to do this … and after that, as [an] indirect purchasing team, they offer us." (Gamma_3)
(4) Knowledge acquisition and exchange	Gaining sustainability knowledge and relevant skills	"If you Google who is doing best practice on this, that's where I will be getting my influences from. So, it would be very up to date and it would be quite innovative, and it would also be sort of quite new." (Beta_4)
	Finding sustainable alternatives	
	Sharing knowledge with suppliers and peers	"It is not in practice in India. There is one institute, ABB, they have presented a report on this. This report helped me to use [it] in cement projects." (Omega_1)

Aggregate theme	**theoretical –Active compliance**	**First order codes**	**Sample evidence from interviews**

(5) Work in cross-functional liaisons	Collaboration between different functional teams within organisation	"We do a lot of work on internal liaisons, so we have an engagement plan where we reach out to leadership and management teams." (Beta_1) "Even then, there is [the] security department, the legal department, to get that from the government if any issues are there … liaising [with] all these departments support [getting] work done easily." (Omega_3) "So, I have to take inputs from different people, and I have to decide what to do with this [sustainability-related] problem. Whether we find a new supplier or we change some process and rectify the problem." (Delta_3)
(6) Conforming to EMS and Sustainability policy	Meeting regulatory and internal environmental standards	"[I]t's mandatory that 10% of sustainability is part of the scoring criteria but also the cost elements. So, between me and the end user as part of the whole life cost, we look at how much things cost to run." (Alpha_6) "We have this one committee for ISO 18001, [the] environment aspect, and just like EMS. So, we have every six-monthly audit system here. So, [an] outside agency will come [to] our plant to check on environmental aspects." (Omega_4)

(7)	Improving efficiency within supply chain processes	Reducing packaging cost using recyclable packaging	"Since we are using it [non-recyclable packaging] once, it is definitely costly, but if you setup your supply chain … that you are using it multiple times, [the packaging] will become more economical." (Delta_2)
		Reducing risk using vendor risk assessment for sustainability	"The primary objective is to reduce the cost or to improve the efficiency or some of the business needs … and then the secondary objective is sustainability." (Delta_1)
		Process improvements leading to sustainability	"there was no mandate that there is a sustainability issue for this [project] .. there are other problems, because of that, we solved that problem and [the] sustainability followed (Delta_3)
Aggregate theme	**theoretical –Passive behaviours**	**First order codes**	**Sample evidence from interviews**
(8)	Prioritising commercial goals	Neglect sustainability in managing operations	"I'll give priority to the business. Because that's where the KPIs and KRAs of me and my team are involved so that will come first priority." (Gamma_2)
		Giving higher priority to business and commercial pressures	

> “Because normally we do have a budget and we do aim to deliver the project within that budget, so I think we are being pushed for about a minimum of 5% [saving] on every tender.” (Alpha_7)

Table 5. Table 5. Employee Green Behaviours: Supporting studies and selective empirical evidence

Manifestations of behaviours towards environmental sustainability from previous empirical research (References)	**Descriptions of Behaviours (Common themes in both fields of OB and SC)**	**Employee green behaviour manifestations in this research in the context of SC (Novel behaviours identified from our empirical data marked by *)**	**Alpha**	**Beta**	**Gamma**	**Omega**	**Delta**
			Service sector		Manufacturing sector		
Proactive green behaviours: *Referred to as performing additional activities towards sustainability implementation, taking charge of sustainability initiatives and improvements, influencing and sharing sustainability knowledge with others, gaining relevant skills and knowledge to develop innovative and sustainable solutions in the supply chain.*							

Perform additional work tasks (Ones and Dilchert, 2012); Take on broader duties (Bissing-Olson *et al.,* 2013; Chiaburu and Baker, 2006)	Actively initiate broader environmentally friendly changes in the policies and procedures in their workplace	(1) Assuming additional roles*	—	Beta_2; Beta_4; Beta_3;	Gamma_4	Omega_1 (SM 4); Omega_2 (SM 4)	—
Take charge (McAllister, 2007); Taking initiatives (Ones and Dilchert, 2012); promoting environmental initiative (Cantor *et al*., 2012)	Discretionary and spontaneous form of committed behaviour involve constructive efforts, by individual employees, to effect organisationally functional change with	(2) Taking charge of sustainability initiatives*	Alpha_4; Alpha_2	Beta_2; Beta_4	Gamma_3	Omega_1 (SM 4); Omega_2 (SM 4)	—

	respect to how work is executed within their jobs, Environmentally sustainable behaviours that are proactive, entrepreneurial, and involve personal risk and sacrifice						
Influence target; (Gattiker and Carter, 2010); Interpersonal influence (Ones and Dilchert, 2012); Helping others	Convincing others to comply with a request, persuade others to buy in a certain project or activity, educating others by sharing factual information to seek their	(3) Influencing others*	Alpha_1 (SM 1), Alpha_2, Alp	Beta_1 (SM 2); Beta_2; Beta_3;	Gamma_3; Gamma_4	Omega_1 (SM 4); Omega_2	Delta_4 (SM 5)

	engagement, seeking expertise of others to make better decisions.		ha_3, Alpha_4	Beta_4		(SM 4)	
Self-development (Boiral and Paillé, 2012); Knowledge sharing (Boiral and Paillé, 2012)	Voluntary behaviours to develop personal knowledge, skills, and abilities that could contribute to organisational functioning.	(4) Knowledge acquisition and exchange	Alpha_1 (SM 1)	Beta_2; Beta_4	Gamma_1; Gamma_3	Omega_1 (SM 4); Omega_2 (SM 4)	—
Active-compliance green behaviours: *Referred to as behaviours aimed at improving operational efficiency as well as sustainability outcomes within the supply chain, working in cross-functional liaisons to contribute towards compliance with the organisational sustainability policy and targets.*							

Cross-functional integration (Murphy *et al.*, 2020)	Gaining support of other employees and functions to fulfil sustainability targets and requirements of the organisation	(5) Working in cross-functional liaisons*	Alpha_1 (SM1), Alpha_2, Alpha_3, Alpha_4; Alpha_5;	Beta_1 (SM2); Beta_2; Beta_3; Beta_4	Gamma_1; Gamma_3; Gamma_4; Gamma_5 (SM3)	Omega_1; Omega_2; Omega_3; Omega_4	Delta_1; Delta_2; Delta_3; Delta_4

			Alpha_6				
Organisational compliance (Boiral, 2009)	Respect for explicit and implicit organisational rules; respect for deadlines, punctuality; adherence to the value of the organisation; etc.	(6) Conforming to EMS and Sustainability policy or environmental regulations	Alpha_1 (SM1), Alpha_2, Alpha_3, Alpha_4; Alpha_5	Beta_1 (SM2); Beta_2; Beta_3; Beta_4	Gamma_1; Gamma_3; Gamma_4; Gamma_5 (SM3)	Omega_1 (SM4); Omega_2 (SM4); Omega_3; Omega_4	Delta_1; Delta_2; Delta_3; Delta_4 (SM5)

			; Alpha_6				
Finding opportunities to reduce pollution (Cantor *et al*., 2012)	Efficiency drives processes in supply chains while sustainability is a by-product of it	(7) Improving efficiency of supply chain processes while sustainability is secondary criterion	Alpha_2, Alpha_3, Alpha_4; Alpha_5; Alpha_6	Beta_2; Beta_3; Beta_4	Gamma_1; Gamma_3; Gamma_4	Omega_1 (SM4); Omega_2 (SM4); Omega_3; Omega_4	Delta_1; Delta_2; Delta_3;

***Passive behaviour*:** *Passive behaviour refers to sustainability-related actions that occur with minimal effort, awareness, or initiative, often arising as by-products of routine tasks or built-in processes, and reflect a lack of explicit sustainability consideration in supply chain and operational decisions.*							
Cost prevalence mindset (Reuter *et al.*, 2012) Moral disengagement (Eriksson and Svensson, 2016) Unidimensional cognitive frame (Preuss and Fearne, 2022)	Economic driven supplier selection practices. The pursuit of cost advantage motivating employees to neglect sustainability practices to enhance value through lower prices. Sustainability is considered as and aspirational goal but secondary to efficiency and customer service.	(8) Prioritising commercial savings	Alpha_7	—	Gamma_2	—	—

Table 6. Matrix of Proactivity Based on Felt Responsibility and Role Breadth

Enablers/Behaviours	**Passive**	**Active Compliance**	**Proactive**
Felt Responsibility (internal or external)	None	Either	Both
Role Breadth Perception	Narrow	Slightly broad	Broad

Table 4. Coding for degree of perceived role breadth towards sustainability (1-3) and dimensions of felt responsibility towards sustainability (4-7)

Aggregate theoretical theme –Degree of perceived role breadth towards sustainability	**First-order codes**	**Sample evidence from interviews**
(1) Narrow role perception	• Sustainability seen as outside their role • Sustainability not seen as personally important	"It's not been cascaded down…that we need to incorporate it." (Alpha_7) "We hardly think of all those things [sustainability]…once in a blue moon someday when we think that okay now we need to do some brainstorming and do these things then might be some suggestions will come but again after that meeting, we will forget that." (Gamma_2)
(2) Slightly broad role perception	• Seeing sustainability requirements as important • Willingness to engage if an opportunity arises	"If I am handling a category, I am basically a kind of owner for that particular category. So whatever new idea..it has to start from me only.." (Delta_2) "But we are [the ones] who take the judgement whether we want to or whether the project is a big project; if it's not a one-time issue or if it's a continuous project?" (Omega_3)

(3) Broad role perception	• Seeing sustainability initiatives as core job duty • Perceived sense of ownership for sustainability outcomes	"First of all, it's my job, I have got to do it right." I believe in it [sustainability], and it's down to people like me to ensure that things like the green aspects, the sustainability aspects of the procurement, are as high as you can get." (Alpha_3) "It is a part of my job. Initially in this organisation where I am working … I was also in charge [of] environment regulations for the organisation … I started all these things." (Omega_2)
Aggregate theoretical theme –Dimensions of felt responsibility towards sustainability	**First-order codes**	**Sample evidence from interviews**
(4) Felt responsibility externally ("have to")	• Obligation to follow sustainability regulations and requirements	"If they want to supply, they have to follow those rules…so it's customer-oriented more or less in [the] present organisation." (Omega_3)

	• Willingness to engage in sustainability upon requests from seniors and peers	"We take a call based upon the directives of the senior management and whatever the [sustainability] issue is and accordingly jointly the team makes the decision." (Delta_1)
(5) Felt responsibility internally ("want to")	• Expected benefits/good outcome for organization	"I normally just want to get a good price as well. The probably before that one I would look at it" (Alpha_5) "That this sort of project may be done it will bring some benefits in terms of the reduction in printing cost, paper cost and other manpower cost. It is huge for the company". (Delta_1)
(6) Felt responsibility both externally and internally ("have to and want to")	• Feeling empowered to engage in sustainability • Feeling personally responsible for wider environmental good	*[Have to and want to]* "I feel that there is a clear policy on sustainability. I feel empowered to work here and promote to, let's say, enlighten colleagues, to go out there and say, 'because it's mandated.' Well, it's the way we should be doing it [external]." (Alpha_3)
	• Anticipated risks of not integrating sustainability in operations	"We've got one planet and it's not going to last forever if we carry on the way we are going. So, we've got to find a way of reducing our carbon footprint at all [internal]." (Alpha_3)

	• Personal interest in environmental management • Feeling obligated to implement sustainability as part of their role/organisation and do the right thing • Influenced to engage through colleagues/ sustainability manager/ supervisor	*[Have to and want to]* "Because sooner or later it is our commitment to society [internal] when all countries are reducing Nox emission, so I should also be doing …government is coming up with norms [external], so sooner or later they are going to enforce [them on] us, which is our commitment also." (Omega_1) *[Have to and want to]* "Even though it seems small, there is this risk that we aren't doing things properly [external] by not telling the suppliers exactly how things are being evaluated." (Alpha_4) "I suppose I have a personal interest in it. I mean, I'm an environmental scientist by degree. I am genuinely interested in it [internal]." (Beta_2) *[Have to and want to]* "There is a specific requirement of supply chain work that needs to be done. I mean, for us to as a company achieve our standard, which is something that we've already committed to doing. [external]." (Beta_2) *[Have to and want to]* "I think, if you're in a role like mine, we've got a fairly relentless drive and a belief in this sort of subject [sustainability]." (Beta_3)

		[Have to and want to] "No binding force on us is there but yes, it is culture of the company. It is something cultural inherited right from day one the safety of employees, machinery, safety of people around that has to be the prime concern. While we are reinforcing safety, environment comes by default there." (Gamma_4)
		[Have to and want to] "This was the intention of my director in purchasing that, ok we should not use these kinds of packaging materials and move on to the returnable packaging [external]." (Gamma_3)
(7) No felt responsibility	• Feeling lack of accountability to implement sustainability	"It's not been cascaded down from either the sustainability or our direct procurement manager that we need to incorporate it." (Alpha_7)